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The Impact of Financial Literacy on Remittance Decisions in Transnational Households: The Case of Mongolian Migrants in Japan

Understanding Financial Inclusion in Mongolia from a Micro Perspective: Is There a Gender Gap?

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# Understanding financial inclusion in Mongolia from a micro perspective: Is there a gender gap?

Enerelt Murakami\*

## Abstract

This paper investigates the determinants of financial inclusion in Mongolia – a country where persistent “reverse” gender gap in financial inclusion exists. When applying multivariate logistic models to nationally representative data, results show that women, and those who are more educated and older are more likely to be financially included. Women are four percentage points more likely than men to have access to formal finances; men are more likely to report barriers to finance and use informal finances. The Blinder-Oaxaca decomposition technique is employed to analyze the “reverse” gender disparity in financial inclusion. The results demonstrate that the disparity is largely due to coefficient effects that reflect behavioral or unobserved differences towards financial inclusion between men and women.

**Keywords:** Financial inclusion, Gender, Mongolia

**JEL codes:** G20, O12, P34

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## 1. Introduction

A growing body of literature demonstrates that financial inclusion can help empower individuals socially and economically, reduce poverty and inequality, and support overall economic development. Access to formal financial systems allows individuals to manage their finances more efficiently, smooth their consumption, cope with income shocks, diversify financial risks, and invest for the future, including in education and business (Demirguc-Kunt et al. 2017). Globally, significant improvements have been achieved in providing individuals with access to formal financial systems. According to the Global Financial Inclusion (Global Findex) database (Demirguc-Kunt et al. 2018), 69% of adults worldwide held an account at a formal financial institution in 2017; this number shows an increase from 51% in 2011. Yet, a notable gender gap in access to finance persists, undermining the benefits of financial inclusion. In developing countries, women are, on average, nine percentage points less likely to have an account than men (Demirguc-Kunt et al. 2018). However, these statistics mask country-level differences in the gender gap in financial inclusion and their driving forces.

This paper contributes to the study of gender disparity in financial inclusion in two ways. First, the paper contributes to a small but growing literature on the gender gap in access to formal financial systems at the individual level within a country. A number of studies (Delechat et al. 2018; Demirguc-Kunt et al. 2013; Morsy and Youssef 2015; Zins and Weill 2016) investigate the effect of gender on financial inclusion using cross-country data and show that country-level legal discrimination, cultural norms, and labor market discrimination against women explain cross-country variations in the gender gap in financial inclusion. Focusing on gender and the use of formal finance by enterprises, Aterido et al. (2013) find that women entrepreneurs have less access to finance; however, the gender differences in financial access disappear once firm size, industry, and ownership types are controlled. On the other hand, studies focusing on gender disparities in financial inclusion at the individual level within a single country are still limited and include

Ghosh and Vinod (2017) and Swamy (2014) on India, Fungacova and Weill (2015) on China, and Nanziri (2016) on South Africa. These studies generally find that women are less likely than men to have access to formal finance. The major determinants of financial inclusion for women tend to be their education level and employment status.

Second, to the best of the author's knowledge, this paper is the first study to explore the determinants of financial inclusion in the case of Mongolia. In this regard, the paper aims to contribute to the understanding of financial inclusion in Mongolia in the following ways: (i) it investigates the determinants of financial inclusion focusing on gender differences; and (ii) it considers different aspects of financial inclusion in addition to access to banks. In the simplest terms, financial inclusion is defined as having an account at a formal financial institution. This paper goes beyond this simple definition and includes three additional aspects of financial inclusion namely, active use of financial products including financial technology (fintech), barriers to the formal financial system, and the use of informal finance.

The Mongolian case provides an interesting study to explore the gender gap in financial inclusion. Unlike many developing countries, where women face added barriers to access to the formal financial system, Mongolia has a reverse gender gap where more women are financially included than men. While Mongolia has made significant progress in providing its citizens with access to the formal financial systems, with the number of account holders increasing from 78% in 2011 to 93% in 2017, the reverse gender gap persists at four percentage points (Demirguc-Kunt et al. 2018). Although financial inclusion is already high for both men and women in Mongolia, it is important to understand why the gender gap persists to prevent it from increasing further.

The reason for the reverse gender gap in financial inclusion is unlikely to stem from inequality and discrimination against men. According to the UNDP Human Development Index (2020), Mongolia was grouped among the countries with high gender equality in terms of achievements between men and women, and ranked 71<sup>st</sup> on the Gender Inequality Index in 2019. Similarly, Mongolia was placed 7<sup>th</sup> in the East Asia and the Pacific region and 69<sup>th</sup> in the world in

the Gender Gap Index published by the World Economic Forum (2021). Gender inequality persists in the forms of low representation of women at the professional and decision-making levels.

Generally, Mongolian women are more educated than men (World Bank 2022). The reverse gender gap in enrolment and attendance, especially at the higher education level, has been exacerbated by Mongolia's transition to democracy and a market economy. More boys than girls drop out of school in rural areas to contribute to family income from herding because of poverty. The reverse gender gap in education worsens with the advanced education levels.<sup>1</sup> Although Mongolian women have higher levels of education, they have not been able to convert this into positions at the decision-making levels.

Considering the dilemmatic gender inequality in Mongolia, this paper aims to explore why men are less likely to have access to the formal financial system than women, taking into account their differences in education, income, and employment status. To systematically investigate the gender differences in financial inclusion, this paper first employs a multivariate logistics model to determine the main factors affecting the likelihood of an individual being financially included and estimates predicted probabilities of financial inclusion by gender. The Blinder-Oaxaca technique (Blinder 1973; Oaxaca 1973) is then applied to the logit models to quantify gender differences in financial inclusion, attributing to compositional or endowment differences and differences in characteristics or behavioral responses between men and women. The results suggest that gender is a significant determinant of financial inclusion even after various individual characteristics are considered. Women tend to outperform in terms of access and use of formal financial services compared to men of the same age, education, income, and employment status. In contrast, men are more likely to report barriers to formal financial services and use informal financial sources, which may indicate additional structural issues, including

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<sup>1</sup> Gross tertiary education enrolment rates are 76.7% and 54.7% for women and men respectively in 2019 (World Bank 2022) <https://databank.worldbank.org/source/world-development-indicators> (accessed 07/10/2021).

gender roles and norms, in Mongolia. Most of the gender disparities in financial inclusion are attributed to gender differences in characteristics or behavioral responses rather than endowment differences.

The remainder of the paper is organized as follows: Section 2 describes the 2017 Global Findex data for Mongolia and performs descriptive statistics by gender. Section 3 explains the empirical strategy to analyze the effect of gender on various aspects of financial inclusion. Section 4 presents the results of the study, and Section 5 discusses them in line with existing studies and evidence. Finally, Section 6 summarizes the main findings.

## **2. Data**

The data used in this paper come from the 2017 Global Financial Inclusion (Global Findex) database, which covers 144 countries and 150,000 individuals.<sup>2</sup> This is the third round of the survey that compiles nationally representative surveys with the aim of comprehensively measuring financial inclusion around the world. The first round of the survey was conducted in 2011, followed by a second round in 2014. The 2017 Global Findex database provides additional data on the use of financial technology (fintech), including the use of mobile phones and internet to access and use financial services. More information on the Global Findex data can be found in Demircuc-Kunt et al (2018).

According to the 2017 Global Findex data, 93.6 percent of adults aged 15 and older have access to the formal finances in Mongolia. This is higher than financial inclusion levels in countries with similar income levels in East and Central Asia (Table 1). Mongolia's financial inclusion level is substantially higher than mean financial inclusion levels of East Asia and Pacific, Central Asia, and the world average. While the financial inclusion levels are much lower than in

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<sup>2</sup> The Global Findex data are available at [https://globalfindex.worldbank.org/#data\\_sec\\_focus](https://globalfindex.worldbank.org/#data_sec_focus) (accessed 06/01/2021).

Mongolia, in the gender gap is also reversed in the Philippines and Kazakhstan. As financial inclusion is already high in Mongolia, the “reverse” gender gap may not be an issue of concern. Yet, it is important to understand why men have less accounts in order to prevent the gap from widening.

**Table 1:** Financial inclusion in Mongolia and some countries in East and Central Asia

	Account	Of which: Women
Mongolia	93.6	94.7
Philippines	34.6	38.9
Kyrgyzstan	39.9	38.9
Kazakhstan	58.7	60.3
Lower middle-income countries	57.8	53.0
East Asia and Pacific	70.6	67.9
Central Asia	65.3	62.5
World	68.5	64.8

*Source:* World Bank (2018)

**Table 2:** Summary statistics of variables

	Total	Men	Women
Financial inclusion	0.936 (0.245)	0.92 (0.272)	0.947 (0.223)
Active use of accounts	0.923 (0.267)	0.905 (0.294)	0.936 (0.246)
Payment product (traditional) holding	0.931 (0.254)	0.895 (0.307)	0.939 (0.240)
Credit product holding	0.359 (0.480)	0.359 (0.480)	0.359 (0.480)
Savings product holding	0.806 (0.396)	0.759 (0.428)	0.839 (0.368)
Mobile banking	0.547 (0.498)	0.573 (0.495)	0.529 (0.500)
Too far	0.029 (0.168)	0.0439 (0.205)	0.0186 (0.135)
Too expensive	0.032 (0.176)	0.0512 (0.221)	0.0186 (0.135)
Not enough money	0.044 (0.205)	0.061 (0.240)	0.0322 (0.177)
Family member has an account	0.06 (0.238)	0.0854 (0.280)	0.0424 (0.202)
No need	0.041 (0.198)	0.0561 (0.230)	0.0305 (0.172)
Informal credit	0.239	0.246	0.234



	(0.427)	(0.431)	(0.424)
Informal savings	0.024	0.0171	0.0288
	(0.153)	(0.130)	(0.167)
Informal remittance/payment	0.279	0.315	0.254
	(0.449)	(0.465)	(0.436)
Respondent age	40.99	40.84	41.09
	(16.770)	(16.450)	(17.000)
Basic education	0.28	0.32	0.253
	(0.449)	(0.467)	(0.435)
Secondary or higher education	0.72	0.68	0.747
	(0.449)	(0.467)	(0.435)
Income quintile, Poorest 20%	0.179	0.144	0.203
	(0.384)	(0.351)	(0.403)
Income quintile, Second 20%	0.178	0.161	0.190
	(0.383)	(0.368)	(0.392)
Income quintile, Middle 20%	0.179	0.168	0.186
	(0.384)	(0.375)	(0.390)
Income quintile, Fourth 20%	0.22	0.239	0.207
	(0.414)	(0.427)	(0.405)
Income quintile, Richest 20%	0.244	0.288	0.214
	(0.430)	(0.453)	(0.410)
Out of the workforce	0.407	0.295	0.485
	(0.492)	(0.457)	(0.500)
In the workforce	0.593	0.705	0.515
	(0.492)	(0.457)	(0.500)
Observations	1,000	410	590

*Source:* Author's calculations based on the 2017 Global Findex database

Standard deviations are in parentheses. All mean indicators are survey weighted averages.

Out of the total sample of the 2017 Global Findex data, the paper makes use of the sample for Mongolia, which covers a nationally representative sample of 1000 individuals aged 15 and above. The survey was implemented in Mongolia via face-to-face interviews conducted in the Mongolian language from May 25–June 30, 2017.

The Global Findex database contains rich information on financial inclusion, covering access to and use of formal and informal financial services and barriers to financial inclusion. Additionally, the data contain information on individuals' characteristics including income, education, age, and gender. Table 2 shows summary statistics of variables used in the paper separated by gender.

This paper looks at four aspects of financial inclusion: (1) access, (2) active use, including fintech, (3) barriers to financial inclusion, and (4) use of informal finance. These four aspects are explained further below.

## **2.1 Access to formal financial services**

Financial inclusion is often defined as access to and use of formal financial services. In its simplest form, access to formal financial services is measured by having an account at a formal financial institution.<sup>3</sup> Table 2 shows that 93.6% of the adult population in Mongolia have an account at a formal financial institution; this figure is substantially higher than the average for developing countries, which according to Demirguc-Kunt et al. (2018) is 68%. By gender, Table 2 shows that approximately 92.0% of men and 94.7% of women are financially included.

## **2.2 Active use of formal financial services**

Holding an account does not directly translate into an active use of financial services. An account is considered inactive if no deposits and no withdrawals have been made for 12 months. According to Table 2, about 1% of the account holders in Mongolia had not used their accounts for the 12 months prior to the survey interview. By gender 90.5% of men and 93.6% of women actively use formal finance. Approximately 1.5% of men and 1.2% of women who hold accounts do not actively use them.

Additionally, the data provide information on the holding of financial products specifically dedicated to credits, savings, and the use of fintech in the past 12 months. Of the total population, 35.9% currently hold a credit product and 80.6% hold a savings product at a formal financial institution. About 55% of the total population or almost 60% of those who are financially included use fintech services. By gender, the data show that women are more likely than men to

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<sup>3</sup> A formal financial institution is a bank, credit union, or microfinance institution. Informal finances are any other financial sources except for banks, credit unions, and microfinance institutions.

hold traditional payment and savings accounts. The gender difference is particularly noticeable for savings products where women hold eight percent more savings accounts than men. On the other hand, men use fintech four percentage points more than women. For credit product holding, there is no substantial difference between men and women.

### **2.3 Barriers to financial inclusion**

The 2017 Global Findex survey collected data on reasons why individuals are not using formal financial services. The eight reasons provided were: “too far away,” “too expensive,” “lack of documentations,” “lack of trust,” “religious reasons,” “lack of money,” “family member has one,” and “no need.” From the reasons given in the survey, “lack of documentations,” “lack of trust,” and “religious regions” are found to be irrelevant to the Mongolian context as there are not enough survey responses in these categories. Among the more relevant reasons for financial exclusion in Mongolia, the share of population reporting the barriers is relatively small at 2–6% of the total population.

Table 2 shows that men tend to report the reasons for financial exclusion more than women; this applies to all reasons listed. According to Allen et al (2012), these reasons can be divided into voluntary exclusions (“lack of money,” “religious reasons,” and “family member has one”) and involuntary exclusions (“too far away,” “too expensive,” “lack of documentation,” and “lack of trust”). From a policy perspective, the distinction between voluntary and involuntary exclusion is crucial for identifying barriers to financial inclusion. To target barriers to financial inclusion, it is important to know the reasons associated with involuntary exclusion. In Mongolia, people tend to report “family member has an account” and “lack of money” as voluntary exclusions. The most reported reason for financial exclusion is “family member has an account” for both men and women where the reverse gender gap is also the highest.

## 2.4 Use of informal finance

Barriers to formal financial services could lead to the use of informal finance. Limited access to credit is also found to be detrimental to economic growth and poverty alleviation (Bruhm and Love 2014). The data show that 24% of the total population borrowed from sources other than formal financial institutions.

Data in Table 2 show that men are more likely to borrow from informal sources and make domestic remittances in cash or through means other than formal financial transactions than women are. Informal saving is relatively scarce among both men and women, although more women than men tend to save, even in informal forms.

## 3. Empirical strategy

In order to formally analyze the determinants of financial inclusion and how they differ for men and women, the study employs two methods: (1) multivariate logit models, and (2) Blinder-Oaxaca decomposition to logit models.

### 3.1 Multivariate logit models

The following empirical model is used to determine factors influencing financial inclusion in Mongolia.

$$fin_i = \beta_0 + \beta_1 \cdot gender_i + \beta_2 age_i + \beta_3 age_i^2 + \beta_4 inc_i + \beta_5 educ_i + \beta_6 emp_i + \varepsilon_i \quad (1)$$

where  $fin_i = \ln \frac{p_i}{1-p_i}$ , with  $p_i$  is the probability an individual  $i$  is financially included,  $gender_i$  is a dummy variable if the respondent is female,  $age_i$  is the age of the respondent,  $age_i^2$  is the square of the age,  $inc_i$  is a categorical variable for income quintiles,  $educ_i$  is a dummy for education level, and  $emp_i$  is a dummy for the employed.  $\beta$ s are parameters to be estimated and

$\varepsilon_i$  is an idiosyncratic error term. Equation (1) is estimated using a logit model for each measure of the four aspects of financial inclusion discussed in the previous section.

After estimating the logistic model of each measure, predicted probabilities of a positive outcome for financial inclusion measures are plotted by gender. The predicted probabilities are calculated by the following formula:

$$p_i = \frac{e^{I_i}}{1 + e^{I_i}} \quad (2)$$

where the predicted index of the  $i$ th observation is defined as  $I_i = X_i\beta$  with  $X_i$  a vector of independent variables and  $\beta$  the corresponding estimated parameter vector described in Equation (1).

### 3.2 The Blinder-Oaxaca decomposition technique to logit models

In order to study gender differences in mean outcomes of financial inclusion measures, the Blinder-Oaxaca decomposition technique (Blinder 1973; Oaxaca 1973) is applied. The Blinder-Oaxaca decomposition technique allows the decomposition of outcome variables between two groups (in this case, men and women) into different parts: one part is explained by differences in observed characteristics and the other part is attributable to differences in estimated coefficients.

Equation (1) can be written separately for men and women as:

$$\begin{aligned} fin_i^m &= \beta_0^m + X_i^m \beta_k^m + \varepsilon_i^m && \text{if "male"} \\ fin_i^f &= \beta_0^f + X_i^f \beta_k^f + \varepsilon_i^f && \text{if "female"} \end{aligned} \quad (3)$$

where  $fin_i^g = \ln \frac{p_i^g}{1-p_i^g}$  with  $p_i^g$  representing the probability of being financially included, and  $X_i^g$  is a vector of covariates explained in (1) except for  $gender_i$ . In other words,  $X_i^g \in (age_i, age_i^2, inc_i, educ_i, emp_i)$  and  $k$  indexes the number of covariates.  $\beta^g$  is a vector of

coefficients to be estimated, and  $\epsilon_i^g$  an idiosyncratic error term for each group  $g \in (m, f)$  where  $m$  and  $f$  stand for male and female, respectively.

In the Blinder-Oaxaca decomposition, the difference in the mean outcome variable (log odds of financial inclusion) between men and women can be expressed as:

$$\overline{fin}^m - \overline{fin}^f = (\bar{X}^m - \bar{X}^f)\beta^m + \bar{X}^f(\beta^m - \beta^f) \quad (4)$$

where the first term on the right-hand side,  $(\bar{X}^m - \bar{X}^f)\beta^m$ , is called an endowment effect or a part explained by characteristics, and the second term,  $\bar{X}^f(\beta^m - \beta^f)$ , is a coefficient effect or a part unexplained by the covariates. Equation (4) treats male,  $m$ , as a reference group and female,  $f$ , as a comparison group. Conversely, the decomposition can be written from the viewpoint of the female group. Depending on the assignment of the reference and comparison groups, the decomposition may lead to different results. To avoid this ambiguity, coefficients from pooled models are used instead of those of reference group models as in Fortin (2006).<sup>4</sup> Thus, Equation (4) can be written with the coefficients from the pooled models as:

$$\overline{fin}^m - \overline{fin}^f = (\bar{X}^m - \bar{X}^f)\beta^p + [\bar{X}^m(\beta^m - \beta^p) - \bar{X}^f(\beta^f - \beta^p)] \quad (5)$$

where  $\beta^p$  is a vector of coefficients from the pooled models. In Equation (5), the coefficient effect becomes  $[\bar{X}^m(\beta^m - \beta^p) - \bar{X}^f(\beta^f - \beta^p)]$ , which is characterized by the deviation between the pooled coefficients and each group's unrestricted coefficients. The endowment effect is the same as in Equation (4).

#### 4. Results

This section presents the results of the empirical analysis for each measure of the four aspects of financial inclusion: access, use, barriers, and exclusion. First, the determinants of access to

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<sup>4</sup> Details on the Blinder-Oaxaca decomposition with coefficients from a pooled regression can be found in Jann (2008).

finance, measured by having an account at a formal financial institution, are considered. The overall financial inclusion indicator is divided into four specific types of financial products namely payment, credit, savings, and mobile bank. In addition, the determinants of the active use of formal finances in the past 12 months are estimated.

The results in Table 3 show that gender is a significant determinant of overall financial inclusion, active use of formal finances, holding traditional payment accounts, and savings products, but not of active use of credit and financial technology. The odds of women being financially included and actively using a bank account are 2.1 times higher than for men. Additionally, the odds of women holding a regular payment account and having formal savings are 2.3 and 2.6 times higher than men, respectively. However, no significant difference is observed between men and women receiving credit from formal financial institutions. Although statistically insignificant, mobile banking is the only financial inclusion indicator where men are likely to outperform women.

**Table 3:** Determinants of financial inclusion

VARIABLES	(1) Financial inclusion (overall)	(2) Active use of accounts	(3) Payment product (traditional)	(4) Credit product holding	(5) Savings product holding	(6) Mobile banking
Female	0.73** (0.30)	0.76*** (0.28)	0.82*** (0.28)	0.22 (0.16)	0.94*** (0.20)	-0.02 (0.17)
Age	0.13*** (0.04)	0.14*** (0.04)	0.16*** (0.04)	0.23*** (0.03)	0.15*** (0.03)	0.21*** (0.03)
Age squared	-0.0014*** (0.00)	-0.0014*** (0.00)	-0.0017*** (0.00)	-0.0024*** (0.00)	-0.0017*** (0.00)	-0.0027*** (0.00)
Secondary or higher education <sup>1</sup>	1.31*** (0.31)	1.05*** (0.29)	1.39*** (0.29)	0.21 (0.20)	0.82*** (0.21)	0.82*** (0.19)
Income quintile 2 <sup>2</sup>	0.06 (0.41)	0.00 (0.37)	0.09 (0.37)	0.04 (0.26)	0.22 (0.28)	0.53** (0.25)
Income quintile 3 <sup>2</sup>	0.85 (0.52)	0.96** (0.48)	0.79* (0.44)	0.43 (0.26)	0.71** (0.30)	0.88*** (0.26)
Income quintile 4 <sup>2</sup>	0.31 (0.48)	0.60 (0.46)	0.46 (0.45)	0.47* (0.27)	0.55* (0.33)	1.15*** (0.27)
Income quintile 5 <sup>2</sup>	0.78 (0.48)	0.86** (0.43)	1.13** (0.45)	0.49* (0.27)	0.79** (0.31)	1.51*** (0.27)

In workforce <sup>3</sup>	0.43 (0.32)	0.48 (0.31)	0.37 (0.31)	0.80*** (0.19)	0.55** (0.23)	-0.07 (0.18)
Constant	-1.57** (0.80)	-1.95*** (0.74)	-2.54*** (0.74)	-6.65*** (0.59)	-3.24*** (0.60)	-4.39*** (0.63)
Observations	1,000	1,000	1,000	1,000	1,000	1,000

Source: Author's estimations

Notes: Robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

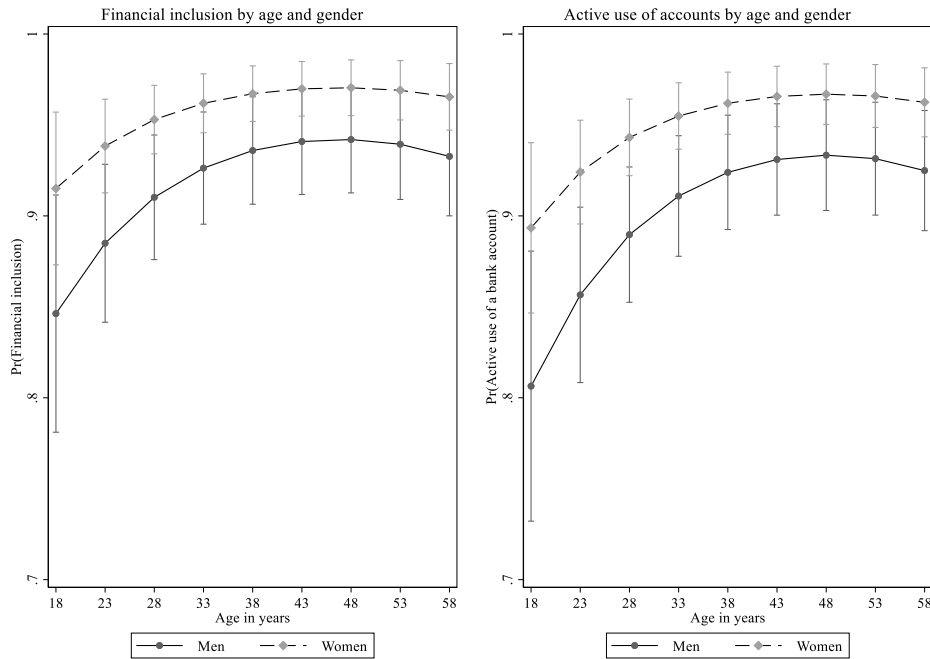
<sup>1</sup> Base is basic education, <sup>2</sup> base is the poorest 20%, and <sup>3</sup> base is out of the workforce. Estimates are in log-odds.

In terms of the other determinants of access to finance, age, education, employment, and income are all found to be important factors. The respondent's age is likely to have a nonlinear effect in that access to finance initially increases with age and gradually levels off. Individuals who are more educated are more likely to have an account, hold savings, and use fintech, although no significant difference in educational levels is found in relation to access to formal credits. Income level is not a significant determinant of overall financial inclusion. However, it is an important determinant of access to credit and savings, and active use of accounts and mobile banking. The effect of the income difference becomes more prominent when comparing the richest quintile to the poorest quintile, as the odds of active use and access to payment accounts, credit, and savings more than triple. In particular, the odds of the richest 20% having a payment account and using mobile banking are 3.1 and 4.5 times higher than the poorest 20%, respectively. Finally, being employed is important for access to credit and savings products, increasing the odds of having access to formal credit by 2.2 times and savings by 1.7 times, respectively.

After estimating the logit models, predicted probabilities of access to finance are calculated by gender. First, the predicted probabilities of being financially included and actively using accounts are calculated and plotted by age and gender in Figure 1. Then, the probabilities of access to and use of specific products are calculated by gender and individual characteristics for models where gender is statistically significant.



**Figure 1: Predicted probability of being financially included by gender**



*Source:* Author's calculations

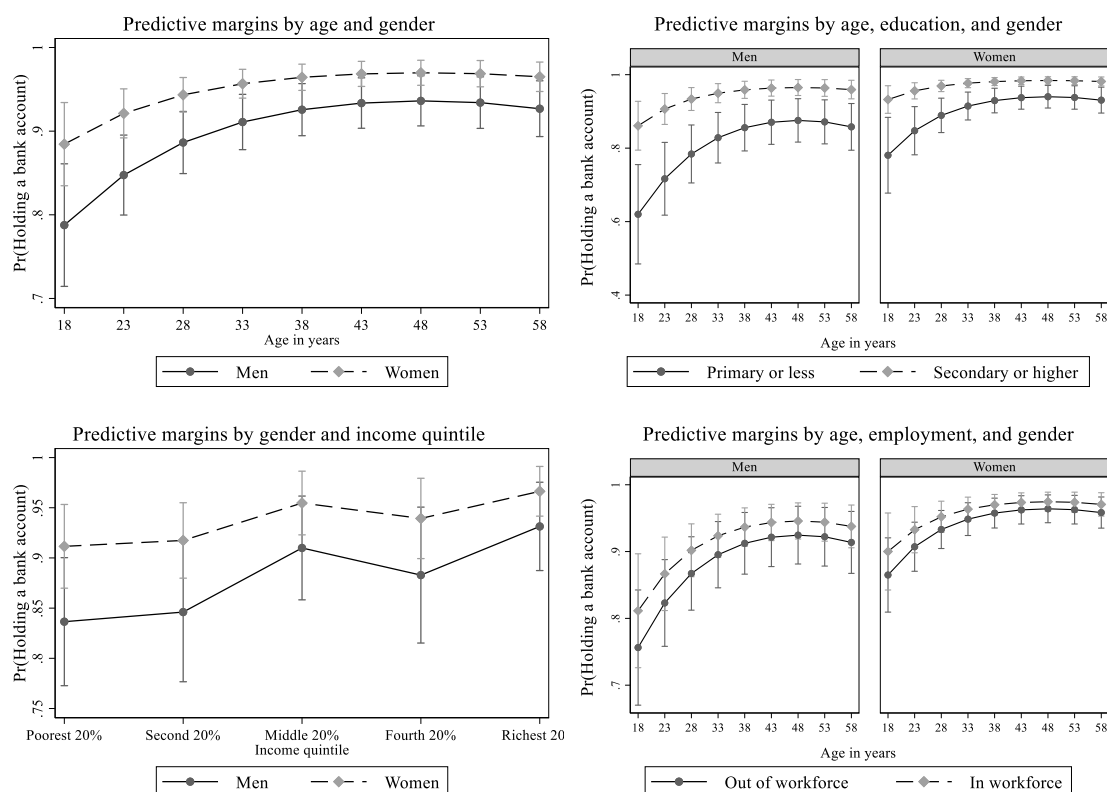
*Note:* Vertical lines are 95% confidence intervals

Figure 1 shows that age appears to have a nonlinear effect on the likelihood of having a bank account for both men and women. However, at the same age, women are more likely than men to have an account and actively use it. For both men and women, the peak age for holding a bank account occurs at around 40, with predicted probabilities of approximately 91% and 95% respectively, and declines slightly afterwards. Among those who are financially included, younger individuals of 18 to late-20s are more likely to be inactive users. Particularly, young men are more likely to be inactive users even if they are financially included. Both men and women tend to actively use formal finances from their early 30s. The reverse gender gap is larger in younger and older age groups, while it narrows slightly around the age of 40.

Figure 2 presents the predicted probabilities of holding a traditional (non-fintech) account at a formal financial institution by gender and other individual characteristics. As with overall financial inclusion, women are more likely to hold a traditional account than men of the same

age; this peaks at around the age 40 and levels off. Those who are more educated are more likely to hold a bank account; however, at the same educational level, more women than men tend to hold accounts. The gender difference is more prominent among those who have completed primary-level education or lower. As the educational level rises, the difference between men and women having a bank account shrinks. The disparity between men and women is negligible for those over 40 years old who have more than secondary education. By income levels, the probability of financial inclusion increases as income rises. At the same income level, however, women are more likely to be financially included than men. The gap between men and women decreases as income rises. At the poorest income quintile, the probability of men having an account is almost seven percentage points lower than that of women, while at the richest income quintile the difference decreases to approximately three percentage points. Being part of the workforce increases the probability of holding a traditional account for both men and women, although women are more likely to have an account than men with the same employment status.

**Figure 2:** Predicted probability of holding a bank account/payment product by gender



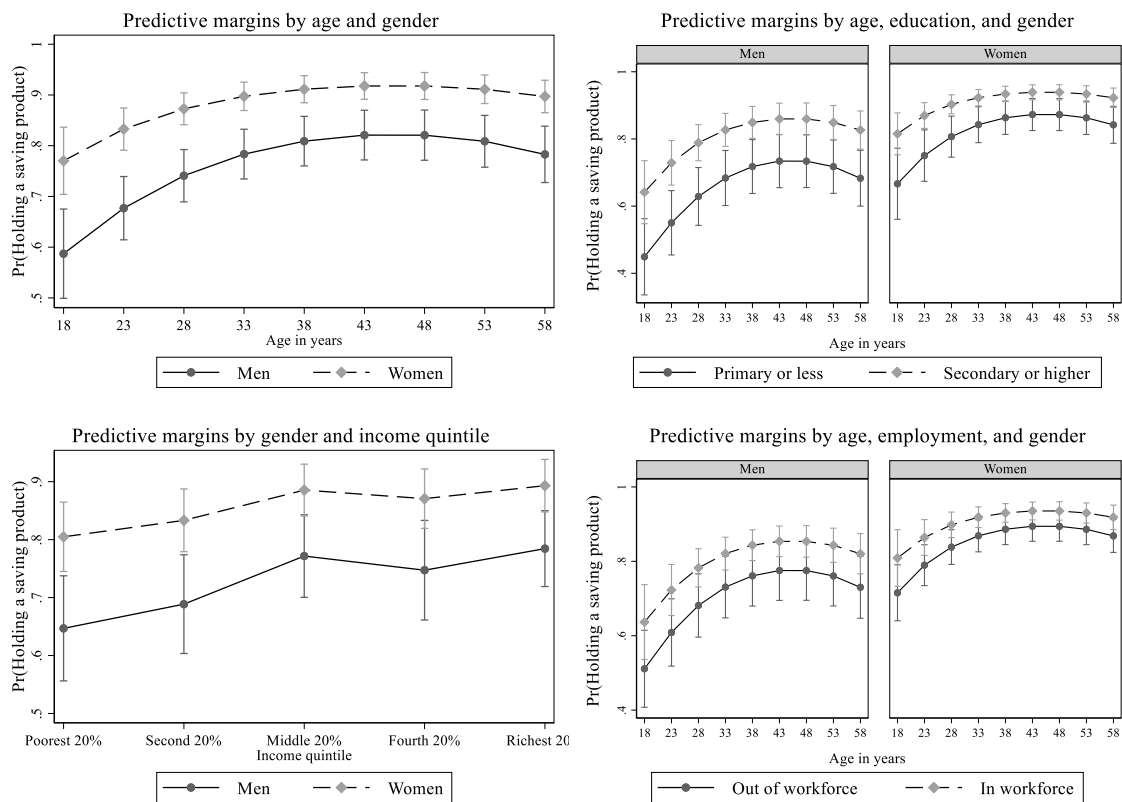
*Source:* Author's estimations

*Note:* Vertical lines are 95% confidence intervals

Figure 3 shows the predicted probabilities of holding a savings product by gender. Again, women are more likely to have a savings product than men of the same age, education, employment, and income level. When comparing the findings for regular bank accounts, the gender difference is more visible for men and women with the same individual characteristics. The probability of men having a savings product increases substantially as education levels increase, narrowing the reverse gender gap. A similar pattern is observed in relation to employment status. Being part of the workforce increases the probability of having a savings account for both men and women; however, even unemployed women are more likely than employed men to have savings products. In contrast, being part of the workforce increases the probability of being able to save more for men than for women as the gap between men out of

and in the workforce is much larger than that for women. Lastly, for both men and women, the probability of holding a savings account increases as income rises. However, women’s propensity to save is always higher than that of men.

**Figure 3:** Predicted probability of holding a savings product by gender



*Source:* Author’s estimations

*Note:* Vertical lines are 95% confidence intervals

To ensure more people are included in the formal financial system, it is necessary to understand the barriers to financial inclusion and the reasons why some people are not participating in the system. Thus, the third aspect of financial inclusion that this paper explores is the barriers to financial inclusion. Table 4 shows the results of the logit model for determinants of barriers to financial inclusion and illustrates that being a woman significantly reduces the odds of being financially excluded due to one of the five barriers relevant to the Mongolian context.

In terms of other determinants, age is found to be a statistically significant predictor of financial exclusion only in relation to the reasons “family member has an account” and “no need”. The coefficient of age is statistically significant and negative and that of age squared is positive; this indicates that these individuals are likely to be young adults and elderly people who might be dependent on the household members. Both belonging to the top income quintile and being part of the workforce reduce the odds of facing barriers to financial inclusion.

**Table 4:** Determinants of barriers to financial inclusion

VARIABLES	(1) Too far	(2) Too expensive	(3) Not enough money	(4) Family member has an account	(5) No need
Female	-2.02*** (0.44)	-1.48*** (0.45)	-1.17*** (0.37)	-1.17*** (0.32)	-1.39*** (0.36)
Age	0.03 (0.07)	-0.07 (0.06)	-0.07 (0.05)	-0.21*** (0.04)	-0.11** (0.05)
Age squared	-0.0001 (0.00)	0.0011* (0.00)	0.0009** (0.00)	0.0021*** (0.00)	0.0012** (0.00)
Secondary or higher education <sup>1</sup>	0.41 (0.54)	0.58 (0.47)	-0.33 (0.39)	-0.53 (0.33)	-0.43 (0.41)
Income quintile 2, Second 20% <sup>2</sup>	0.20 (0.62)	-0.15 (0.55)	0.11 (0.46)	0.67 (0.46)	0.46 (0.51)
Income quintile 3, Middle 20% <sup>2</sup>	-0.87 (0.69)	-0.97 (0.66)	-1.01 (0.63)	0.43 (0.48)	-0.60 (0.69)
Income quintile 4, Fourth 20% <sup>2</sup>	-0.71 (0.71)	-0.96 (0.65)	-0.52 (0.54)	0.14 (0.51)	0.12 (0.55)
Income quintile 5, Richest 20% <sup>2</sup>	-1.80** (0.71)	-1.98*** (0.61)	-2.53*** (0.72)	-0.67 (0.57)	-2.26*** (0.73)
In workforce <sup>3</sup>	-0.82* (0.47)	-0.16 (0.48)	-0.71** (0.36)	-0.36 (0.35)	-0.37 (0.46)
Constant	-3.41 (2.09)	-1.65 (1.49)	-0.48 (1.12)	2.41*** (0.84)	0.04 (1.12)
Observations	1,000	1,000	1,000	1,000	1,000

Source: Author's estimations

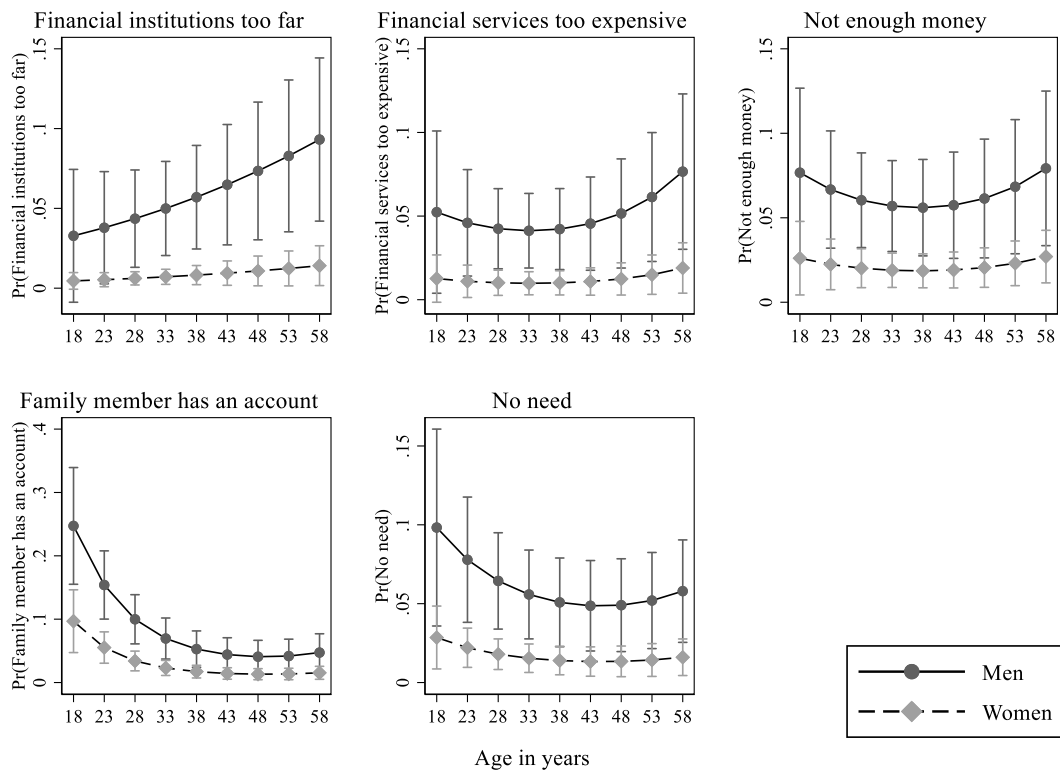
Note: Robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>1</sup> Base is basic education, <sup>2</sup> base is the poorest 20%, and <sup>3</sup> base is out of the workforce. Estimates are in log-odds.

Figure 4 presents the predicted probability of financial exclusion by gender. At the same age, men are more likely than women to cite barriers to accessing and utilizing financial services. The gap between men and women increases with age for those who state that financial institutions

are too far away. There are subtle inverse parabolic relationships between age and the rest of the barriers to formal financial services. In other words, younger and older individuals tend to report these barriers more than those in their 30s to 40s. This could be due to the fact that younger and older individuals are more likely to be financially dependent on other household members of prime working age. While there is no systematic discrimination against men in Mongolia, the results show that more men report barriers to financial services than women, which may indicate that men are more likely to live in rural areas where access to financial services is restricted due to the absence or poor quality of infrastructure. This is also related to the fact that more women than men migrate to urban areas to pursue education and employment.

**Figure 4:** Predicted probability of financial exclusion by gender



Source: Author's estimations

Note: Vertical lines are 95% confidence intervals

Lastly, the paper investigates determinants of the use of informal finance for different purposes: credit, saving, and payment/remittance. Table 5 shows that gender (being a woman) is insignificantly negatively related to informal borrowing and positively related to savings in forms other than with formal financial institutions. On the contrary, it is found that women are significantly less likely than men to opt for informal remittances and payments in cash. In terms of other determinants, having completed secondary education or higher and belonging to a wealthier income quintile reduces the odds of informal remittances and payments in cash. Furthermore, being part of the workforce is statistically significantly positively related to informal remittances, indicating that there may still be workplaces that provide wages in cash.

**Table 5:** Determinants of informal finance use

VARIABLES	(1) Informal credit	(2) Informal savings	(3) Informal remittance/payment
Female	-0.10 (0.17)	0.29 (0.50)	-0.38** (0.17)
Age	0.05 (0.04)	0.11 (0.10)	-0.03 (0.03)
Age squared	-0.0010** (0.00)	-0.0018 (0.00)	0.0004 (0.00)
Secondary or higher education <sup>1</sup>	0.49** (0.21)	-0.34 (0.53)	-0.19 (0.19)
Income quintile 2, Second 20% <sup>2</sup>	-0.09 (0.26)	0.23 (0.70)	-0.49** (0.25)
Income quintile 3, Middle 20% <sup>2</sup>	0.08 (0.26)	0.57 (0.71)	-0.43* (0.25)
Income quintile 4, Fourth 20% <sup>2</sup>	-0.52* (0.28)	0.26 (0.83)	-0.58** (0.26)
Income quintile 5, Richest 20% <sup>2</sup>	-0.27 (0.27)	0.40 (0.68)	-1.03*** (0.27)
In workforce <sup>3</sup>	0.08 (0.20)	-0.04 (0.56)	0.39* (0.20)
Constant	-1.43** (0.66)	-5.00*** (1.55)	0.18 (0.54)
Observations	1,000	1,000	1,000

Source: Author's estimations

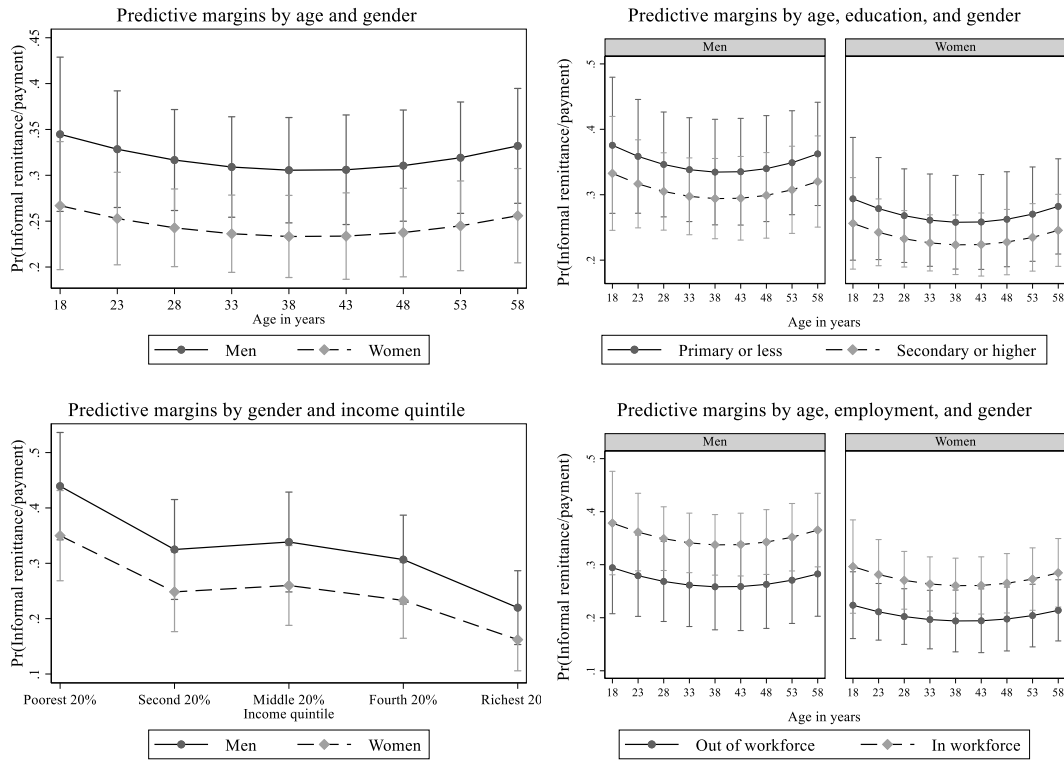
Note: Robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>1</sup> Base is basic education, <sup>2</sup> base is the poorest 20%, and <sup>3</sup> base is out of workforce.

Figure 5 displays predicted probability of informal remittances by gender. Men are approximately ten percentage points more likely to send and receive money through forms other than formal financial institutions than women of the same age. More educated men and women are less likely to opt for informal remittances and payments, although the probability of doing so is higher for men than for women who have the same education level and age. Individuals in the poorest quintile are more likely to use informal remittances and payment methods, although within the same income quintile, men are almost 8 percentage points more likely than women to do so. The probability of receiving informal remittances decreases substantially when shifting from the poorest to the second poorest income quintile. Being in the workforce increases the probability of both men and women opting for informal remittances. However, at the same age and employment status, men are more likely to opt for informal remittances than women. This may indicate that men are more likely to be employed in the informal sector or by small and medium enterprises where salaries and wages are still paid in cash.



**Figure 5:** Predicted probability of informal remittances and payment by gender



Source: Author's estimations

Note: Vertical lines are 95% confidence intervals

The analysis so far shows that there is a gender gap in financial inclusion, assuming that all other things are equal. Differences in observed and unobserved characteristics between men and women can affect this gender gap. To quantify the gender gap in financial inclusion in a counterfactual manner, the Blinder-Oaxaca decomposition given by Equation (5) is estimated to gauge whether the disparity is due to compositional differences (explained by covariates), or due to differential mechanisms (unexplained by covariates). Table 6 shows the results of the Blinder-Oaxaca decomposition for financial inclusion measures used in this paper.

The decomposition results show that the reverse gender gap in financial inclusion is highly statistically significant for most of the indicators considered, except for the use of credit and fintech products. The reverse gender gap in overall financial inclusion is four percentage points. The gap is mostly explained by coefficient effects that reflect behavioral or unobserved

differences towards financial inclusion between men and women. The largest gap in terms of access and use is found to be for savings where the gap is 11 percentage points. The gender differences in savings are more than fully explained by the coefficient effects, implying that men would save 18 percentage points<sup>5</sup> more if they had the same behavioral responses or returns to risk as women. On the other hand, the negative and significant effect of the characteristics implies that compared to women with the same characteristics including age, educational level, income, and employment status, men save less. Men are more likely to have credits and use fintech products than women, although the estimated gender difference is not statistically significant. For credits, the characteristics or endowment effect is negative and statistically significant, indicating that men are more likely to have credits than women with the same characteristics.

**Table 6:** Blinder-Oaxaca decomposition of gender differences in financial inclusion

	(1) Women	(2) Men	(3) Difference	(4) Explained	(5) Unexplained
<b>Access and use</b>					
Financial inclusion (overall access)	0.94*** (0.01)	0.91*** (0.02)	0.04** (0.02)	-0.00 (0.00)	0.04** (0.02)
Active use	0.93*** (0.01)	0.89*** (0.02)	0.04** (0.02)	-0.01 (0.01)	0.05*** (0.02)
Payments	0.93*** (0.01)	0.88*** (0.02)	0.05** (0.02)	-0.01 (0.01)	0.06*** (0.02)
Credits	0.33*** (0.02)	0.34*** (0.03)	-0.01 (0.03)	-0.05*** (0.02)	0.04 (0.03)
Savings	0.85*** (0.02)	0.74*** (0.02)	0.11*** (0.03)	-0.02* (0.01)	0.13*** (0.03)
Mobile bank (fintech)	0.55*** (0.02)	0.58*** (0.03)	-0.02 (0.04)	-0.02 (0.02)	-0.00 (0.03)
<b>Barriers to finance</b>					
Too far	0.01* (0.01)	0.05*** (0.01)	-0.04*** (0.01)	0.004** (0.00)	-0.04*** (0.01)
Too expensive	0.02*** (0.01)	0.05*** (0.01)	-0.03*** (0.01)	0.003* (0.00)	-0.04*** (0.01)
Not enough money	0.03*** (0.01)	0.06*** (0.01)	-0.04** (0.02)	0.01** (0.00)	-0.04*** (0.01)
Family member has an account	0.05*** (0.01)	0.11*** (0.02)	-0.06*** (0.02)	0.01 (0.00)	-0.07*** (0.02)
No need	0.03*** (0.01)	0.09*** (0.02)	-0.06*** (0.02)	0.00 (0.00)	-0.06*** (0.02)
<b>Use of informal finance</b>					

<sup>5</sup>  $\frac{Unexplained}{Total\ differences} - 1 = \frac{0.13}{0.11} - 1 = 0.18$

Informal credit	0.26*** (0.02)	0.27*** (0.02)	-0.01 (0.03)	0.01 (0.01)	-0.02 (0.03)
Informal savings	0.03*** (0.01)	0.02*** (0.01)	0.01 (0.01)	-0.00 (0.00)	0.01 (0.01)
Informal remittances	0.25*** (0.02)	0.33*** (0.03)	-0.08** (0.03)	-0.00 (0.01)	-0.08** (0.03)

*Source:* Author's estimations

*Note:* Standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Men tend to report barriers to finance more than women do. The reverse gender gap in barriers to finance is highly statistically significant and ranges from three to six percentage points. The largest gap is estimated for the categories “family member has an account” and “no need,” which are voluntary reasons for financial exclusion. The gender differences in barriers to finance are fully explained by the coefficient effects, implying that if men have unobserved characteristics that differ from those of women, the gap could decrease. For barriers “too far,” “too expensive,” and “not enough money,” which lead to involuntary financial exclusion, the effects of the characteristics are statistically significant and positive. This implies that equalizing the observed endowments (age, income, education, and employment) would reduce the reverse gender gap in barriers to finance.

Lastly, regarding the use of informal finance, only the use of informal remittances is found to be statistically significantly different for men and women. Men are eight percentage points more likely to opt for informal remittances, and the gender difference is fully attributed to the coefficient effect. If men had the same unobserved characteristics as women, the gender difference in informal remittances would be reduced.

## 5. Discussion

In the context of gender disparities in financial inclusion, this paper offers insights into the special case of Mongolia. The findings of the paper suggest three major points observed in the context of Mongolia: (1) women are more likely than men to be financially included, (2) men tend to report barriers to formal finance, and (3) men are more likely than women to use informal finance.

Gender differences in financial inclusion measures are highly statistically significant and found to be influenced largely by differences in unobserved characteristics between men and women.

Both cross-country and country case studies suggest that women are disproportionately disadvantaged when it comes to access to formal finance. Major factors that prevent women from being financially included are legal discrimination, lack of protection from harassment, and traditional gender norms and expectations (Allen et al. 2016; Demirguc-Kunt et al. 2013). Women are often found to face added barriers to accessing formal finance due to cultural and legal discriminations (Delechat et al. 2018; Morsy and Youssef 2015). As women do not have access to formal financial services, they are more likely to opt for informal finances, which could be risky and dangerous. Contrary to the literature, the Mongolian case provides evidence that women have more access and face less barriers to finance than men do. Additionally, they are less likely to use informal finance.

While gender inequality measures (see United Nations Development Programme 2020; World Economic Forum 2021) suggest that there are no known forms of discrimination against men in Mongolia, there may be a number of inter-related explanations as to why men have less access to finance there. First, cultural factors lead more men to live in rural areas where they engage in traditional herding activities; in contrast, women move to cities to study or work. When faced with financial constraints on providing schooling to their children, Mongolian families often send their daughters rather than their sons to school; this has been especially so after the collapse of the socialist rule (Schmillen and Weimann-Sandig 2017). Due to social and economic demands in the countryside as well as attachment to a lifestyle that nomadic people in Mongolia have led for centuries, families consider boys as their family successors and the workforce needed to help family subsistence. This leads to disproportionately high drop-out rates among boys starting from secondary school age (Table A.1). The reverse gender gap in educational enrolment is more pronounced at the higher education levels where female students constitute 60% of the total student population. Consequently, this has led to more men entering economic sectors (including

agriculture and mining) that are predominantly located in rural areas. According to the official statistics, approximately 60% of agricultural workers and 80% of miners are men (Table A.2).

Second, urban-rural disparities in infrastructure development make access to financial institutions difficult for rural residents in Mongolia; the disparity between the capital city, Ulaanbaatar, and the rest of the country is particularly pronounced. Mongolia is one of the most sparsely populated countries in the world.<sup>6</sup> The cost of providing infrastructure and social services to populations that are dispersed outside of the capital city has been a challenge that contributes to the urban-rural disparity in the country. While Ulaanbaatar occupies less than 1% of the vast land area of the country, it houses more than 60% of the country's commercial bank branches (Mongolbank 2022). A lack of basic services in rural areas makes it difficult for rural residents, who are mostly males engaged in agriculture and mining activities, to access formal financial services.

Third, men are more likely to be working in the informal sector. As more boys drop out of secondary school, they tend to work in low-skilled jobs, most of which are in the informal sector where the wages are often paid in cash rather than through formal financial services. Statistics show that about 60% of the informal sector workers are male (Table A.3).

Among the above possible explanations for the reverse gender gap in financial inclusion in Mongolia, the education variables in the analysis capture the fact that more women pursue education in the cities. The results show that education increases the odds of being financially included for men by a greater percentage than for women, indicating that educational equality could remedy the reverse gender gap in financial inclusion. The remaining two explaining factors that men are more likely to live in rural areas and that they are engaged in informal sectors are unfortunately not included in the data. Future studies should consider these cultural, economic,

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<sup>6</sup> The average population density of Mongolia is approximately two people per square kilometer. Ulaanbaatar is the most populated city in Mongolia with more than 300 people per square kilometer, while the rest of the country averages around one person per square kilometer as of 2020. The data can be obtained at <https://beta.1212.mn/en> (Accessed 02/05/2022).

and social factors in order to formally analyze these issues. Connecting individual- or household-level data with regional or local-level panel data that account for cultural, economic, and social changes in relation to financial inclusion could be a way forward. Although the results shown in this paper do not explicitly reveal what factors affect gender disparity, they suggest that most of the disparity is due to differences in the unobserved characteristics of men and women, which are likely to include the cultural, economic, and social factors discussed here.

## **6. Conclusion**

This paper investigated the determinants of financial inclusion in Mongolia, focusing on the gender gap. Distinct from many developing countries where women have less access to formal financial services, Mongolia has experienced a reverse gender gap in financial inclusion. Women in Mongolia are four percentage points more likely than men to have access to formal finance. The difference between men and women is more pronounced when looking at the likelihood of holding savings products. The gender differences in financial inclusion are highly statistically significant and are influenced largely by differences in unobserved characteristics including cultural, economic, and social factors that affect the probability of being financially included.

In addition to access to formal finances, this paper looked at barriers to financial inclusion and the use of informal finances. Although a relatively small share of the population reports barriers to finance, men are more likely than women to report them. The decomposition analysis shows that the gender differences in barriers to financial inclusion are highly statistically significant and are influenced by coefficient effects or unobserved characteristics. Furthermore, men are more likely to use informal remittances than women. These gender differences may indicate the fact that more men live in rural areas that engage in agriculture and mining activities and where physical access to financial institutions is difficult.

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## Appendix

**Table A. 1:** Enrolment rates by education level

Year	Primary		Secondary		Higher education	
	Male	Female	Male	Female	Male	Female
2010	96.5	98.9	103.1	109.2	40.4	59.6
2011	86.1	90	86.9	89.1	41.2	58.8
2012	84.8	85	92.1	100.1	41.7	58.3
2013	98.3	104.8	89.8	104.2	41.5	58.5
2014	103.5	102	89.8	89.2	42.5	57.5
2015	98.3	98.6	84.5	84.9	42.4	57.6
2016	98.2	98	96	98.9	41.8	58.2
2017	97.9	97.3	99.3	101.3	42.0	58.0
2018	96.7	96.5	96.7	99.3	40.6	59.4
2019	97	96.7	96.7	98.3	39.0	61.0
2020	97.3	97.2	95.9	97.4	39.3	60.7

*Source:* National Statistical Office of Mongolia (2022) [www.1212.mn](http://www.1212.mn) (accessed 02/05/2022)

**Table A. 2:** Share of workers in agriculture and mining by gender

Year	Agriculture		Mining	
	Men	Women	Men	Women
2013	54.7	45.3	77.4	22.6
2014	55.4	44.6	81.7	18.3
2015	54.9	45.1	79.2	20.8
2016	56.2	43.8	83.4	16.6
2017	56.9	43.1	84.6	15.4
2018	57.1	42.9	84.0	16.0
2019	56.5	43.5	79.6	20.4
2020	55.8	44.2	82.5	17.5

*Source:* National Statistical Office of Mongolia (2022) [www.1212.mn](http://www.1212.mn) (accessed 02/05/2022)

**Table A. 3:** Share of workers in informal sector by gender

	2019	2020
Men	56.9	59.0
Women	43.1	41.0

*Source:* National Statistical Office of Mongolia (2022) [www.1212.mn](http://www.1212.mn) (accessed 02/05/2022)



**Abstract (in Japanese)****要約**

本稿では、モンゴルにおける金融包摂の決定要因を、ジェンダーギャップに着目して調査した。全国を代表するデータに多変量ロジスティックモデルを適用した結果、女性、高学歴、高齢であるほど金融包摂が進んでいることが示された。また、女性は男性よりも 4 パーセントポイント高い確率でフォーマルな金融にアクセスすることができる一方で、男性はフォーマルな金融に対する障壁を報告し、インフォーマルな金融を利用する傾向がある。Blinder-Oaxaca 分解法を用いて金融包摂における「逆」男女格差を分析した結果、この格差は主に男女間の金融包摂に対する行動的または観測されない差異を反映した係数効果によるものであることが明らかになった。

**キーワード:** 金融包摂、ジェンダー、モンゴル

**JEL コード:** G20、O12、P34