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Article

Who Gains from Digital Finance? Micro-Evidence on Account Ownership in Uzbekistan and Central Asia, 2021–2024

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Abstract: Uzbekistan raised adult account ownership from 44.1% to 59.7% between 2021 and 2024, during a rapid expansion of bank cards and payment applications. This study uses Global Findex microdata for Uzbekistan, Kazakhstan and Tajikistan (about 6,000 respondents) to identify who gained and why. Weighted probit models show that education, not household income, is the main dividing line: tertiary education raises the probability of owning an account by 41.8 percentage points, whereas income quintiles have no significant effect. Women overtook men: the raw gender gap moved from −11.0 to +1.9 points, an adjusted change of 14.4 points ($p = 0.005$), while young adults fell further behind. Non-linear Blinder–Oaxaca decompositions show that only 20% of the 2021–2024 gain and 28% of the 27.3-point gap with Kazakhstan are explained by individual characteristics. Among account owners, only 15% save and 18% borrow formally. The remaining exclusion in Uzbekistan is therefore institutional and capability-based rather than income-based.

Keywords: Financial inclusion; digital finance; Global Findex; probit; Blinder–Oaxaca decomposition; gender gap; Uzbekistan; Central Asia.

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1. Introduction

Access to safe and affordable financial services lowers transaction costs, improves risk sharing and is associated with lower poverty. Digital channels are now the main driver of new account ownership in developing economies, and mobile money has produced measurable welfare gains where it spread widely. Whether such gains are broad-based, however, depends on who is brought into the system [1].

Uzbekistan offers a sharp test. Its payment sector was liberalised after 2017, and a law on payments and payment systems legalised electronic money and licensed payment organisations from 2020, which opened the market to bank and non-bank payment applications. Account ownership rose from 22.5% of adults in 2011 and 37.1% in 2017 (World Bank, n.d.) to 44.1% in 2021 and 59.7% in 2024. Yet existing evidence on Uzbekistan is aggregate and descriptive. It cannot tell whether the recent gain reached women, the poor, the less educated and the young, or whether it reflects a changing population rather than a changing financial system [2].

This article addresses three questions. Which individual characteristics determine account ownership and use in Uzbekistan? Which groups gained most between 2021 and 2024? And how much of the national gain, and of the gap with Central Asian peers, is explained by population characteristics rather than by the supply side and institutions? It makes three contributions. It provides, to our knowledge, the first two-round micro-level analysis of financial inclusion in Uzbekistan based on harmonised Findex 2021 and 2025 microdata. It documents a reversal of the gender gap and a dominant education gradient.

And it decomposes the gaps with Kazakhstan and Tajikistan, showing that most of the distance to Kazakhstan is not explained by who Uzbeks are [3].

Cross-country and country studies based on Findex microdata find a consistent gradient. Account ownership rises with education, income, age and employment and is lower for women. Gender gaps persist in many economies even after controls, partly because of legal and social constraints. Digital payment of wages and social transfers can bring previously excluded groups into accounts, while low financial literacy limits the benefits of access. In Uzbekistan only 21% of adults were financially literate in 2014, against a global average of 33%. Critical work warns that account counts can rise without welfare gains, so access must be distinguished from meaningful use [4].

Decomposition methods for binary outcomes split a gap between two groups or periods into a part explained by observable characteristics and an unexplained part that reflects differences in how those characteristics translate into outcomes [5]. In the context of financial inclusion, the unexplained part captures differences in the supply side, regulation and trust. Based on this literature, we test four hypotheses:

H1. Account ownership increases with education, household income and labour-force participation [6].

H2. Women are less likely than comparable men to own an account.

H3. The 2021–2024 gain in Uzbekistan and its gap with Kazakhstan are mainly explained by differences in population characteristics [7].

H4. Among account owners, active and value-adding use follows the same gradients as ownership.

2. Data and Methods

We use the Global Findex 2021 and 2025 microdata for Uzbekistan, Kazakhstan and Tajikistan. Each survey covers about 1,000 adults aged 15+ per country, collected by Gallup in 2021 and in 2024. All estimates use survey weights normalised to a mean of one within each country-year. Variables were harmonised with the official data dictionaries. Formal saving means saving at a financial institution or through mobile money; formal borrowing means borrowing from a financial institution or mobile-money provider or using a credit card. The order of the reasons for having no account changed between questionnaires, so items were mapped by label. The rural indicator uses different classifications in the two rounds and is used only for 2024. Respondents with missing age or education (at most eight per country-year) are dropped. The 2024 Uzbek sample excludes Karakalpakstan (about 6% of the population). Table 1 summarises the outcomes.

Table 1. Financial inclusion indicators by country and year (% of adults, weighted)

Indicator	UZB 2021	UZB 2024	KAZ 2021	KAZ 2024	TJK 2021	TJK 2024
Owns an account	44.1	59.7	81.1	87.0	39.5	54.5
Made or received a digital payment	41.7	49.9	77.9	85.0	33.1	49.3
Made a digital merchant payment	32.6	38.1	57.3	70.1	4.0	16.2
Saved formally	2.6	9.2	19.1	37.7	1.8	10.1
Borrowed formally	7.5	11.8	29.8	32.8	12.4	17.1
Owns a mobile phone	75.4	82.3	90.6	92.2	81.9	77.5
Owns a smartphone	—	70.2	—	81.1	—	64.7

Source: author's calculations from Global Findex 2021 and 2025 microdata; N = 1,000 per column. Smartphone ownership was first asked in 2024.

The probability that adult i owns an account (or, among owners, uses it in a given way) is estimated with a weighted probit model:

$$Pr(y_i = 1) = \Phi(\alpha + \beta_1 female_i + \beta_2 age_i + \beta_3 age_i^2 + \Sigma_k \delta_k educ_{ik} + \Sigma_q \theta_q inc_{iq} + \lambda emp_i + \rho rural_i) \quad (1)$$

Education is measured relative to primary or less, income quintiles relative to the poorest within-economy quintile, and employment as being in the workforce. We report weighted average marginal effects (AMEs) in percentage points, with standard errors simulated from the robust covariance matrix. Robustness checks use logit, a linear probability model (LPM), unweighted estimation and controls for smartphone ownership and internet use. To test which groups gained, we pool the two Uzbek rounds and estimate an LPM with a 2024 dummy, a group indicator and their interaction, controlling for other characteristics. Gaps are decomposed with the non-linear Blinder–Oaxaca method using coefficients β^* from a pooled probit with a group indicator (Fortin, 2008):

$$\bar{y}_A - \bar{y}_B = [\ \Phi(X_A\beta^*) - \Phi(X_B\beta^*)\ ] + [\ (\bar{y}_A - \bar{y}_B) - explained\ ] \quad (2)$$

The explained part is allocated to variables in proportion to $(\bar{X}_{A,k} - \bar{X}_{B,k})\beta^*_k$ (Yun, 2004), with standard errors from 200 bootstrap replications. Within-economy income quintiles are omitted from cross-country decompositions.

3. Results

Determinants of account ownership

Education is the strongest predictor of account ownership in Uzbekistan (Table 2). In 2024, tertiary education raised the probability by 41.8 points and secondary education by 16.3 points relative to primary or less [8]. Household income quintiles are not significant in either year once education and employment are controlled for, unlike in Kazakhstan, where the richest quintile is 8.1 points more likely to own an account. Workforce participation adds 9.0 points and ten additional years of age 6.2 points; rural residence has no effect [9].

Table 2. Determinants of account ownership: average marginal effects (percentage points)

Variable	UZB 2021	UZB 2024	KAZ 2024	TJK 2024
Female	−5.6 (3.9)	10.2** (3.4)	−1.0 (2.2)	−7.8* (3.8)
Age (+10 years)	1.5 (1.0)	6.2*** (1.0)	2.0** (0.6)	9.0*** (1.0)
Secondary education	17.1*** (4.9)	16.3** (5.2)	18.6*** (5.2)	0.0 (4.2)
Tertiary education	49.8*** (6.3)	41.8*** (5.8)	24.8*** (5.4)	25.7*** (4.8)
Income quintile 2	1.2 (6.0)	−1.5 (5.2)	3.2 (3.4)	3.9 (5.7)
Income quintile 3	1.2 (5.9)	−6.3 (5.4)	1.1 (3.9)	4.6 (5.6)
Income quintile 4	−1.1 (5.4)	−7.8 (5.4)	5.0 (3.9)	9.4 (5.7)
Income quintile 5 (richest)	2.6 (5.3)	−6.6 (5.5)	8.1* (3.4)	9.8 (5.8)
In workforce	7.1 (3.9)	9.0* (3.7)	13.7*** (2.7)	19.3*** (4.0)
Rural	—	−1.1 (3.8)	−4.1 (2.3)	5.8 (4.0)
N / pseudo-R^2	999 / 0.118	999 / 0.106	995 / 0.214	998 / 0.161

Notes: Weighted probit; standard errors in parentheses. Reference: male, primary education or less, poorest quintile, out of workforce. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

The gender effect changed sign: comparable women were 5.6 points less likely than men to own an account in 2021 (not significant) and 10.2 points more likely in 2024. The age gradient steepened from 1.5 to 6.2 points per decade [10]. The results are robust: in logit, LPM and unweighted models, the female effect ranges from 10.1 to 10.5 points and the tertiary effect from 33.5 to 41.8 points. Internet use (+17.9 points) and smartphone ownership (+13.3 points) are significant when added, and leave the other effects almost unchanged. H1 is therefore only partly supported, and H2 is rejected for 2024 [11].

Who gained between 2021 and 2024?

Only the change in the gender gap is statistically significant (Table 3). After controls, women's relative probability of owning an account rose by 14.4 points. The gap between

the poorest 40% and the richest 60% turned positive, but the adjusted change is not significant. The education gap barely moved, and the gap between young adults (15–24) and older adults widened from 25.2 to 31.6 points [12].

Table 3. Change in group gaps in account ownership, Uzbekistan, 2021–2024

Group vs rest	2021, %	2024, %	Raw change, pp	Adjusted change (SE)	p
Women vs men	38.8 / 49.9	60.7 / 58.8	+12.9	+14.4 (5.1)	0.005
Poorest 40% vs richest 60%	41.0 / 45.9	61.7 / 58.5	+8.1	+8.2 (5.3)	0.122
Primary or less vs secondary+	23.9 / 51.8	39.3 / 63.9	+3.4	+3.5 (6.9)	0.608
Age 15–24 vs 25+	24.4 / 49.6	35.4 / 67.0	−6.4	−7.1 (6.0)	0.236
In workforce vs out	53.0 / 34.4	65.4 / 54.6	−7.7	−6.2 (5.0)	0.214

Notes: Weighted shares, estimation samples (N = 999 per year). Adjusted change = coefficient on 2024 × group in a weighted LPM with the controls of Table 2; HC1 standard errors.

Composition or structure?

The decompositions reject H3 (Table 4). Only 3.2 of the 15.9-point rise in account ownership between 2021 and 2024 (20%) is explained by changes in observable characteristics, mainly education. The remaining 80% reflects a higher probability of ownership among people with the same characteristics. Only 28% of the 27.3-point gap with Kazakhstan is explained by age, education, employment and rural residence, and 32% when smartphone ownership is added [13]. In a pooled 2024 probit, Kazakh adults are 28.1 points more likely to own an account than Uzbek adults, and still 20.9 points more likely after all controls ($p < 0.001$). By contrast, two-thirds of Uzbekistan's lead over Tajikistan is explained by characteristics [14].

Table 4. Non-linear Blinder–Oaxaca decomposition of gaps in account ownership

Comparison	Gap, pp	Explained, pp (SE)	Share, %	Unexplained, pp	Main contributors, pp
Uzbekistan 2024 vs 2021	15.9	3.2 (1.3)	20	12.7	Education 2.7; age 0.7
Kazakhstan vs Uzbekistan, 2024	27.3	7.6 (1.2)	28	19.8	Education 3.9; employment 1.7
… with smartphone ownership	27.3	8.8 (1.2)	32	18.5	Education 3.6; smartphone 1.5
Uzbekistan vs Tajikistan, 2024	5.3	3.5 (1.1)	66	1.8	Age 2.1; education 1.3
Men vs women, Uzbekistan 2021	11.0	5.9 (2.4)	54	5.1	Education 3.7; employment 2.4

Notes: Pooled-coefficient reference (Fortin, 2008); detailed contributions following Yun (2004); 200 bootstrap replications.

Use of accounts and barriers

Owning an account does not mean using it fully (Table 5). Among Uzbek account owners in 2024, 63.8% made a digital merchant payment, 15.0% saved formally and 17.6% borrowed formally, against 80.5%, 41.9% and 37.3% among Kazakh owners. Within Uzbek owners, tertiary education raises these probabilities by 23.2, 17.1 and 18.0 points; smartphone ownership raises digital merchant payments by 12.0 points and formal saving by 7.0 points; and rural owners are 7.4 points less likely to save formally, although rural residence does not affect ownership itself. H4 is supported for education and employment [15].

Table 5. Determinants of account use among account owners, Uzbekistan 2024 (AMEs, percentage points)

Variable	Digital merchant payment	Formal saving	Formal borrowing
Female	−2.1 (4.7)	2.2 (3.7)	4.4 (3.9)
Age (+10 years)	−2.9* (1.4)	−0.8 (1.2)	−0.5 (1.1)
Tertiary education	23.2** (8.6)	17.1** (6.5)	18.0* (7.5)
Income quintile 4	18.4** (6.8)	6.3 (5.1)	7.5 (5.4)
Income quintile 5 (richest)	6.6 (7.2)	7.4 (4.9)	8.5 (5.5)
In workforce	7.8 (4.4)	8.9* (3.5)	9.4** (3.6)
Rural	−0.7 (4.5)	−7.4* (3.7)	−5.1 (3.5)
Owns a smartphone	12.0* (5.5)	7.0* (3.5)	4.0 (3.9)
Mean: Uzbek owners / Kazakh owners, %	63.8 / 80.5	15.0 / 41.9	17.6 / 37.3

Notes: Weighted probit on account owners (N = 652); conditional associations, not corrected for selection. Secondary education and income quintiles 2–3 included but not shown. Notation as in Table 2.

The reasons for having no account changed markedly (Table 6). The share of unbanked Uzbeks citing insufficient money fell from 51.3% to 22.3% and the share citing distrust from 30.9% to 20.7%. The most frequent answer in 2024 was that a family member already has an account (32.9%), which points to account sharing within households.

Table 6. Reasons for not having an account (% of adults without an account; multiple answers)

Reason	UZB 2021	UZB 2024	KAZ 2024	TJK 2024
Family member already has one	22.3	32.9	63.5	48.9
Insufficient money	51.3	22.3	24.9	48.1
Lack of trust	30.9	20.7	24.5	14.9
Too far	24.9	18.2	26.8	17.8
Lack of documents	25.5	17.1	17.8	18.8
Too expensive	25.1	12.2	26.9	8.3
Unbanked respondents (unweighted)	514	347	106	367

Notes: Weighted. Items were mapped by label because their order changed between questionnaires; compare over time with caution. The Kazakh base is small.

4. Discussion

Three findings stand out. First, the recent gain in Uzbekistan is structural. Four-fifths of the 2021–2024 increase occurred within groups of identical characteristics, and more than two-thirds of the gap with Kazakhstan remains after controls. This points to the supply side — digital onboarding, payment of wages and transfers into cards, and the spread of payment applications — and to institutions, consistent with the role of account costs and provider models in cross-country evidence [16]. Kazakhstan's remaining lead is best read as an ecosystem advantage rather than a population advantage [17].

Second, the gender gap reversed, which contrasts with the persistent gaps reported for most developing regions and with the 7.8-point gap that remains in Tajikistan [18]. A plausible channel is the payment of government transfers into accounts: in 2024, 11.6% of Uzbek women but only 4.7% of men received a government transfer into an account, up from 7.4% and 4.9% in 2021. This is consistent with, but does not prove, a transfer-led channel [19].

Third, education rather than income separates the included from the excluded, both in ownership and in use. This echoes the dominant role of education in other micro studies

and suggests that the binding constraint is capability — the ability to open, understand and use digital accounts — rather than affordability. Young adults are the group falling behind, which is a concern for a country where they form a large share of the population [20].

Policy should therefore move from account opening to assisted and simplified onboarding for adults with basic schooling, reach young people through schools, universities and first-wage payments, embed simple savings products in payment applications, and strengthen consumer protection, since one in five unbanked adults still cites distrust [21]. The study has limitations. It uses repeated cross-sections and identifies associations, not causal effects [22]. Samples contain about 1,000 adults per country-year, some questions changed between rounds, the 2024 Uzbek sample excludes Karakalpakstan, and usage models are not corrected for selection because no credible exclusion restriction is available [23].

5. Conclusion

Uzbekistan's 16-point gain in account ownership between 2021 and 2024 was driven mainly by changes in the financial system rather than in the population. Women overtook men, but education remains the main dividing line, young adults are falling behind, and income has no independent effect. Most of the gap with Kazakhstan is institutional. The next stage of inclusion depends less on opening accounts than on capabilities, trust and the quality of use.

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