



Financial Inclusion for the Elderly in Thailand: The Role of Information Communication Technology

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1 Introduction

- Aging is advancing fast in developing countries, and Asia
- Thailand, an aging society in 2005 (+60 yrs at 10.3%)
- NSO in 2017 reported of 11,312,447 people aged +60
- aged society in 2022 with 20% of population aged over 60, super-aged 2042
- Financial services, aging social security systems play a major role in later life
- Ambitious global goal to reach Universal Financial Access (UFA) by 2020
- *Financial inclusion: means that individuals and businesses have access to useful and affordable financial products and services that meet their needs – transactions, payments, savings, credit and insurance – delivered in a responsible and sustainable way*
- major role of financial services in aging society

- Bank of Thailand surveys on financial access every 3 years at the HH level
- latest survey 2016, 10,866 households
- better access to financial services 97.3% in 2016 from 95.8% in 2013
- non-banks such as village funds and electronic payments providers played increasing roles
- slightly higher share of households accessing financial services through mobile applications and internet banking

- No studies on financial inclusion of the older people in Thailand.
- All of the surveys at the household level → not separate financial inclusion of the elderly
- ratio of elder persons living alone has surged (10.8%)
- higher share of the elder living with spouse than with children
- → more independence in conducting financial transactions of this group
- very small share (4%) the elderly with access to computers, the internet or social media (NSO, 2015).

OBJECTIVES

- Examine the level of financial inclusion of different age groups in Thailand
 - Identify the main determinants of financial inclusion among the old age
 - Explore the potentials of digital technology to such as mobile phone and mobile money account to promote financial inclusion for the elderly
- highlight the opportunities and challenges related to financial services in older age

Outline

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Theoretical foundations & related literature

3

Data, Financial Inclusion Scores & Empirical Framework

4

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Result verifications with household survey data

6

Concluding remarks

3 Data, Financial Inclusion Scores & Empirical Framework

3.1 2 datasets and 4 components of the analysis

1. Microdata from Global Findex database <https://globalfindex.worldbank.org/>
 - Bill & Melinda Gates Foundation, by Gallup World Poll
 - Over 160 countries, sample of 1,000 each, every 3 years (2011, 2014, **2017**)
 - 2017 dataset: formal/informal financial services; use of financial technology (fintech)
2. Household Survey on the use of ICT 2559 <http://www.nso.go.th/sites/2014en/itu>
 - Limit sample to only members aged +15 years

3 Data, Financial Inclusion Scores & Empirical Framework

3.1 Four main components of the analysis

- descriptive analysis with Findex 2017
- the measurement of Financial Inclusion (FI) scores
- Multivariate regression analysis with FI scores
- Result verification using the household survey on ICT use 2016

3 Data, Financial Inclusion Scores & Empirical Framework

3.2 Construction of financial inclusion measures

- follow OECD/INFE (2016) financial inclusion index
- based on two components:

holdings of financial products	active consumption of financial products
(a) savings or retirement products (b) payment products current account or mobile money (excl. credit cards...) (c) insurance products (d) credit products (credit card or mortgages).	(a) aware of available financial products; (b) Making conscious choices among financial products; (c) family or friends to help them save money or make ends meet

3 Data, Financial Inclusion Scores & Empirical Framework

3.2 Construction of financial inclusion measures

- Findex 2017: only 5 criteria (binary variables 0-1), scores ranked from 0 to 5

Table 1: Computing Financial Inclusion (FI) indicators

Indicator	Name of variables used	Meaning
1. Have an account	account	Has an account at the financial institution or non-financial institution
2. Saved in the past 12 months	Saved, fin15, fin16, fin17a, fin17c	Savings in any forms or for any purposes
3. Borrowed in the past 12 months	Borrowed, fin19, fin20, fin21a, fin21b, fin21c	Any credit products such as credit cards, house/land mortgage, bank loans, etc. from any formal or informal institutions
4. Possible source of emergency fund from family or friends	fin26, fin28	Possible coming up with emergency fund and the main source of such fund comes from family or friends
5. Sent or received domestic remittances in the past 12 months	fin24, fin25	Either sent or received domestic remittances in the past 12 months

Source: Author's own compilation adopted from OECD/INFE (2016)

3 Data, Financial Inclusion Scores & Empirical Framework

3.3 Empirical models

- normalize FI scores into z-scores

$$FI\ z - score = \frac{FI\ score - mean(FI\ score)}{Std.\ Dev(FI\ score)}$$

- Basic model

$$FI\ z - score_i = \beta_1 + \beta_2 Gender_i + \beta_3 Educ_i + \beta_4 Income_i + \beta_5 LaborForce_i + \beta_6 Age_i + \varepsilon_i$$

- Extended models:

$$FI\ z - score_i = \beta_1 + \beta_2 Gender_i + \beta_3 Educ_i + \beta_4 Income_i + \beta_5 LaborForce_i + \beta_6 Age_i + \beta_7 Mobilephone_i + \beta_8 MobileMoneyAccount_i + \varepsilon_i$$

4 Discussion of results

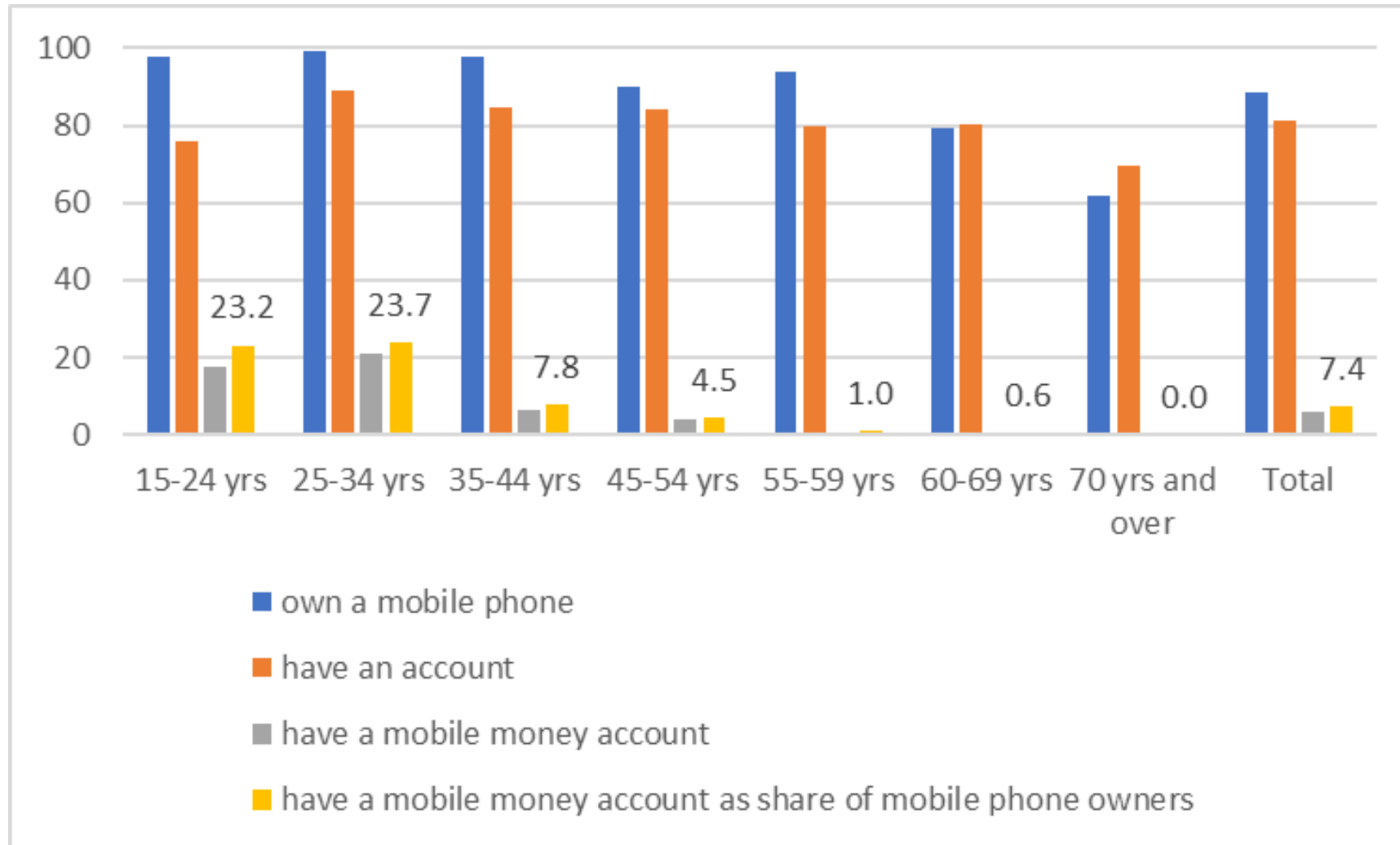
4.1 Descriptive analysis on the financial inclusion for the elderly

- large proportion having account (almost exactly at FIs, 812 vs. 809 respondents)
- only 57 people (7%) own a mobile money account
- Among 188 respondents without an account, 50.5% are the elderly 55+ and 36.7% are 60+ years old

Discussion of results

4.1 Descriptive analysis on the financial inclusion for the elderly

Figure 1: Shares of having an A/C, money mobile A/C and a mobile phone

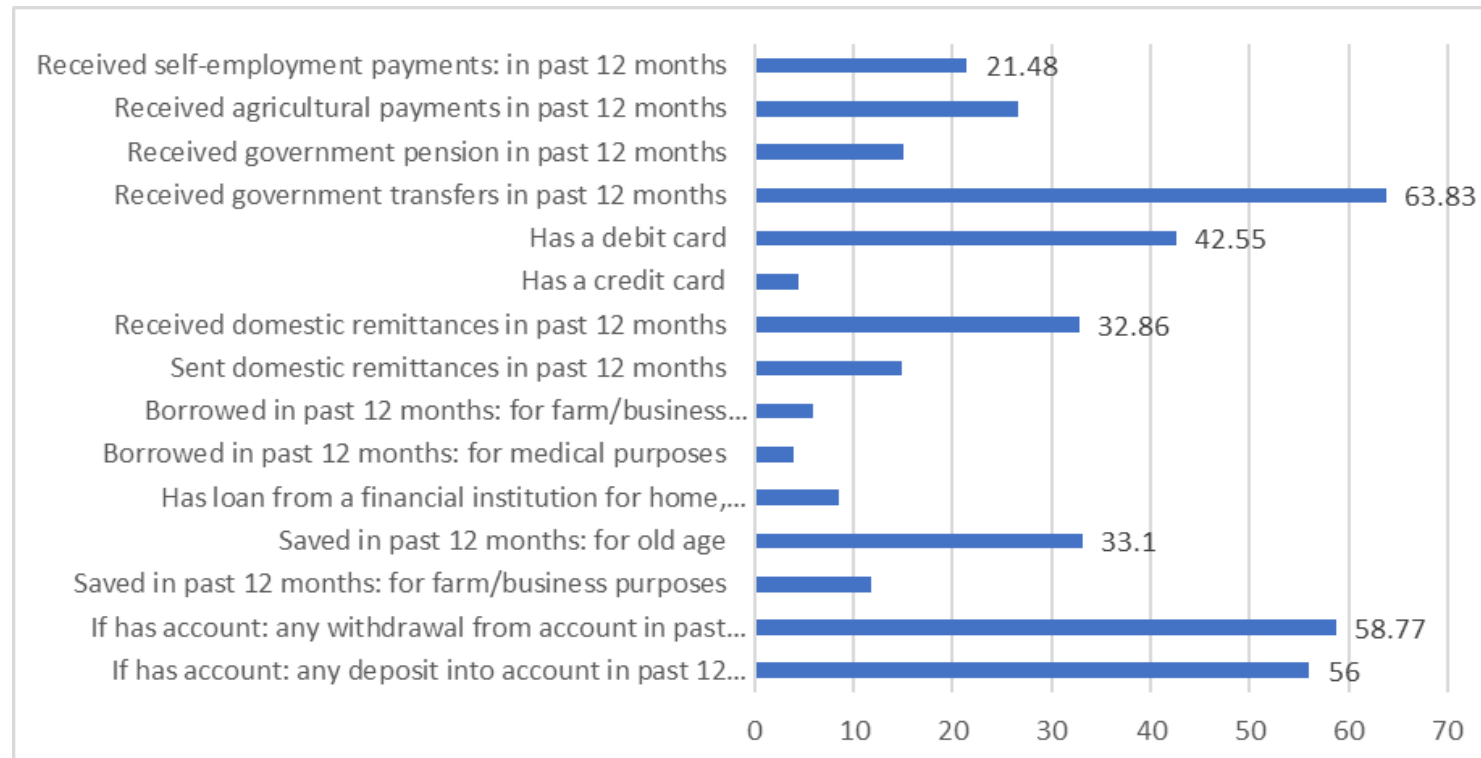


4 Discussion of results

4.1 Descriptive analysis on the financial inclusion for the elderly

- *Gender aspect and labor force participation*
- *Education level and income level*
- *Mobile phones and mobile money accounts*

Figure 2: the use of financial transaction among the elderly in Thailand



4 Discussion of results

4.1 Descriptive analysis on the financial inclusion for the elderly

Table 2: The elderly borrowed and saved through different channels

	No. of elderly	Channels		
		Formal FIs	Informal Savings clubs	Family and Friends
Borrowed in the past year	154	76	14	71
	36%	49%	9%	46%
Saved in the past year	192	124	40	
	45%	65%	21%	

Table 3: The elderly received payments with different methods

	No. of elderly	Received through		
		Formal FIs	Mobile phones	Cash/MTO
Received government transfer	270	164	1	96
	64%	61%	0%	36%
Received agricultural payments	113	28	1	82
	27%	25%	1%	73%
Received self-employment payments	55	4	0	48
	13%	7%	0%	87%
Received wage payments	76	25	0	47
	18%	33%	0%	62%
Received domestic remittances	139	86	3	50
	33%	62%	2%	36%

Discussion of results

4.1 Descriptive analysis on the financial inclusion for the elderly

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	33%	62%	2%	36%

Table 4: The elderly made payments with different methods

	No. of elderly	Sent/paid through		
		Formal FIs	Mobile phones	Cash/MTO
Paid utility bills	369	22	0	344
	87%	6%	0%	93%
Sent domestic remittances	63	46	1	16
	15%	73%	2%	25%

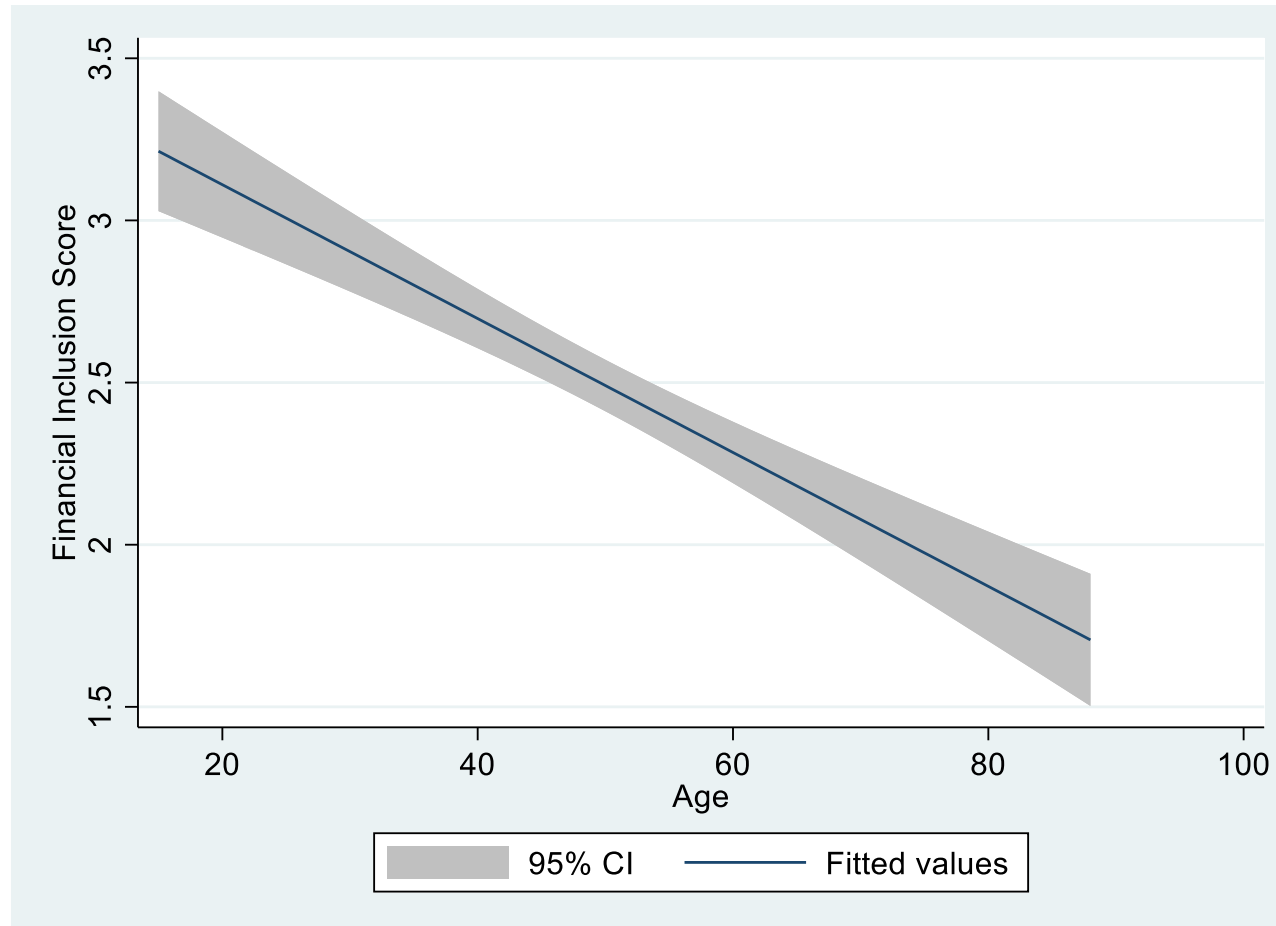
4.2 Calculation of Financial Inclusion scores

Table 5: Financial Inclusion Score by different categories

Categories	Obs	Mean	Std.Dev.	Quantiles				
				Min	25th per	Median	75th per	Max
<i>By gender</i>								
Male	368	2.56	1.29	0	2	3	4	5
Female	632	2.47	1.34	0	2	3	3	5
<i>By education level</i>								
completed primary or less	594	2.21	1.28	0	1	2	3	5
secondary	328	2.82	1.29	0	2	3	4	5
completed tertiary or more	76	3.45	0.97	0	3	4	4	5
<i>By income quintile</i>								
poorest 20%	199	1.99	1.27	0	1	2	3	5
second 20%	202	2.39	1.24	0	2	2	3	5
middle 20%	186	2.47	1.38	0	1	3	4	5
forth 20%	191	2.63	1.36	0	2	3	4	5
richest 20%	222	2.99	1.17	0	2	3	4	5
<i>By labor force participation</i>								
out of workforce	263	1.94	1.24	0	1	2	3	5
in workforce	737	2.7	1.29	0	2	3	4	5
<i>By age group</i>								
15-24 yrs	91	2.64	1.4	0	2	3	4	5
25-34 yrs	109	3.15	1.22	0	2	3	4	5
35-44 yrs	167	2.8	1.25	0	2	3	4	5
45-54 yrs	210	2.68	1.26	0	2	3	4	5
55-59 yrs	128	2.38	1.38	0	1	2	3	5
60-69 yrs	196	2.11	1.24	0	1	2	3	5
70 yrs and over	99	1.74	1.12	0	1	2	3	4
Overall	1000	2.5	1.32	0	2	3	3	5

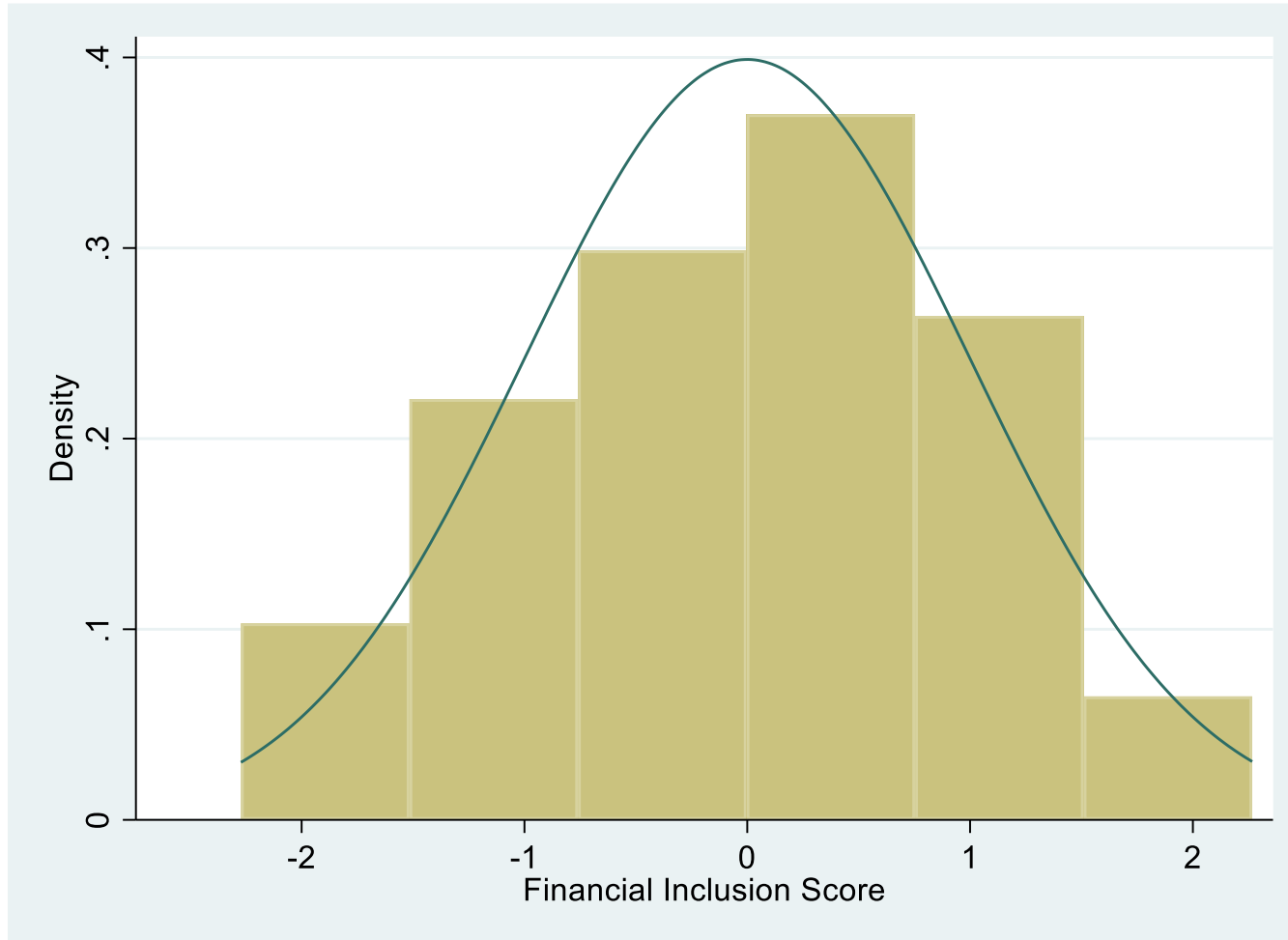
4.2 Calculation of Financial Inclusion scores

Figure 3: Correlation between Financial Inclusion Score and Age



4.3 Econometrics analysis of FI score determinants

Figure 4: Distribution of the Financial Inclusion Z-Score



4.3 Econometrics analysis of FI score determinants

Table 6: Determinants of Financial Inclusion score – basic model

	Model 1	Model 2	Model 3	Model 4
<i>Gender (Female as reference)</i>				
Male	0.0262 (0.0617)	0.0165 (0.0616)	0.0258 (0.0615)	0.0244 (0.0615)
<i>Education level (primary or less as reference)</i>				
Secondary	0.216*** (0.0790)	0.223*** (0.0818)	0.248*** (0.0710)	0.226*** (0.0733)
Tertiary or higher	0.593*** (0.127)	0.622*** (0.129)	0.635*** (0.122)	0.615*** (0.123)
<i>Income quintile (poorest group as reference)</i>				
second quintile	0.175* (0.0933)	0.150 (0.0937)	0.149 (0.0937)	0.168* (0.0931)
middle	0.178* (0.0961)	0.137 (0.0974)	0.136 (0.0970)	0.164* (0.0960)
forth quintile	0.249*** (0.0966)	0.213** (0.0979)	0.210** (0.0977)	0.233** (0.0967)
richest	0.393*** (0.0982)	0.351*** (0.0990)	0.362*** (0.0987)	0.371*** (0.0984)
<i>Labor force participation (out of labor force as reference)</i>				
in the work force	0.434*** (0.0688)	0.383*** (0.0713)	0.415*** (0.0692)	0.424*** (0.0687)

4.3 Econometrics analysis of FI score determinants

Table 6: Determinants of Financial Inclusion score – basic model (cont.)

	Model 1	Model 2	Model 3	Model 4
Age	-0.00613*** (0.00224)			
<i>Age group (young group 15-24yrs old as reference)</i>				
agegroup2 (25-34 yrs)		0.218 (0.133)		
agegroup3 (35-44 yrs)		0.0414 (0.122)		
agegroup4 (45-54 yrs)		0.134 (0.124)		
agegroup5 (55-59 yrs)		-0.0430 (0.135)		
agegroup6 (60-69 yrs)		-0.152 (0.129)		
agegroup7 (70 yrs and over)		-0.287** (0.146)		
aging60			-0.254*** (0.0729)	
aging55				-0.240*** (0.0684)
_cons	-0.352** (0.169)	-0.582*** (0.141)	-0.551*** (0.105)	-0.537*** (0.107)
R-square	0.155	0.165	0.159	0.159
No. of observations	998	998	998	998

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4.3 Econometrics analysis of FI score determinants

Table 7: Effects of mobile phones and mobile money accounts on financial inclusion – extended model

	Model 5	Model 6	Model 7	Model 8
<i>Gender (Female as reference)</i>				
Male	0.0292 (0.0605)	0.0328 (0.0611)	0.0356 (0.0601)	0.0362 (0.0602)
<i>Education level (primary or less as reference)</i>				
Secondary edu	0.219*** (0.0703)	0.199*** (0.0717)	0.171** (0.0709)	0.171** (0.0709)
Tertiary edu or higher	0.639*** (0.121)	0.554*** (0.123)	0.558*** (0.122)	0.562*** (0.123)
<i>Income quintile (poorest group as reference)</i>				
second quintile	0.142 (0.0923)	0.160* (0.0931)	0.154* (0.0917)	0.155* (0.0919)
middle	0.115 (0.0961)	0.138 (0.0963)	0.117 (0.0954)	0.117 (0.0954)
forth quintile	0.200** (0.0964)	0.202** (0.0970)	0.193** (0.0957)	0.193** (0.0958)
richest	0.339*** (0.0978)	0.353*** (0.0981)	0.331*** (0.0972)	0.330*** (0.0973)
<i>Labor force participation (out of labor force as reference)</i>				
in the work force	0.394*** (0.0683)	0.407*** (0.0687)	0.386*** (0.0679)	0.387*** (0.0679)

4.3 Econometrics analysis of FI score determinants

Table 7: Effects of mobile phones and mobile money accounts on financial inclusion – extended model (cont.)

	Model 5	Model 6	Model 7	Model 8
aging60	-0.169** (0.0741)	-0.241*** (0.0725)	-0.156** (0.0737)	-0.157** (0.0738)
mobile phone	0.469*** (0.0992)		0.470*** (0.0985)	0.466*** (0.0991)
mobile money A/C		0.489*** (0.127)	0.482*** (0.125)	0.198 (0.914)
mobile*A/C interaction				0.288 (0.920)
_cons	-0.956*** (0.136)	-0.560*** (0.105)	-0.965*** (0.135)	-0.963*** (0.135)
R-square	0.180	0.171	0.192	0.192
No. of observations	991	998	991	991

t statistics in parentheses

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4.3 Econometrics analysis of FI score determinants

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4.4 Analysis of household survey data on ICT use

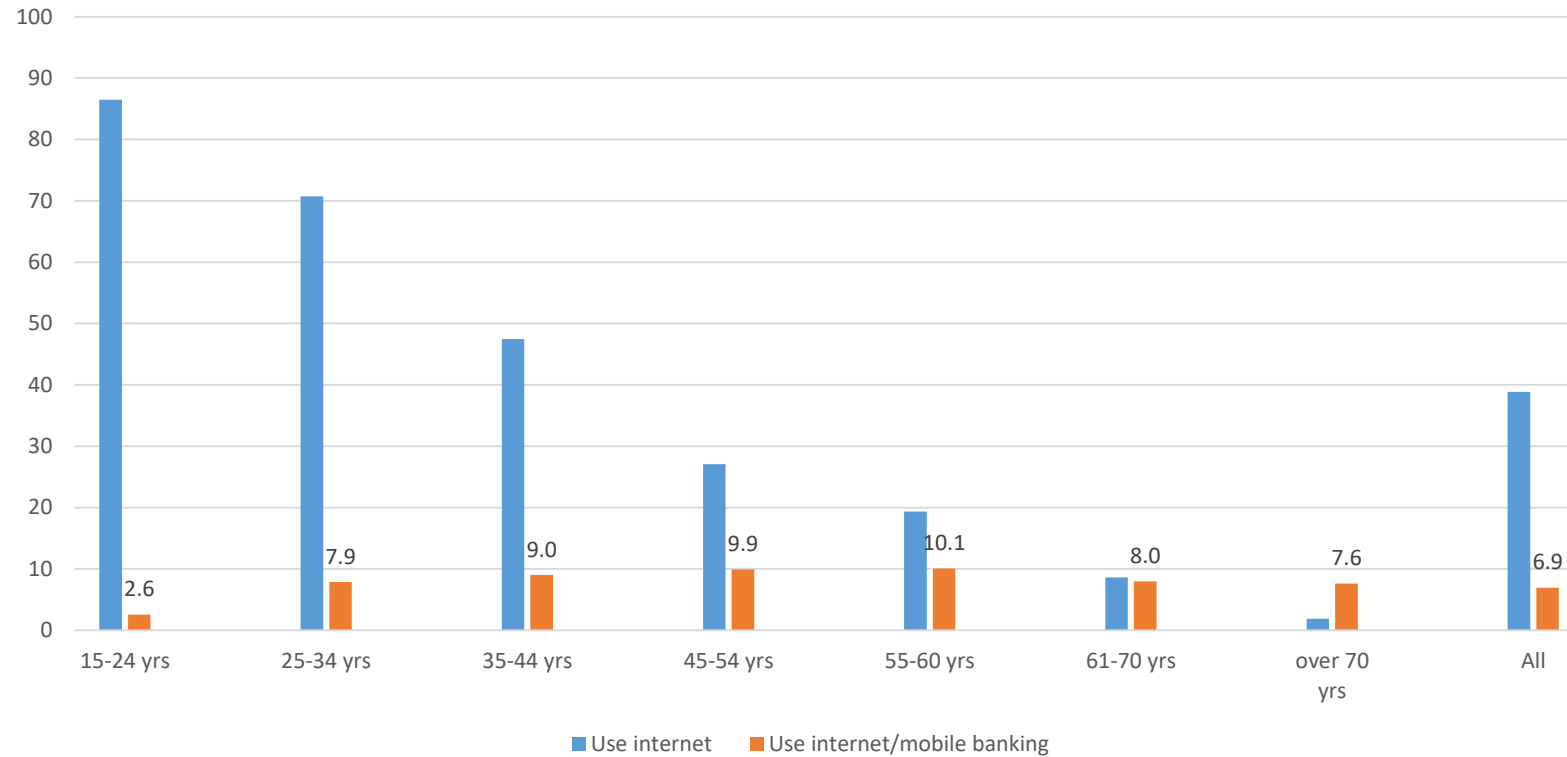
Table 9: Internet using experience by age group

Age group	Yes	Never, because	
		don't know how	not interested/not necessary/waste time
15-24	19,934 86.45	990 4.29	1,776 7.7
25-34	16,912 70.73	2,720 11.38	3,869 16.18
35-44	14,628 47.48	8,811 28.6	6,974 22.64
45-54	9,789 27.09	18,474 51.13	7,599 21.03
55-60	3,102 19.34	10,064 62.74	2,810 17.52
61-70	2,032 8.6	17,791 75.34	3,721 15.76
over 70	341 1.87	15,859 87.15	1,977 10.86
Total	66,738 38.85	74,709 43.5	28,726 16.72

4.4

Analysis of household survey data on ICT use

Figure 5: Shares of internet users and Internet or mobile banking use by age group



6 Concluding remarks

- progress in financial inclusion in Thailand, elderly is a group of concerns
- among those non-account holders, more than half are the elderly +55 yrs
- level of digital financial inclusion is still low 7%
- share of using mobile phones and internet access for balance checking (5% and 3.2% respectively)
- The older the people, the lower their FI scores → negative effects
- strong correlation: mobile phones, mobile money accounts and FI scores
- not using the Internet; Lack of skills rather than lack of interest
- financial literacy, role of ICT and digital technology to promote financial inclusion
- Internet service products for the elderly need coordination (policymakers and service providers); more custom-made financial products;
- Public-private partnerships for future financial environment for the old age

Thank you for your attention