THE IMPACT OF FINANCIAL INCLUSION ON WELL-BEING IN VIETNAM

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Appendix 1. Total variance explained of principal component analysis.

Component	Eigenvalue	Proportion	Cumulative
1	4.24921	0.4721	0.4721
2	1.64665	0.1830	0.6551
3	.987387	0.1097	0.7648
4	.717332	0.0797	0.8445
5	.683404	0.0759	0.9204
6	.283131	0.0315	0.9519
7	.164357	0.0183	0.9702
8	.14366	0.0160	0.9861
9	.124866	0.0139	1.0000
Cronbach's alpha	0.8355		
Bartlett test of sphericity	0.0000		
Kaiser-Meyer-Olkin sampling adequacy test p-value	0.8185		

Appendix 2. Descriptive statistics and description of all variables

Variables	Obs.	Mean	Std. Dev.	Min	Max
Subjective well-being	2877	5.464	1.786	0	10
Financial inclusion	2947	.133	.199	0	1
Age	2999	41.084	15.898	15	96
Urban	3002	.389	.488	0	1
Female	3002	1.515	.5	1	2
Employed full-time	3002	.193	.395	0	1
Employed part-time	3002	.107	.309	0	1
Self-employed	3002	.405	.491	0	1
Single	2999	.212	.409	0	1
Separated or divorced	2999	.028	.166	0	1
Widowed	2999	.046	.21	0	1
Household size (log)	3002	3.796	1.672	1	10
Income rank	3002	3.106	1.427	1	5

Variables	Obs.	Mean	Std. Dev.	Min	Max
Emergency funds	2866	.656	.475	0	1
Educational attainment	3002	1.845	.713	1	5

Appendix 3. The correlation matrix and variance inflation factor analysis (VIF)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Subjective well-being	1.000									
(2) Financial inclusion	0.180	1.000								
(3) Age	-0.153	-0.266	1.000							
(4) Urban	0.042	0.162	-0.010	1.000						
(5) Female	-0.008	0.012	-0.011	-0.057	1.000					
(6) Employed full-time	0.105	0.279	-0.202	0.091	-0.024	1.000				
(7) Employed part-time	-0.041	-0.051	0.027	-0.042	-0.007	-0.169	1.000			
(8) Self-employed	-0.056	-0.017	0.028	-0.063	0.004	-0.404	-0.286	1.000		
(9) Single	0.138	0.085	-0.490	0.059	0.003	0.099	-0.023	-0.157	1.000	
(10) Separated or divorced	-0.035	-0.010	0.022	0.020	0.021	0.039	0.026	0.006	-0.089	1.000
(11) Widowed	-0.035	-0.106	0.316	0.014	0.044	-0.063	0.007	-0.058	-0.114	-0.038
(12) Household size (log)	0.043	0.026	-0.117	0.041	-0.005	0.011	0.007	-0.019	-0.115	-0.092
(13) Income rank	0.144	0.276	-0.146	0.195	0.022	0.163	-0.030	0.008	0.132	-0.004
(14) Emergency funds	0.083	0.197	-0.112	0.098	-0.008	0.144	-0.001	0.083	-0.083	-0.009
(15) Educational attainment	0.146	0.348	-0.256	0.154	-0.029	0.203	-0.018	-0.071	0.115	-0.039

Variables	(11)	(12)	(13)	(14)	(15)
(11) Widowed	1.000				
(12) Household size (log)	-0.098	1.000			
(13) Income rank	-0.099	-0.332	1.000		
(14) Emergency funds	-0.128	0.034	0.288	1.000	
(15) Educational attainment	-0.090	0.025	0.236	0.226	1.000

The variance inflation factor analysis (VIF)

Dependent variable: *Subjective well-being*	VIF
Financial inclusion	1.31
Age	1.68
Urban	1.10

Dependent variable: *Subjective well-being*	VIF
Female	1.01
Employed full-time	1.58
Employed part-time	1.24
Self-employed	1.57
Single	1.50
Separated or divorced	1.03
Widowed	1.15
Household size (log)	1.27
Income rank	1.44
Emergency funds	1.21
Educational attainment	1.26
Mean VIF	1.31

Appendix 4. Condition 1 – OLS estimation

Dependent variable:	Income rank	Emergency funds	Educational attainment
	OLS	OLS	OLS
	(1)	(2)	(3)
Financial inclusion	1.578***	0.376***	0.921***
	(0.117)	(0.042)	(0.061)
Age	-0.016*	0.010***	-0.019***
	(0.009)	(0.003)	(0.004)
Age squared	0.000	-0.000***	0.000**
	(0.000)	(0.000)	(0.000)
Urban	0.514***	0.083***	0.112***
	(0.047)	(0.017)	(0.021)
Female	0.064	-0.025	-0.049**
	(0.045)	(0.016)	(0.020)
Employed full-time	0.432***	0.198***	0.164***
	(0.070)	(0.025)	(0.033)
Employed part-time	0.066	0.082***	0.020
	(0.089)	(0.031)	(0.039)
Self-employed	0.233***	0.141***	0.009
	(0.061)	(0.023)	(0.026)
Single	0.022	-0.099***	-0.058*
	(0.075)	(0.026)	(0.033)
Separated or divorced	-0.344**	-0.102**	-0.134**
	(0.148)	(0.052)	(0.068)
Widowed	-0.561***	-0.153***	-0.144***
	(0.116)	(0.044)	(0.046)
Household size (log)	-1.079***	-0.004	-0.042*
	(0.049)	(0.018)	(0.022)
Year fixed effects	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes
Observations	2,824	2,824	2,824
R-squared / Pseudo R-squared	0.059	0.128	0.018

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

Appendix 5. Empirical results from OLS and ordered probit estimations

Dependent variable: *Subjective well-being*	OLS (1)	OLS (2)	Ordered probit (3)	Ordered probit (4)
Financial inclusion	1.305***	0.965***	0.820***	0.631***
	(0.172)	(0.171)	(0.106)	(0.110)
Age	-0.035**	-0.041***	-0.022***	-0.027***
	(0.014)	(0.014)	(0.008)	(0.008)
Age squared	0.000**	0.000**	0.000**	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Urban	0.018	0.021	0.006	0.010
	(0.067)	(0.065)	(0.040)	(0.040)
Female	-0.043	0.055	-0.036	0.028
	(0.065)	(0.063)	(0.039)	(0.039)
Employed full-time	0.139	0.110	0.091	0.074
	(0.104)	(0.099)	(0.062)	(0.061)
Employed part-time	-0.207*	-0.080	-0.145**	-0.066
	(0.112)	(0.112)	(0.068)	(0.070)
Self-employed	-0.094	-0.111	-0.049	-0.065
	(0.089)	(0.084)	(0.052)	(0.052)
Single	0.286***	0.129	0.172***	0.074
	(0.109)	(0.105)	(0.065)	(0.065)
Separated or divorced	-0.262	-0.342	-0.163	-0.227*
	(0.216)	(0.216)	(0.127)	(0.131)
Widowed	0.057	0.027	0.053	0.036
	(0.199)	(0.194)	(0.115)	(0.116)
Household size (log)	0.165**	0.197***	0.099**	0.127***
	(0.075)	(0.073)	(0.044)	(0.044)
Year fixed effects	No	Yes	No	Yes
Region fixed effects	No	Yes	No	Yes
Observations	2,824	2,824	2,824	2,824
R-squared / Pseudo R-squared	0.059	0.128	0.018	0.043

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

Appendix 6. Results from Oster's (2019) test for omitted variables bias.

	Subjective Well-being	
$R_{max} = 1.3\tilde{R}$	(1) Oster bias-corrected effect (β^*)	(2) $\lvert\delta\rvert$ for $\beta = 0$
Financial inclusion	0.661*** [0.219]	2.470
Observations	2,824	2,824

Note: Bootstrapped standard errors are in square brackets (with 1000 reps). Control variables are the same as Table 5. Year fixed effects and region fixed effects are included in the model. *** p<0.01, ** p<0.05, * p<0.1

Appendix 7. Kinky Least Squares (KLS)

Dependent variable: *Subjective well-being*	KLS (1)
Financial inclusion	1.971*** (0.181)
Age	-0.039*** (0.013)
Age squared	0.000*** (0.000)
Urban	-0.039 (0.066)
Female	0.039 (0.063)
Employed full-time	-0.020 (0.100)
Employed part-time	-0.115 (0.117)
Self-employed	-0.150* (0.083)
Single	0.159 (0.103)
Separated or divorced	-0.298 (0.192)
Widowed	0.047 (0.165)
Household size (log)	0.203*** (0.068)
Constant	6.543*** (0.321)
Year fixed effects	Yes
Region fixed effects	Yes
Postulated endogeneity of FI	-0.1000
Observations	2,824

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

Appendix 9. Financial inclusion level and subjective well-being level by regions in Vietnam

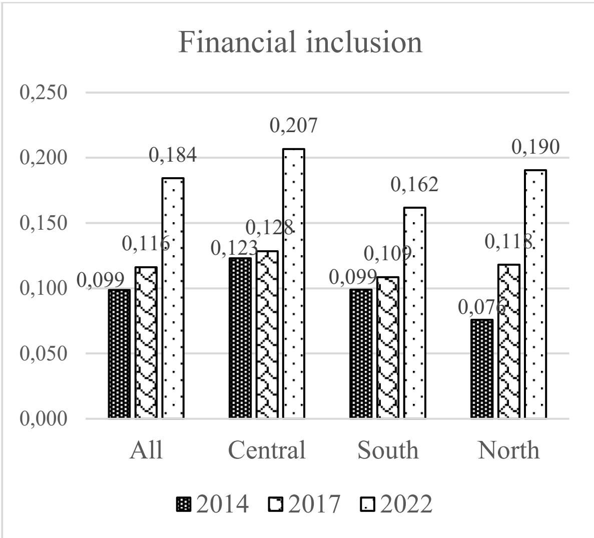

Figure 1A: Financial inclusion by region (2014-2022)

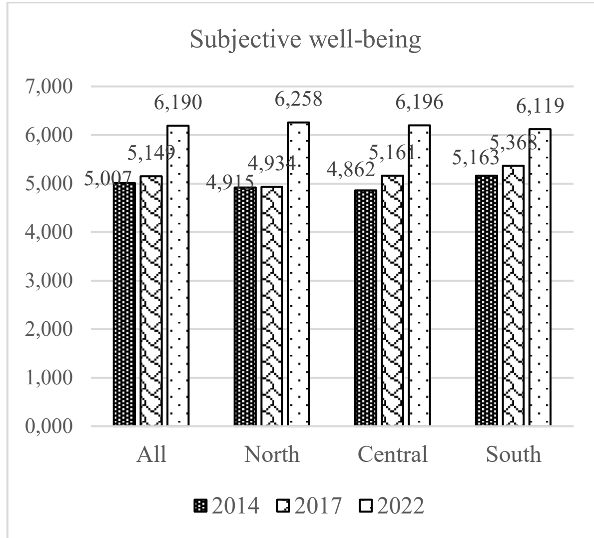

Figure 1B: Subjective well-being by region (2014-2022)

Figure 10. The KLS estimate of the impacts of financial inclusion on subjective well-being