Understanding and measuring financial inclusion in the Philippines

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Motivation

Why study financial inclusion?

- Financial inclusion helps individuals as well as smaller firms **invest for the future** in productive capital (education and business), **smooth consumption,** and **manage financial risk** ⟶ can **enhance productivity** and **long-term economic growth** and help **reduce poverty and inequality** (Demirgüç-Kunt, Klapper and Singer 2017).
- Timeliness: According to new research (Gutierrez-Romero and Ahamed 2021), financial inclusion can **mitigate the detrimental effect of inequality on poverty**
  - In their forecasts, extreme poverty will rise due to the COVID-19 pandemic, but **urgent improvements in financial inclusion can substantially lessen this harsh effect.**
- Research gap: Despite the growing interest in the area and appreciation of its policy importance, **empirical research on financial inclusion in relation to economic growth and development or financial stability remains limited**, especially at the **national/subnational levels** (most studies are cross-country).

Questions we tried to answer

Understanding and measuring financial inclusion in the Philippines

#1 How does the Philippines compare with other countries in developing Asia in financial inclusion?

#2 What are the stylized facts of financial inclusion in the Philippines?

#3 Financial inclusion being multidimensional, how do we construct a measure that can help us answer important empirical and policy questions?

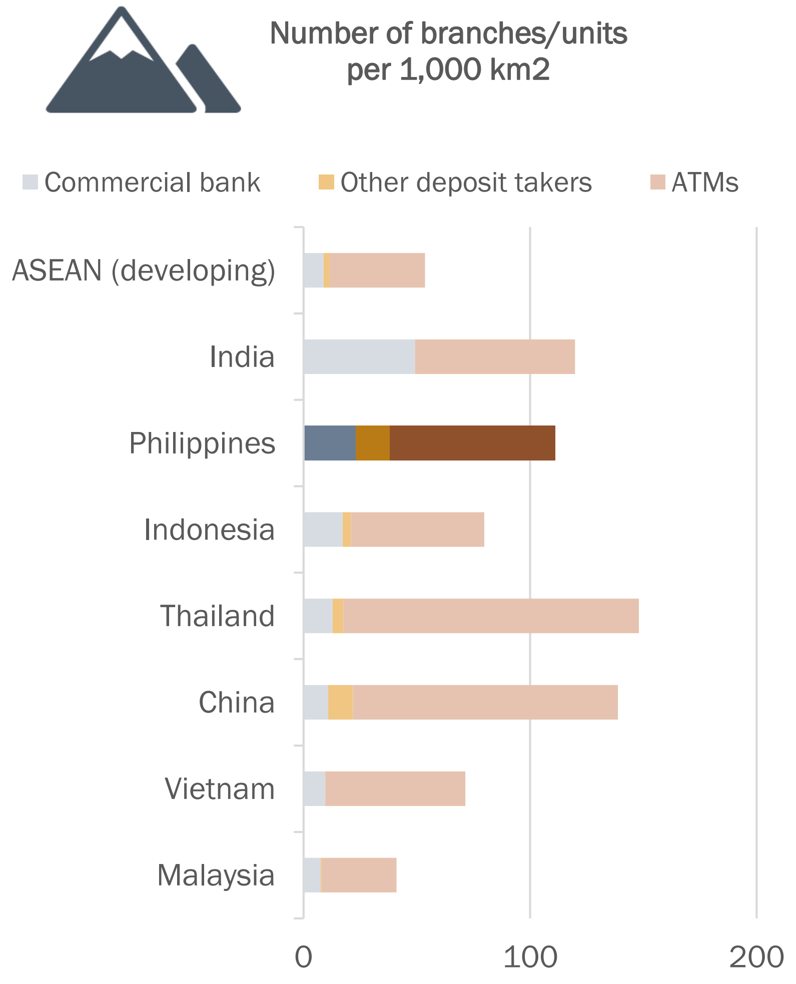
#1 How does the Philippines compare with other countries in developing Asia in financial inclusion?

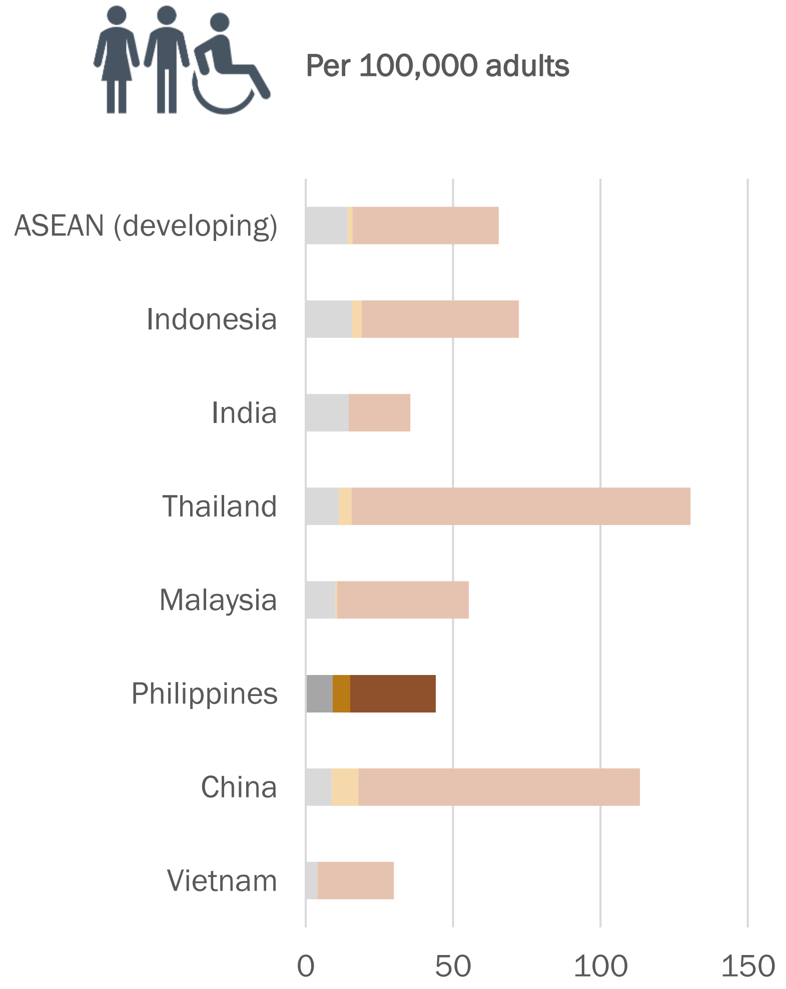
LOOK AT GLOBAL MICROSCOPE EIU 2020, IMF FINANCIAL ACCESS SURVEY 2019, WORLD BANK GLOBAL FINDEX 2017

The Philippines leads the region in the enabling environment for financial inclusion…

Source: Global Microscope Economist Intelligence Unit 2020

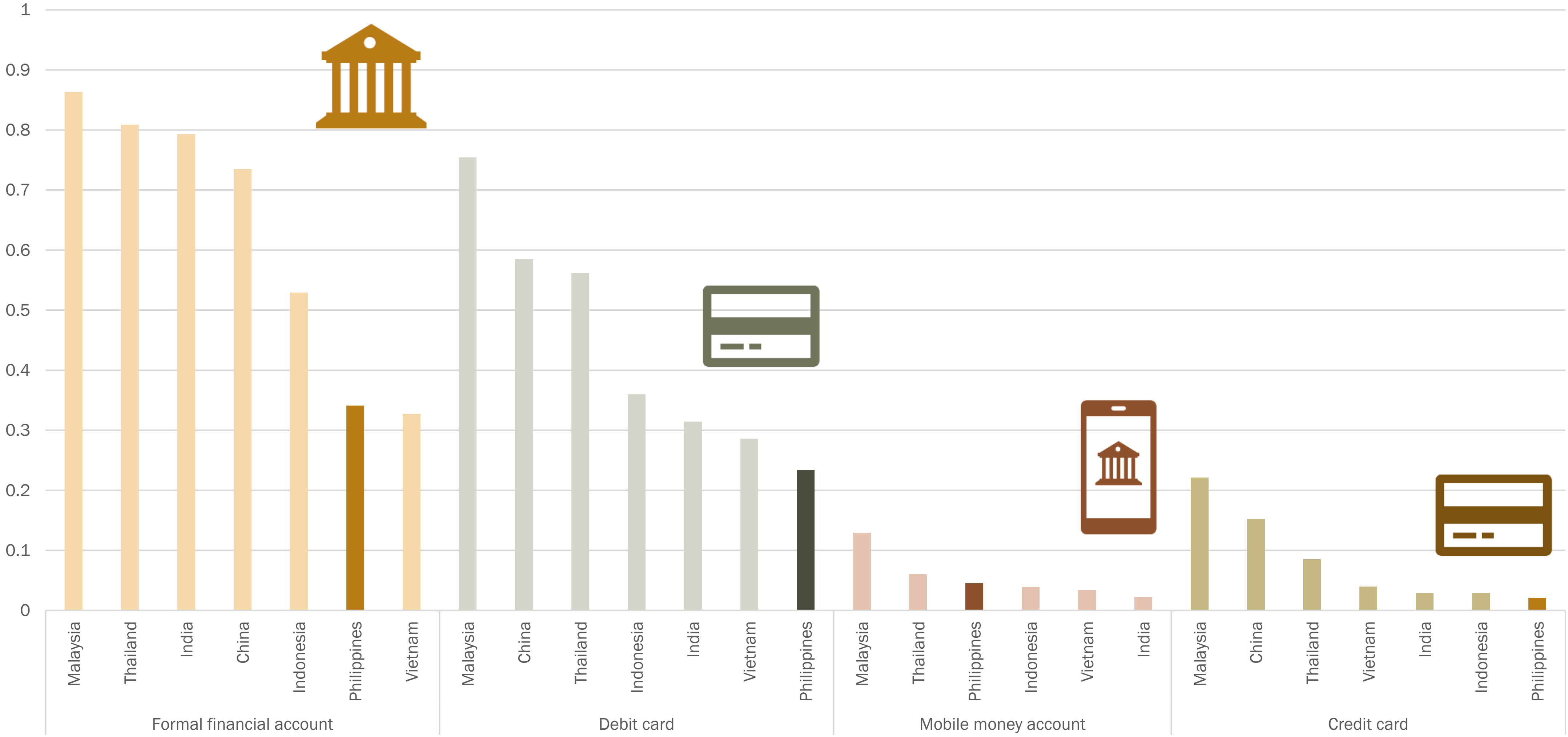
…but the country has mixed performance in financial outreach…





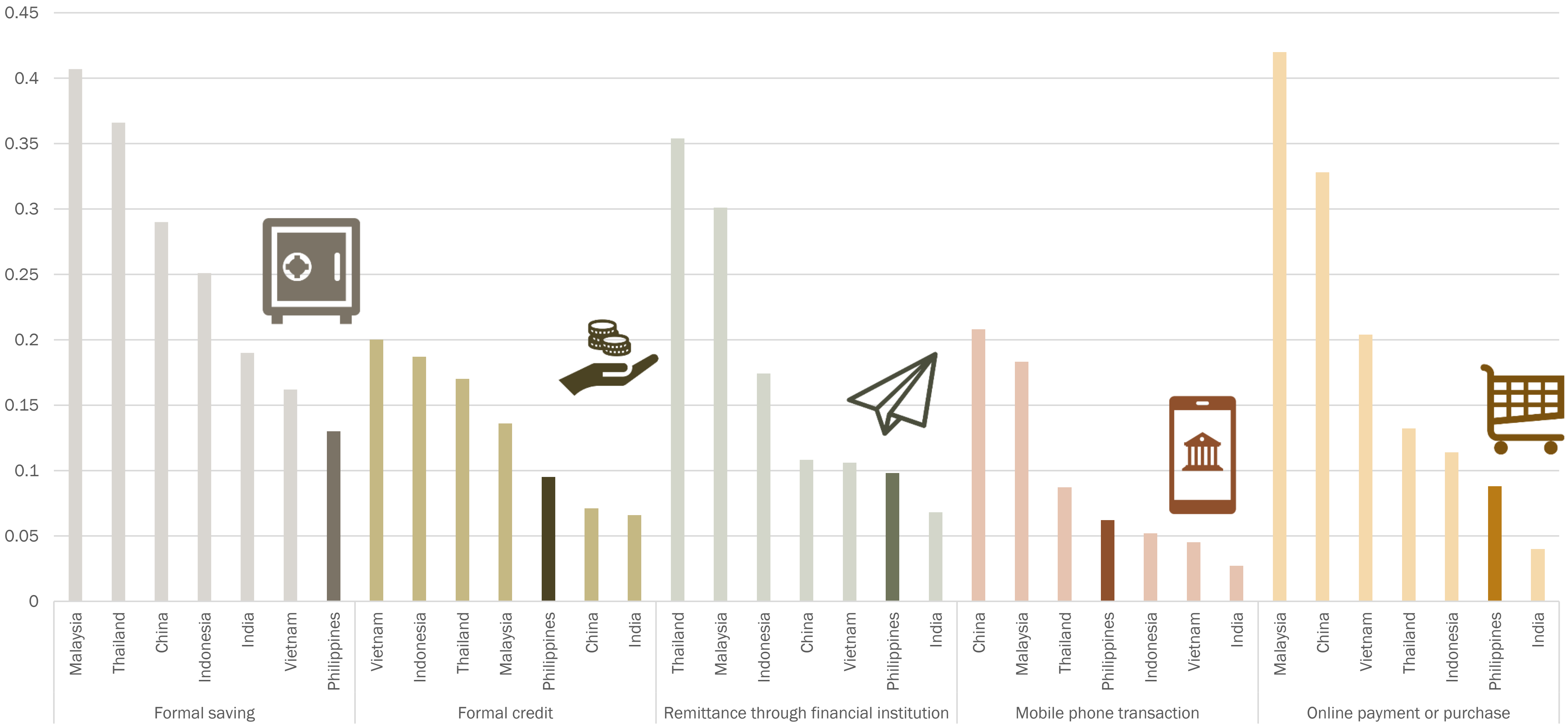
Source: IMF Financial Access Survey 2019

…and lags in ownership of financial accounts…



Source: World Bank Global Findex 2017

…and in usage of financial services.



Source: World Bank Global Findex 2017

Reasons given by the financially excluded in the Philippines include both voluntary and involuntary reasons.

Philippines

- Lack of money – 0.70
- Too expensive – 0.54
- Lack documentation – 0.45
- Too far away – 0.41
- No need for financial services – 0.40
- Family member already has one – 0.26
- Lack trust – 0.21
- Religious reasons – 0.14

Indonesia

- Lack of money – 0.72
- Too far away – 0.33
- Too expensive – 0.32

Malaysia

- Family member already has one – 0.52
- No need for financial services – 0.48
- Lack of money – 0.47

Thailand

- No need for financial services – 0.64
- Lack of money – 0.58
- Family member already has one – 0.50

Vietnam

- No need for financial services – 0.47
- Lack of money – 0.45
- Family member already has one – 0.21

India

- Lack of money – 0.54
- Family member already has one – 0.49
- No need for financial services – 0.29

China

- Lack of money – 61%
- Family member already has one – 30%
- No need for financial services – 24%

Source: World Bank Global Findex 2017

Understanding financial inclusion in the Philippines

#2 What are the stylized facts of financial inclusion in the Philippines?

ANALYZE THE AVAILABLE MICRODATA ON THE PHILIPPINES

Understanding financial inclusion in the Philippines: Literature review

- Demirgüç-Kunt & Klapper (2013 Brookings Papers)
  - Highlighted that national development level drives differences in account penetration across countries, while personal income level drives differences across individuals within these countries
- Allen, Demirgüç-Kunt, Klapper & Peria (2016 J Fin Interm)
  - Examined “foundations of financial inclusion” (i.e., individual and country characteristics) and noted that the efficacy of national policies to promote financial inclusion depended on individual characteristics (within a country)
- Fungáčová & Weill (2015 China Econ Rev)
  - Underscored concept of “involuntary exclusion” (from Allen et al. 2016) where the reasons for not owning a bank/financial account may be due to some market failure or are preventable → thus, can be addressed through suitable policy
- Llanto (2015 Phil Rev Econ) and Llanto & Rosellon (2017 PIDS)
  - Similarly motivated by the observed challenges to further expansion of financial outreach and usage in the Philippines despite this being on top of the policy agenda for several years
  - Found significantly positive relationships between household and individual access/use of financial services and different socio-economic characteristics helpful in designing policy

Understanding financial inclusion in the Philippines: Empirical method

- Probit estimation for account ownership
  - Dependent variables: (1) formal account, (2) debit card, (3) mobile money account, and (4) credit card
- Joint probit estimation for account use
  - Dependent variables: (1) formal saving, (2) formal credit, (3) domestic remittances, (4) mobile-phone transactions, and (5) online transactions (*simple probit)
- Common regressors:
  - (1) age, (2) sex (female & male), (3) education (primary, secondary & tertiary), (4) employment (out of workforce, wage-employed, self-employed & unemployed), (5) income (quintile 1 to quintile 5), (6) geographic area (Luzon, Visayas, Mindanao & NCR)
- Data:
  - World Bank Global Findex 2017 (adds fintech)

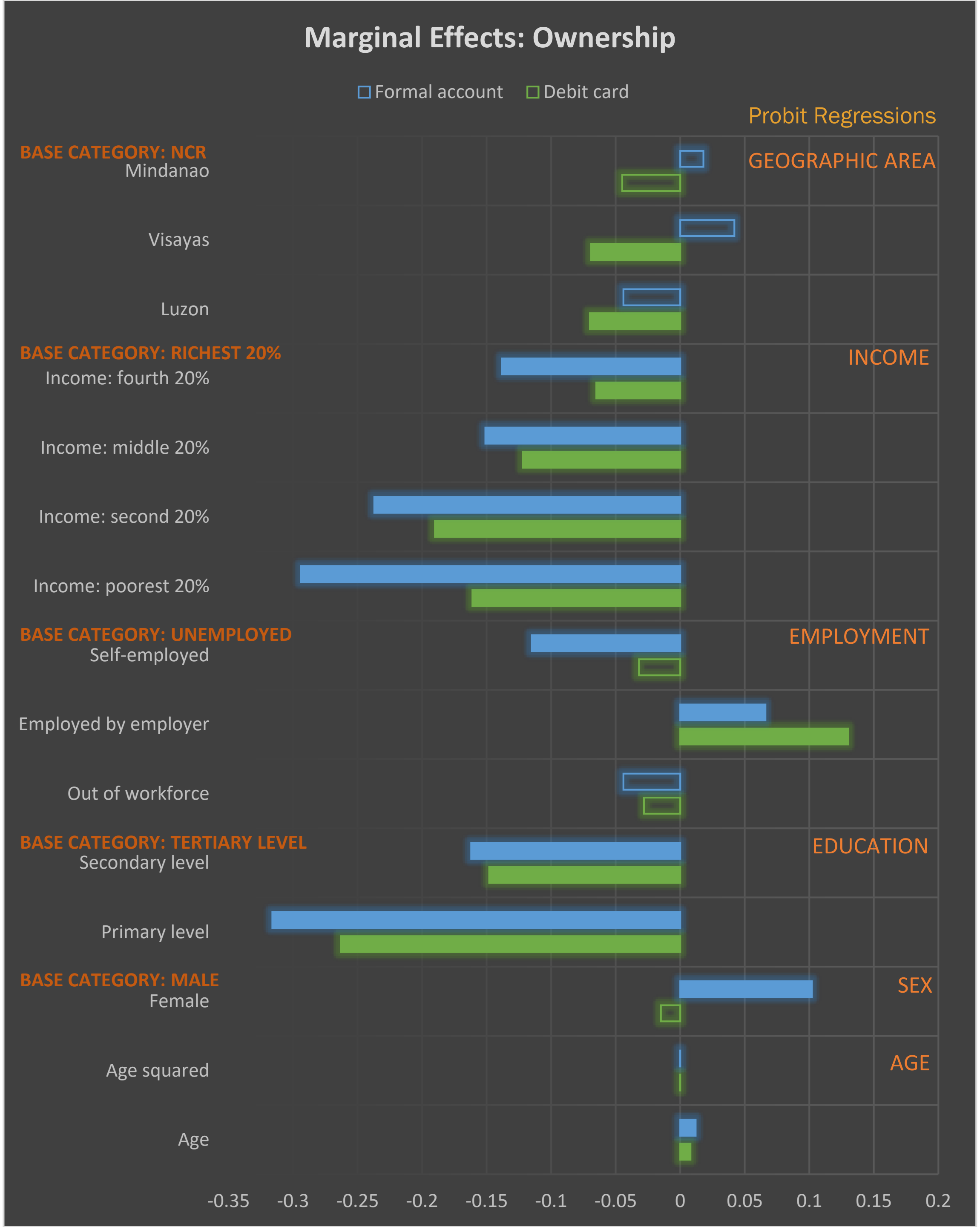
Understanding financial inclusion in the Philippines: Empirical method

- Joint probit estimation for alternative sources of borrowing
  - Dependent variables: (1) borrowing from family or friends, (2) borrowing from informal savings groups, and (3) borrowing from all sources (*simple probit)
- Probit estimation for barriers to financial inclusion
  - Dependent variables: reasons cited by individuals for not having a formal account
    - "too far away"
    - "too expensive"
    - "lack documentation"
    - "lack trust"
    - "religious reasons"
    - "lack money"
    - "family member already has one"
    - "no need for financial services"
- Common regressors:
  - (1) age, (2) sex (female & male), (3) education (primary, secondary & tertiary), (4) employment (out of workforce, wage-employed, self-employed & unemployed), (5) income (quintile 1 to quintile 5), (6) geographic area (Luzon, Visayas, Mindanao & NCR)
- Data:
  - World Bank Global Findex 2017 (adds fintech)

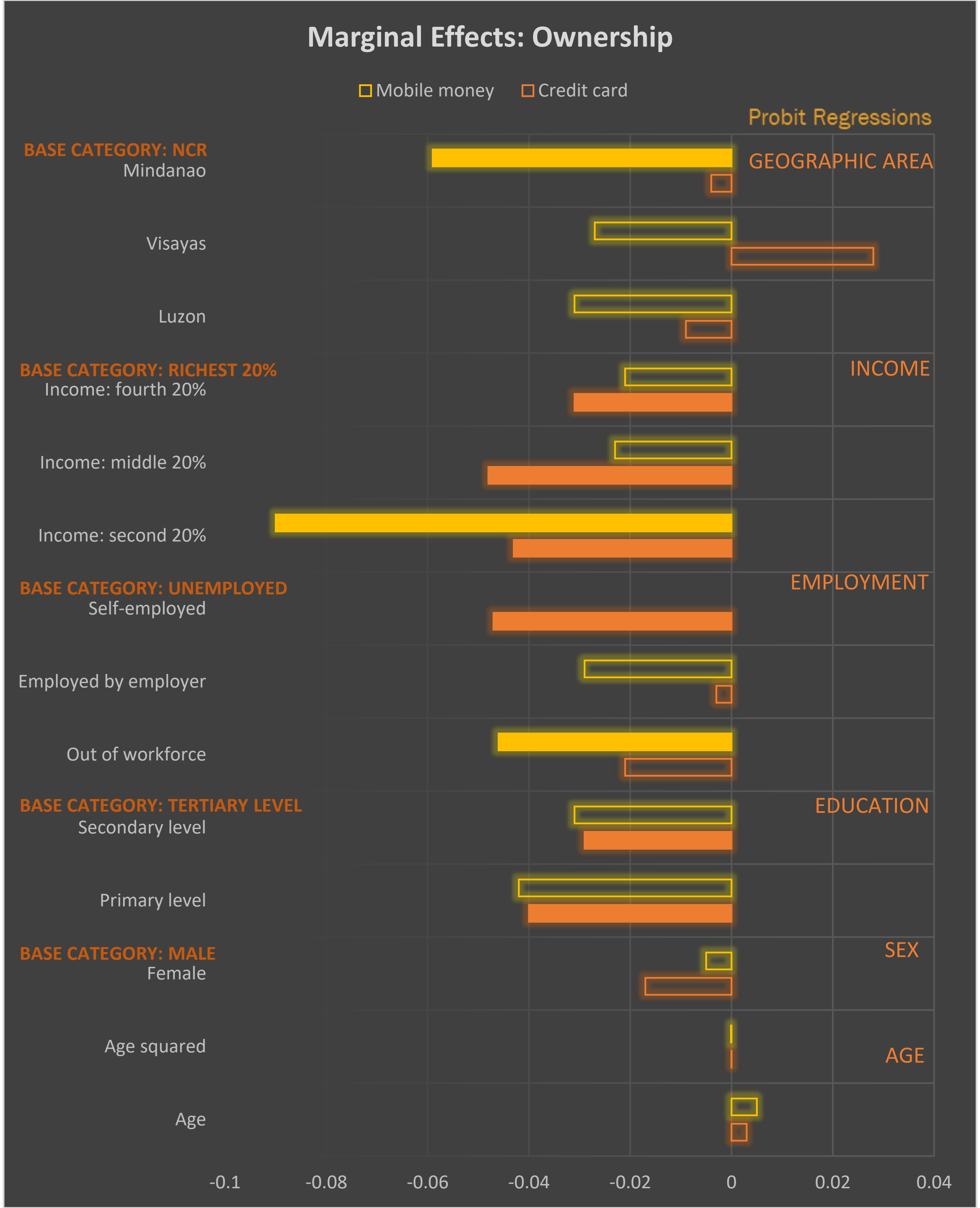
Determinants of financial account ownership & use

PROBIT REGRESSION RESULTS

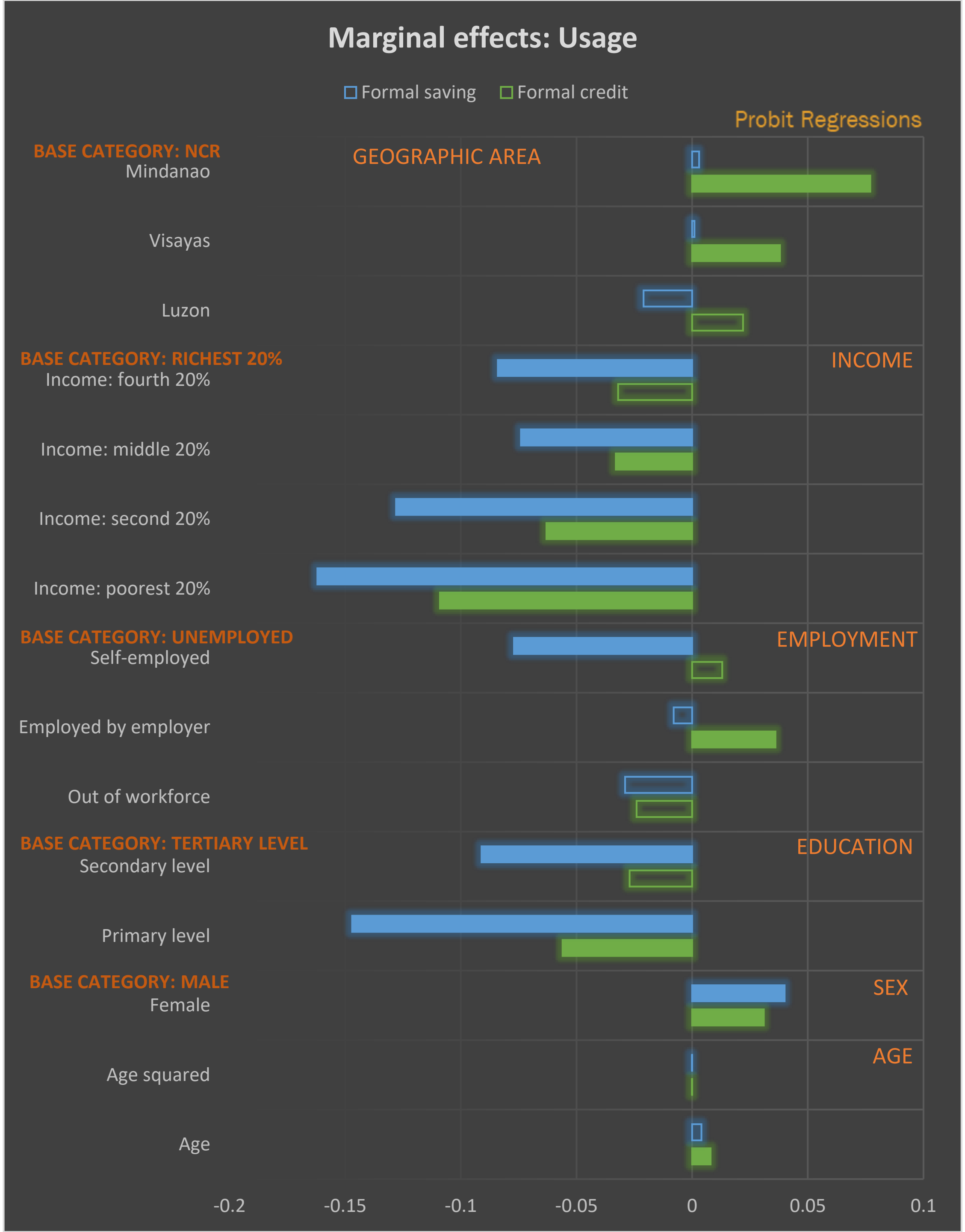
- Individuals in Luzon and Visayas are less likely to own a debit card than those in NCR
- Poorer individuals are less likely than richest individuals (quintile 5) to own a formal account or a debit card
- The self-employed are less likely than the unemployed to own a formal account
- Employed individuals receiving wages are more likely than the unemployed to own a formal account or a debit card
- The less educated are less likely than the most educated (tertiary) to own a formal account or a debit card
- Females are more likely than males to own a formal account
- Non-linearity: Older individuals are more likely than younger individuals to own a formal account or a debit card (until around retirement age)
    - LIFE CYCLE EFFECT
    - GENERATIONAL EFFECT



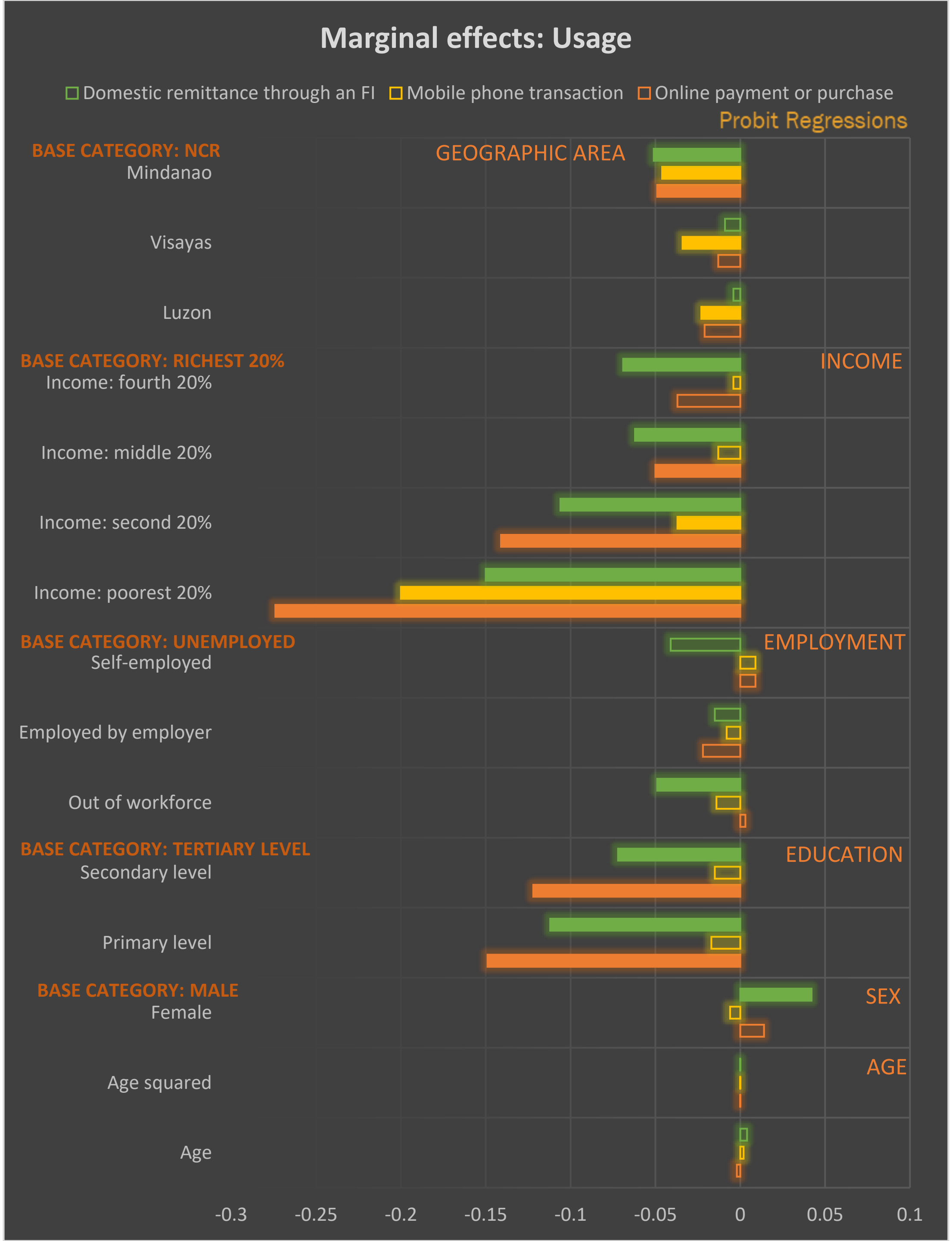
- Individuals in Mindanao are less likely than those in NCR to use fintech such as through a mobile money account
- Poorer individuals are less likely than the richest individuals to own a credit card
- Only the poorest individuals are less likely than the richest individuals to own a mobile money account
- The self-employed are less likely than the unemployed to own a credit card
- Individuals who are not part of the labor force are less likely to own a mobile money account
- The less educated are less likely than the most educated to own a credit card *but NOT a mobile money account
- There is no significant difference between males and females
- Age is not a significant determinant



- Individuals in Mindanao and Visayas are more likely to borrow from a formal financial institution
- Poorer individuals are less likely than the richest individuals to save formally or avail of formal credit *except for quintile 4 in the latter
- The self-employed are less likely than the unemployed to save using a formal account
- Employed individuals receiving wages are more likely than the unemployed to avail of formal credit
- The less educated are less likely than the most educated to save using a formal account or avail of formal credit *except for secondary-level in the latter
- Females are more likely than males to save using a formal account or to avail of formal credit
- Non-linearity in credit: Older individuals are more likely than younger individuals to avail of formal credit (until around middle age)



- There is a clear urbanization effect in fintech use (mobile-phone)
- Income matters less for mobile-phone use for financial transactions though it remains significant
- Individuals who are not part of the labor force are less likely to send or receive domestic remittances through a (formal) financial institution
- The less educated are less likely than the most educated to send/receive domestic remittances through a formal FI or make online financial transactions
- Education is not a significant determinant of mobile-phone use for financial transactions
- Females are more likely than males to send/receive domestic remittances through a formal FI *but sex not a factor for fintech use (mobile-phone and Internet transactions)
- Age is not a significant determinant



Determinants of alternative borrowing sources: Probit regression results

- We saw that formal account ownership is more likely if one is richer, more educated, wage-employed, female, or older (up to middle age). This is also the salient pattern in formal credit.
- Less than a tenth of the adult population taps formal credit – among the lowest in developing East Asia.
- To further understand borrowing at the individual level, we look at informal credit.
- Some salient points:
  - Informal loans from family or friends are the most common type of borrowing (>40% of adult population).
  - Self-employed individuals are the most likely to avail of such loans (their probability is 10.7 percentage points higher than the unemployed).
  - Females are more likely than males to borrow from informal savings groups (but only 4.4% of the adult population tap this borrowing source).
  - The least educated are the least likely to participate in both formal and informal credit markets.

Determinants of barriers to financial inclusion

PROBIT REGRESSION RESULTS

Voluntary vs involuntary exclusion

VOLUNTARY EXCLUSION

- “Religious reasons”
- “Lack of money”
- “Family member has one”
- “No need for financial service”

INVOLUNTARY EXCLUSION

- “Too far away”
- “Too expensive”
- “Lack of documentation”
- “Lack of trust”

Too far away

- Age (nonlinear) **
- Income: Poorest 20%**, Second 20%**
- Geog. area: Luzon**, Visayas***, Mindanao***
- Male **

Too expensive

- Education: Primary level*
- Employment: Wage-employed***
- Income: Poorest 20%*, Second 20%**
- Geog. area: Visayas**, Mindanao*

Lack documentation

- Education: Primary level***, Secondary level**
- Employment: Wage-employed*
- Geog. area: Visayas**, Mindanao**

Lack trust

- Age (nonlinear)**
- Geog. area: Visayas***
- Income: Fourth 20%* (neg. sign)
- Male*

Religious reasons

- Employment: Wage-employed**
- Geog. area: Visayas***, Mindanao***
- Income: Middle 20%* (neg. sign)

Lack of money

- Geog. area: Mindanao***

Family member already has one

- Geog. area: Visayas* (neg. sign)

No need for financial services

- Employment: Wage-employed*
- Male**

*Significance levels denoted by * $p < 0.1$; ** $p < 0.05$; and *** $p < 0.01$*

Determinants of perceived barriers to account ownership: Probit regression results

Main finding: Financial exclusion appears “involuntary” in nature for certain segments of society

Understanding financial inclusion in the Philippines: Takeaways

- Financial inclusion (account ownership and credit use) is more likely if one is richer, more educated, wage-employed, female, or older (up to retirement and middle age, respectively).
- Fintech in the form of mobile money seems most promising, with seemingly the most equitable access among the different forms of financial inclusion.
- Analysis of barriers to financial account ownership imply “involuntary exclusion” of some underserved sectors, indicating scope for policy adjustment.
- Formal credit remains underdeveloped. However, empirical results suggest that improvement in education, aside from income and employment, could enable better access to formal borrowing sources.

Measuring financial inclusion in the Philippines

#3 Financial inclusion being multidimensional, how do we construct a measure that can help us answer important empirical and policy questions?

BUILD A COMPOSITE INDEX USING PCA-BASED WEIGHTS

Measuring financial inclusion in the Philippines: Literature review

- Basic paper: Beck, Demirgüç-Kunt and Peria (2007 J Fin Econ), first to measure access to the financial sector (along two dimensions, namely access and use of financial services)
- Non-parametric composite indexes for FI patterned after the Human Development Index: Sarma (2008, 2015, 2016) followed by similar studies (e.g., Yorulmaz 2013, Park and Mercado 2018)
- Parametric indexes for FI: uses data dimensionality reduction technique, mainly principal component analysis (PCA), to weight an index (e.g., Camara and Tuesta 2018, Mialou et al. 2017, Park and Mercado 2018, Tram et al. 2021, Ahamed and Mallick 2019, Vo et al. 2021, Gutierrez-Romero and Ahamed 2021)
- Philippine studies: Efforts to construct a Philippine FI index, including studies by Mojica and Mapa (2017) and Tan (2014), who used non-parametric methods and created cross-section indicators for Philippine provinces and regions, respectively; and Reyes (2018) who generated a regional index using various techniques, creating panel data for the years 2005 to 2016.

Measuring financial inclusion in the Philippines: Methodology

- Challenge: to find the appropriate weights to a multidimensional financial inclusion index (FII)
- We combine indicators that measure financial outreach and financial usage into a single index using a two-stage principal component analysis (PCA).
- In the first stage, we combine the outreach and usage indicators to form sub-indices for outreach and usage, respectively.
- In the second stage, we combine the outreach and usage sub-indices to arrive at the financial inclusion index.
- In each step, the first principal component is taken as the index being estimated.

Measuring financial inclusion in the Philippines: Methodology

Indicators

Outreach

Demographic outreach
(per 100,000 people)
- No. of bank offices
- No. of automated teller machines (ATMs)
- No. of e-money agents
- No. of non-stock savings and loan associations
- No. of credit coops
- No. of pawnshops
- No. of remittance agents and money changers

Geographic outreach
(per sq. km.)
Same variables as above

Usage

Uptake
(per 100,000 people)
- No. of bank deposit accounts

Intensity
(percent of GRDP, or regional GDP)
- Value of bank deposit liabilities
- Value of bank loans

Measuring financial inclusion in the Philippines: Methodology

Alternative specifications

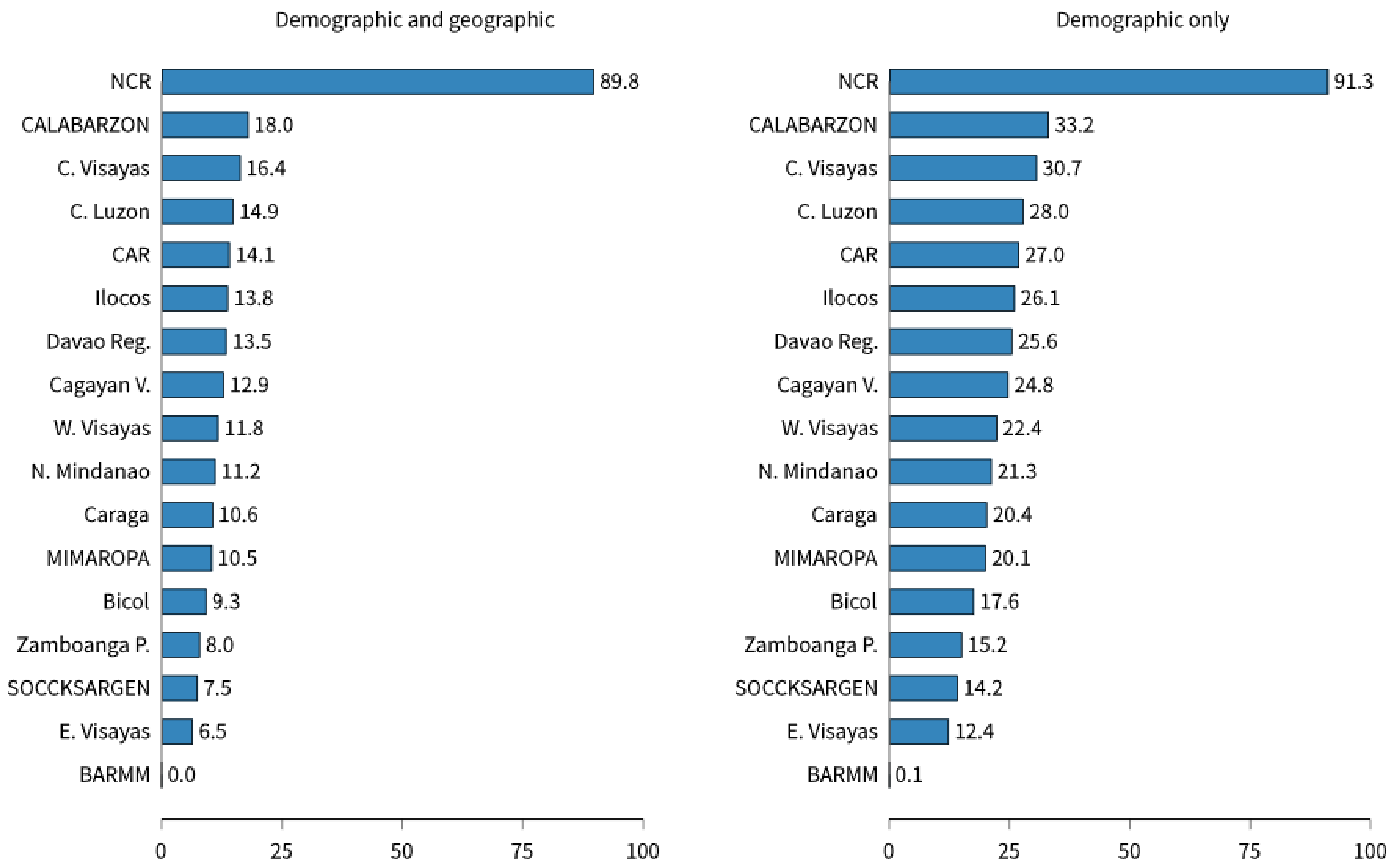
	(1) Baseline	(2) Alternative	(3) Baseline, without geographic outreach	(4) Alternative, without geographic outreach
Outreach	Demographic + geographic Banks ATMs	Demographic + geographic Banks ATMs Non-bank financial service providers (FSPs)	Demographic only Banks ATMs	Demographic only Banks ATMs Non-bank FSPs
Usage				

Measuring financial inclusion in the Philippines: Data

- Regional panel
- Years:
  - Baseline: 2013-2019
  - Alternative: 2013-2017 [shorter due to issues with outreach data for non-bank financial service providers (FSPs) in 2018-2019]
- Data source: BSP
- All data standardized prior to analysis

Measuring financial inclusion in the Philippines: Results

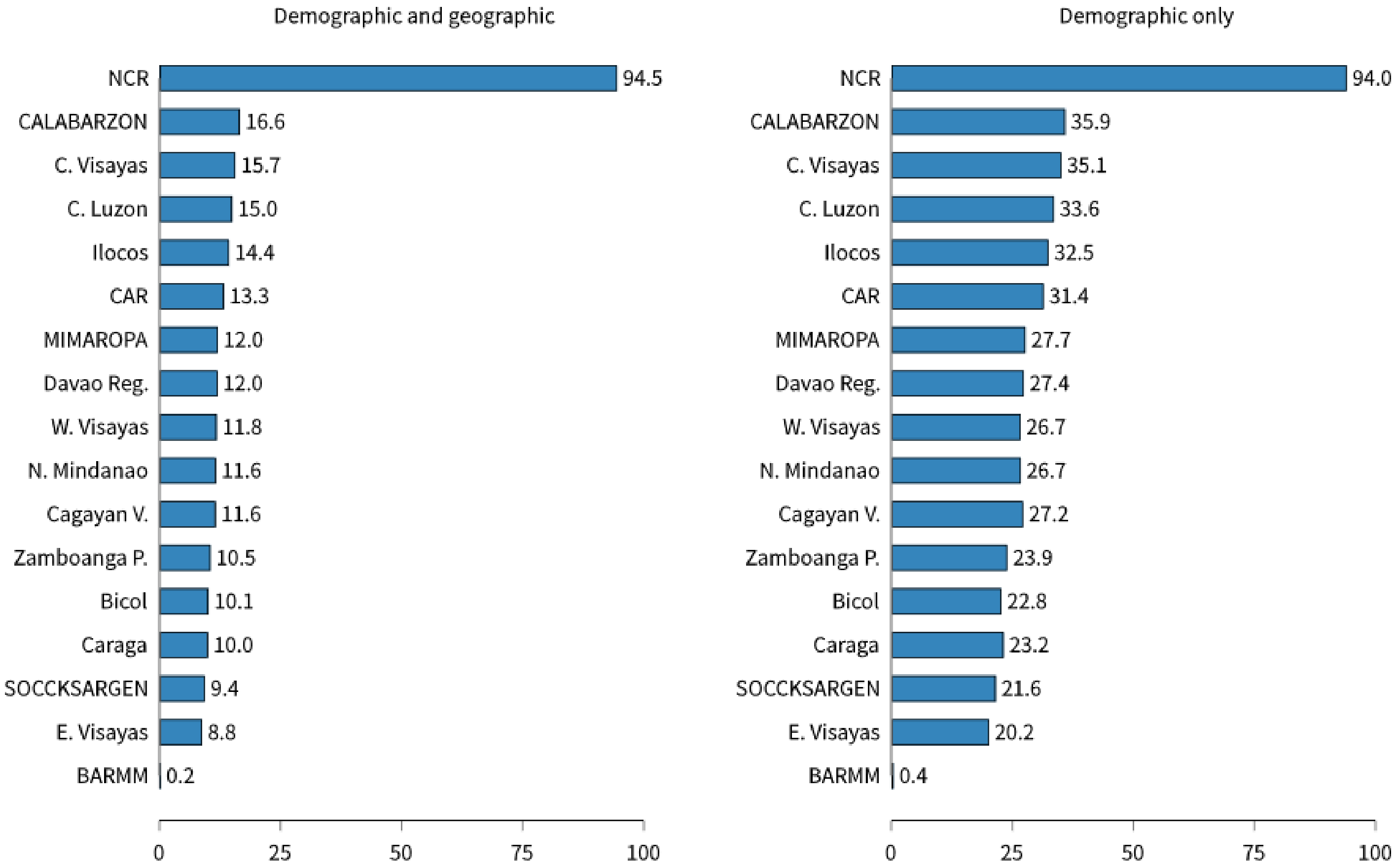
Outreach sub-index (baseline)



- Top regions:
  - NCR, Calabarzon, Central Visayas, and Central Luzon
- Bottom regions:
  - BARMM and Eastern Visayas
- Excluding geographic outreach increases outreach scores for regions outside NCR.

Measuring financial inclusion in the Philippines: Results

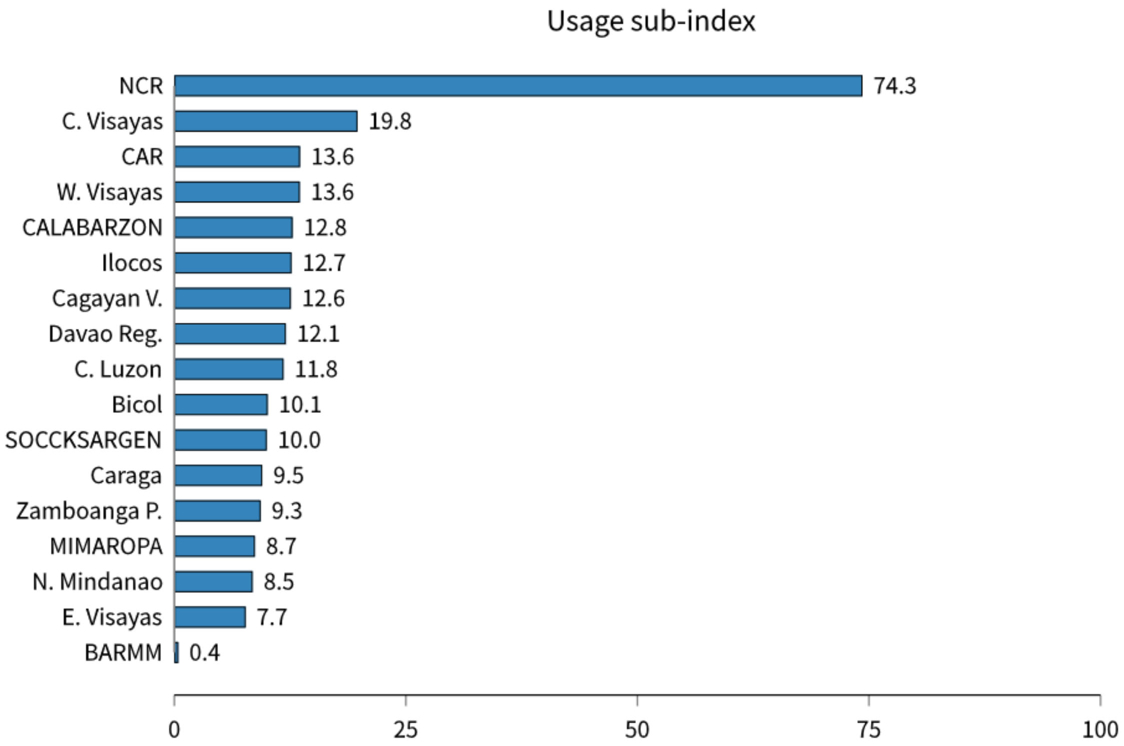
Outreach sub-index (alternative)



- Same top and bottom regions
- Same effect on outreach scores when excluding geographic outreach.

Measuring financial inclusion in the Philippines: Results

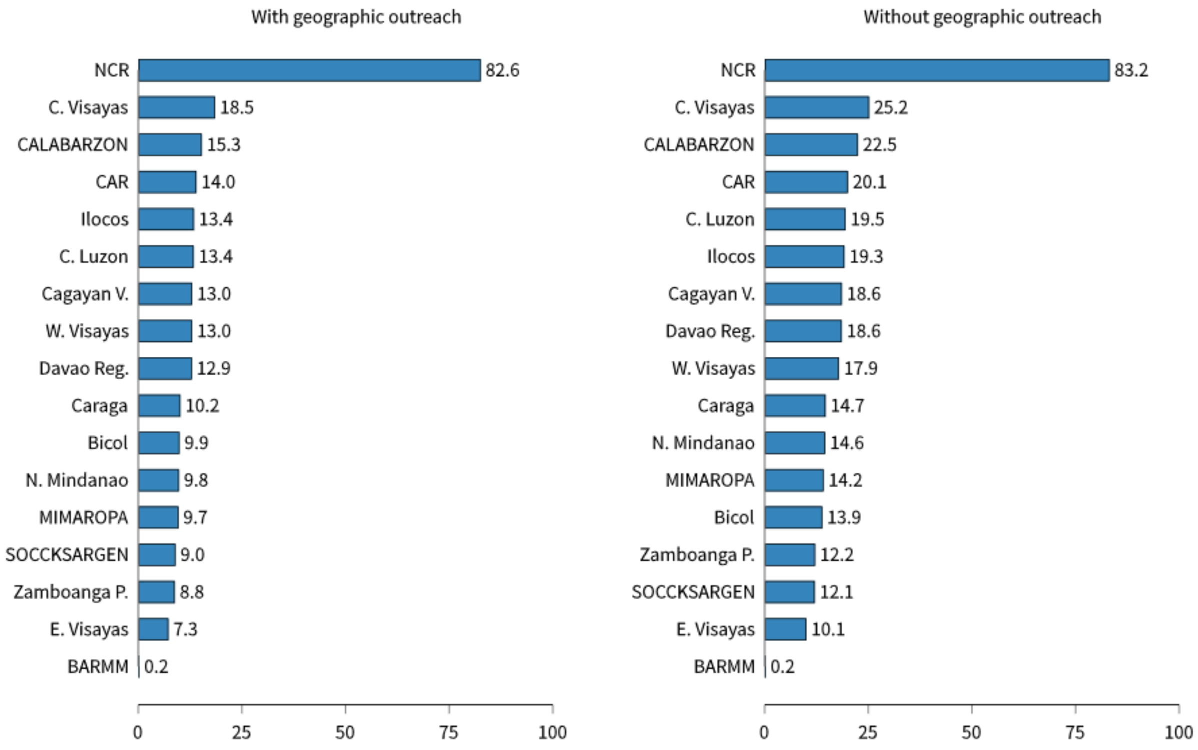
Usage sub-index, 2013-2019



- Top regions:
  - NCR, Central Visayas, CAR, Western Visayas
- Bottom regions:
  - BARMM and Eastern Visayas

Measuring financial inclusion in the Philippines: Results

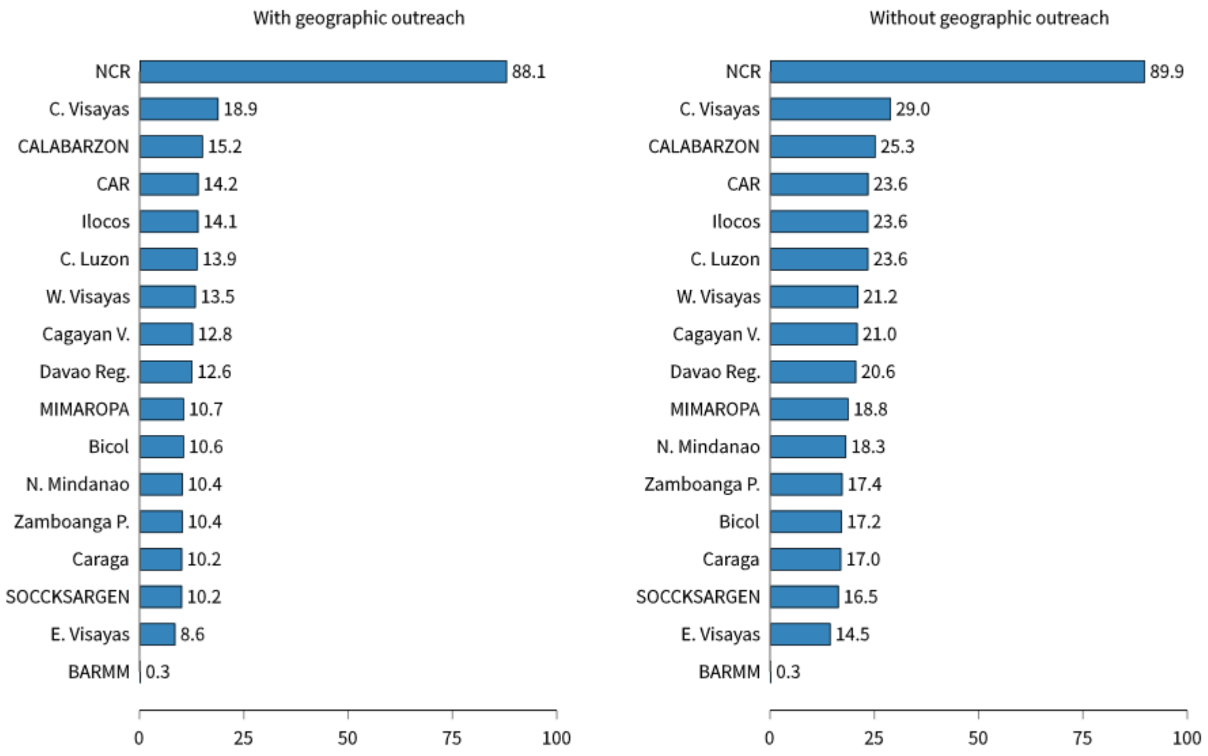
Financial inclusion index (baseline)



- Top regions:
  - NCR, Central Visayas, Calabarzon
- Bottom regions:
  - BARMM and Eastern Visayas
- Wide gap between NCR and the rest of the regions, and between the rest of the regions and BARMM

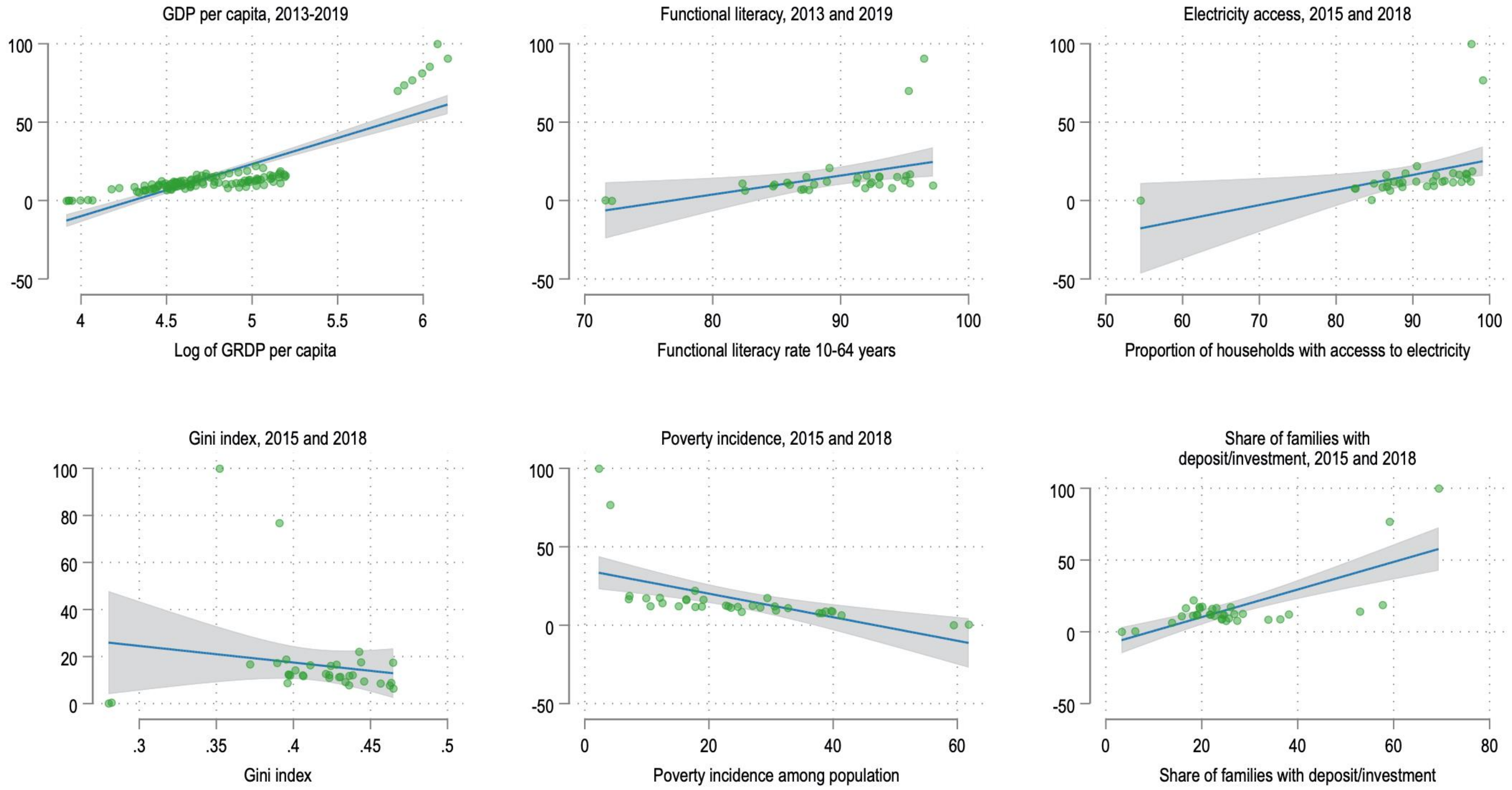
Measuring financial inclusion in the Philippines: Results

Financial inclusion index (alternative)



- Same top and bottom regions

Measuring financial inclusion in the Philippines:
FI index vs. development indicators



Measuring financial inclusion in the Philippines: Key results

- There is a big gap in financial inclusion scores between NCR and other regions, and between the latter and BARMM.
- Relatively lower weights are assigned to the demographic penetration of e-money agents and credit cooperatives. This is due to the latter being weakly correlated with the other financial outreach indicators.
- Financial inclusion is positively associated with indicators of economic development (GDP per capita, electricity access, and literacy), and negatively associated with poverty incidence and, to some extent, income inequality. Demand-side data also validate the index.

Conclusions

- The stylized facts offer obvious policy levers such as raising education levels in the country and creating broader programs to improve math and financial literacy, including in the adult population.
  - Grohmann, Klühs and Menkhoff (2018) have convincingly shown that financial literacy raises financial inclusion, hence financial education can be “an important instrument of financial development.”
  - Potential undesired generational effects where the elderly may be shut out of the formal financial sector for various reasons, including unfamiliarity with financial services, further underscore the need for some intervention.
- Research has suggested that targeting the financially excluded by encouraging basic or low-fee accounts and correspondent banking, as well as consumer protection policies and the use of G2P payments by government may be effective strategies for greater financial participation (Allen et al. 2016). Such inclusive policies are already being pursued by the BSP (BSP 2021) and the national government.
  - Silver lining of the COVID-19 pandemic is that it has sped up implementation of the country’s national ID system (for more efficient delivery of social protection), helping eliminate documentation barriers to banking and other financial services.

Conclusions

- Fintech seems tailor-made to address the hurdles to financial inclusion (targeting distance, cost and documentation barriers), yet economic history has shown that financial innovation/liberalization comes with its own set of risks.
  - "Democratization of credit" in the US beginning the 1980s, for example, led to a sharp rise in credit card debt and bankruptcies by the late 1990s, while similar forces alongside the creation of new financial derivatives led to the subprime crisis and contributed to the global financial crisis of 2008 (Livshits, Gee and Tertilt 2016 RES).
  - With today's economic, financial, and technological environment serving as breeding ground for risk, the country's lawmakers and regulators will need to (continuously) strike an optimal regulatory balance to foster both financial inclusion and financial stability.
  - This requires deeper understanding of the nature of new financial products, services, technologies, and markets that may emerge, as well as the behavior of new players and their clients.
- Ultimately, more research is needed. In measuring financial inclusion at the subnational level, we have taken the first step to building a dataset that would allow us to further study other issues that may be deemed relevant by Philippine policymakers.
  - These include not just the important (causal) link between financial inclusion and economic growth and development, but also the critical link between financial inclusion and financial stability, and even monetary policy.

The end. Thank you.