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Knowledge will set you free: Financial awareness and inclusion in the bottom of the pyramid

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Report on Project Title:

Knowledge will set you free: Financial Awareness and Inclusion in the Bottom of the Pyramid[1]

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Abstract:

In this project, we explored whether financial literacy and economic awareness alleviates financial exclusion for the general population, particularly the financially underserved sections of the population in Ho Chi Minh City (HCMC) in Vietnam. We overcame the problem of identifying the financially excluded by looking at multiple measures of financial inclusion including frequency of bank use, access to borrowing for business, having a regular savings plan and having some insurance for possible future unfavourable outcomes. Using an innovative *principal component (PCA)* based method we identified a single score factor that can be construed as an overall measure of the degree of financial inclusion, using participation in the formal financial institutions and outlined the locations which is leading or lagging in financial inclusion. We determine factors including demographic, socio-economic, expectation or perception based and finally, accessibility and propensity for financial services based factors that influence measures of financial inclusion. We establish that factors including duration of stay, educational qualification, and in particular, keenness on getting more financial awareness and new innovative financial services, do indeed impact financial inclusion almost as much as income and other opportunities like education. We also propose an alternate and internal measure of financial inclusion in the budget share of necessities among individuals and identify channels that impact the budget share. Having established benchmark measures of financial inclusion we recommend possible technology-enabled policy based approach to accelerate financial inclusion in the bottom of the pyramid.

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Abstract:

In this project, we explored whether financial literacy and economic awareness alleviates financial exclusion for the general population, particularly the financially underserved sections of the population in Ho Chi Minh City (HCMC) in Vietnam. We overcame the problem of identifying the financially excluded by looking at multiple measures of financial inclusion including frequency of bank use, access to borrowing for business, having a regular savings plan and having some insurance for possible future unfavourable outcomes. Using an innovative principal component (PCA) based method we identified a single score factor that can be construed as an overall measure of the degree of financial inclusion, using participation in the formal financial institutions and outlined the locations which is leading or lagging in financial inclusion. We determine factors including demographic, socio-economic, expectation or perception based and finally, accessibility and propensity for financial services based factors that influence measures of financial inclusion. We establish that factors including duration of stay, educational qualification, and in particular, keenness on getting more financial awareness and new innovative financial services, do indeed impact financial inclusion almost as much as income and other opportunities like education. We also propose an alternate and internal measure of financial inclusion in the budget share of necessities among individuals and identify channels that impact the budget share. Having established benchmark measures of financial inclusion we recommend possible technology-enabled policy based approach to accelerate financial inclusion in the bottom of the pyramid.

Introduction:

Information asymmetry in Economics (or *Agency problems* in Corporate Finance) makes it harder and more expensive to run organizations effectively. Many countries are plagued by the same issues, middle income countries in ASEAN like Vietnam is all but exemplar of this phenomenon. One key problem of information asymmetry is knowledge itself (Rich and Tracy, 2010). The dissemination of knowledge to the less privileged rungs of the society has been daunting particularly for policymakers and market participants including the government, the central bank and non-governmental organizations (NGO). There are two potential information asymmetry issues that policymakers are often faced with. First, they have to identify those who are financially excluded for the mainstream due to a variety of reasons. Second, how to provide services to them that will alleviate their conditions for them to participate fully in financial development of the country, along with themselves. So in short, how to achieve a true inclusive growth? In this project our humble intention is to identify such instruments that can help us identify the financially less served, and then to propose knowledge-based products to engage them better in the financial mainstream.

Monetary and other macroeconomic policies and their effectiveness are largely determined by the expectation of future inflation of consumers and investors. In some countries like the US one way of measuring inflation expectations is through Survey of Professional Forecasters (SPF, 2011). Including the uninformed or poorly informed into the financial mainstream or in a policy discourse using traditional tools enhanced by Financial Technology (through mobile and/or online platforms) seem to be the first and natural step to quantify their predicaments, eventually increasing financial inclusion.

In running two surveys in May 2016 and August 2016, we have managed to capture two points of time in the urban population that is interspersed with global turmoil including uncertainty surrounding the BREXIT where UK voters decided to go separate ways from the European Union and the acrimonious developments of the US presidential election where both the leading candidates moved away from the Trans Pacific Partnership (TPP). While the former event caused a turmoil in the currency market with the British pound losing 20% of its value against major currencies while the latter drove emerging economies like in Vietnam which stood to gain significantly from TPP through removal of barriers to trade looking into a protectionist future.

These events were unfolding in the backdrop of exceptionally accommodative monetary policy from all three of the major G3 Economies (US, Eurozone and Japan) while two of the three were in the middle of unprecedented stimulus spending. With other major emerging economies in the region particularly China in the grips of "subdued" growth, inclusive growth is a challenge of exceptional proportions. Furthermore for the implementation side, there are challenges galore as observed by Christine Lagarde, Managing Director, IMF, April 2016:

"Despite clear evidence of its benefits to individuals and society as a whole, financial inclusion is often proceeding on an isolated track—more social policy than macro policy. It is critical that we avoid such a "silo mentality." Financial inclusion is an integral part of inclusive growth strategies and should be closely integrated into macroeconomic and financial policies."

In his New York Times article Binyamin Applebaum has highlighted the "…vexing reality …inflation did not fall as much as expected during the Great Recession, and it has remained surprisingly weak during the recovery." The sentiment is captured by the president of the Saint Louis Federal Reserve, James Bullard, "The biggest risk for those that are less fortunate is that we would go back into recession…"

Theoretical Development and Implications:

One key feature of the Neo-Keynesian model followed by most Central banks including the FED and the ECB, is the short run non-neutrality of monetary policy which is an effect of nominal rigidities (or stickiness) in prices and wages. The cusp of the issue is possibly information asymmetry or market friction which brings about less than one-for-one response of nominal interest rate with changes of expectations of inflation, which brings about variations in the real interest rate or purchasing power (Gali, 2015). The work on establishing the Neo-Keynesian framework has been ongoing since the mid-eighties by establishing static models with micro-foundations (Akerlof and Yellen, 1985) or explaining persistent effects of policy on output through long-term contracts (Fischer, 1977).

There is growing evidence of price and wage rigidity and adjustment periods of up to one year which might have negative impact on consumer's welfare due to fluctuating real interest rate (Taylor, 1999). The new generation of monetary models have a fully specified dynamic Real Business Cycle (RBC) model that has features of the Neo-Keynesian models, in particular, as observed by Gali, 2015, p. 6:

"…the presence of nominal rigidities makes room for welfare-enhancing interventions by the monetary authority, in order to minimize the existing distortions."

Monetary and other macroeconomic policies and their effectiveness are largely determined by the expectation of future inflation of consumers and investors (de Bruin et. al., 2010, Carroll, 2003, Bullard, 2011, Gali, 2015). Consequently, inflation expectations is often cited as the main source of changes in monetary policy, as observed by noted economist and Vice Chairman of the Federal Reserve Board, Stanley Fisher (New York Times Aug 29, 2015; Thomas, 1999).

The main hypothesis we want to explore in this project, "*Does higher financial literacy and awareness of economic conditions increase current and future financial inclusion controlling for socioeconomic and demographic factors*." Furthermore, we would also like to explore some financial instruments (like inflation linked products, innovative payment systems) that can alleviate some issues that propagate financial exclusion.

A general hypothesis we want to test is if keenness to gain financial awareness would increase financial inclusion using various measures including external factors like usage of banks, proportion of active bank accounts, borrowing for business, having a regular savings account, insurance and internal factors like budget share of necessary items. So additionally, we want to explore the hypothesis:

"Does propensity to learn increase inclusion?"

Data and Analysis:

Financial Inclusion has broadly been defined as both the intent and access to participating in the overall financial services industry, with an underlying assumption that more engagement in financial services will improve the potential future economic outcomes of individuals. On basic comparison we see that the levels of debt, one measure of financial inclusion and growth potential of the economy, are quite low and not quite changed between the two waves in May 2016 and August 2016 (Figure 1). In fact, as discussed before, the level of uncertainty in August 2016 might have increased the proportion with no debt or towards more cash holding for households. Furthermore Figure 2 suggests a higher proportion of the HCMC population would like to have more indirect forms of payments through mobile and internet based systems. Finally, in Figure 3 in the August 2016 Financial Inclusion survey, we have explored the main challenges for female labor force participation and consequently financial inclusion, with "…family responsibility…" being the clear leader in all age groups. All three figures indicate we probably need to explore technology based solutions to unlock the potential empowerment of the financially excluded groups.

As one leading indicator of financial inclusion, we often look for active or at least monthly participation rate in banking services (BNKUSG1). We are, in particular, interested in what factors affect the decision to participate in the formal banking industry in a binary Probit model in Table 1 Panel A. The factors we identify are demographic (for example, age, gender, duration of stay in HCMC, marital status, college education, parent's education, undergraduate major of education), socio-economic (for example, unemployed or not, experience, monthly income, whether gainfully employed as owner or manager, work close to home, district their home is in), economic power and awareness (for example, respondents' status as household decision maker, awareness of economic issues, following media coverage, individual levels of uncertainty measured by the Inter-Quartile Range, if respondent controls spending, if respondents control financials, if respondents are keen to get more financial education, if respondents acquired money management skills from relatives like parents), future expectations (for example, expectations of income increases, changes in exchange rate with US dollars, expected in future investment in non-governmental securities) and if respondents have access or interest in other financial services (having formal savings, whether there are any borrowing, wants more innovative financial services, would accept net based or mobile payments next year, would accept indirect payments, perceived barriers to financial services including cost and distance, pay check is send to online or direct deposit account, whether there are government transfers).

Our finding suggests duration of stay has a negative effect on the probability on active bank usage. This might suggest that older residents probably find it more challenging to use banks actively. It is unsurprising that at least a college education is strongly significant in explaining bank usage frequency. While monthly income is strongly predictive of bank usage, experience is only marginally significant (at 10% margin of error). What seems to be strongly predictive in the usage of bank is knowledge of economic issues and decision making power at home. Those respondents who are at least jointly responsible as decision makers in the household and those who were aware of the economic issues facing the household vis-à-vis the country affected the bank usage positively. Intention of future investment prospects in non-governmental securities were significant at a 10% margin of error in explaining the active usage of formal bank accounts.

From the want of additional financial services context, bank usage could be explained widely. Those respondents who would like to see more financial innovation like different mobile and internet based payment systems are also likely to use banks more actively. From business facilitation side, the respondents who are willing to accept payments though the internet banking and those who are willing to get indirect payments seems to positively affect bank usage and hence inclusion into financial services. As has been reported by previous literature on the World Bank Financial Inclusion Index (Demirgüç-Kunt and Klapper, 2012, Demirgüç-Kunt et. al., 2015) and others, distance plays a major negative role in deciding the active usage of banks.

Discussion of financial inclusion cannot be complete without a proper analysis of prospective transfers from government as well as methods of payment for salaries and employment. Though marginally significant, government transfer directly through the internet seems to reduce active bank usage. This in some sense is counterintuitive. However, getting pay check directly transferred through banks strongly explains frequent usage of banks.

There is certain variation in the location of residence and bank usage. While there seems to be very little and marginally negative impact on working close to home. However, staying in District 3 and District Quận Thủ Đức (District Code 19) increases the probability of bank usage and Huyện Củ Chi (District Code 22) decreases the probability compared to District 1 on active usage of banks. We additionally find that if the respondents are travelling longer distances to work there is a marginal negative impact on bank usage.

Although, overall 73% of the sample are active bank users. Using the binary probit regression, the overall model explains close to 37% of the variation in the bank usage although quite a few variables seems not to be statistically significant. Demographic variables like age, gender, marital status, parent's education and major of education seems not to be important in bank usage. Socio economic variables like unemployment status or working as a manager or owner also surprisingly does not play a role. Expectations of future income and exchange rate and whether media is followed is also insignificant. Other financial services variables like having formal savings account, having no borrowing, levels uncertainty in responding to inflation questions, intention of acquiring financial knowledge, cost of using financial services or ability to control spending or learning money management skills from parents do not significantly have impact on active usage of banks.

While using bank accounts gives a general indication of the increasing level of financial inclusion of individuals having regular formal savings, some borrowing and some insurance accounts provides the incremental path towards better financial inclusion. In a binary Probit regression model we identify the factors responsible for affecting regular savings plan highlighted in Table 1 Panel B. We find overall nearly 30% of the variation in the propensity of having a regular savings account can be explained by its binary probit regression on demographic, socio-economic, expectations and financial covariates.

We observe that most of the demographic and socioeconomic variables including age, gender, educational qualifications, major of study do not play an important role in the presence of other variables in determining whether the respondent has a regular savings account. What is surprising is that factors that are externally related like following media on economic issues have a significant positive impact on the probability of having a regular savings account. Furthermore, while expectations of future income growth has a strong positive impact while expectations on appreciation of the Vietnamese Dong has a strong negative impact on having the probability of regular savings plan. Having a plan for investing in non-governmental securities also seem to have a strong and statistically significant impact on the probability of regular savings plan. Respondents with a keenness to acquire financial knowledge or awareness and who have learnt money management skills from family members also seem to increase the propensity of a regular savings plan.

For business and financial services perspective, individuals who are willing to accept indirect payments through internet and mobile payment systems also increase the propensity of having a regular savings plan. People who control their spending and have good financial records seem also to have better likelihood of having a regular savings plan. Finally, as we saw before distance to access financial services seem to play a significant and negative role in having a regular savings plan. While working near residence is not a significant contributory factor but compared to district 1 some districts of residence like District codes like 7 and 15 increases the probability while district code 6 decreases the probability of having regular savings account.

Access to borrowing has been a critical element for Financial Inclusion. In particular, when we look at micro-entrepreneurs availability of loans from a formal banking system it signals they are potentially included in the system in two ways. First, they have access to external credit as bank credits signals that

they are credit worthy. Second, they also grow a chance of establishing their credit records and hence access to future credit. We evaluate the impact on various demographic, socio-economic, expectations based and financial services related variables.

We use a binary Probit model to estimate the factors that would have an impact on whether respondents borrowed for business (Table 1 Panel C). The overall model has approximately 25% of the respondents have borrowed for business related costs.

We observe that gender and duration of stay in HCMC has a strong negative and statistically significant impact on the probability of having access to borrowing for business related expenses. Age and college education do not play a role, although monthly income has a positive statistically significant impact. However, being a professional who is either an owner or a manager also reduces the probability of borrowing for business and is statistically significant. Although working near residence does not seem to increase the probability of borrowing for business, resident in Huyện Bình Chánh (District Code 20) seem to have a positive impact on the possibility of borrowing compared to District 1. However, discipline of major being science or unemployed status did not have a statistically significant impact on the probability of having borrowing for business. However, if the distance from home to work is high it is more likely respondents will borrow for business.

We find that lack of financial inclusion due to higher distance for financial services do not seem to play an important role as has been stated by previous work (Brown, et. al., 2016). Finally, learning money management skills from relatives seem to be helping in the probability of getting access to borrowing for business.

However, status in the household as a decision maker, being aware of economic issues or following media does not impact the probability of borrowing for business. The proportion of investment in non-governmental securities does have a statistically significant and positive impact on the probability on borrowing for business. Other factors related to future expectations including increments of income, appreciation of income tax or levels of uncertainty about future inflation had no statistical impact on the probability of borrowing. We also further establish that variables including intent on having more awareness of financial services, new innovations like mobile payments, possibility to accept mobile and internet based payments or direct deposit paycheck have insignificant impact on borrowing probability. Probability of borrowing is also not impacted by lack of financial inclusion due to perceived

In a similar vein the factors highlighting the impact on having some insurance plan is captured in the binary probit regression in Table 1 Panel D. While insurance needs are quite individual specific having access and knowledge of insurance seems to be one of the foundations of financial inclusion and possibly retirement.

The demographic factors that increase propensity to have some insurance includes as expected age but only marginally. But being female is not statistically significant. However, socio-economically experience in work place reduces the likelihood of having some insurance, which seems counterintuitive. Being a decision maker in a household have a positive and not a significant impact on insurance while keenness on acquiring more financial knowledge is strongly affecting the propensity of having some insurance in terms of statistical significance. Furthermore, while receiving government transfer to deposits increases the propensity for insurance, not have financial services accessible due to distance also increase the demand for some insurance as does government transfers. Finally, although working near residence is not significant but certain districts like district codes 2,3,4,7,11,13,14,16 and 19 have lower insurance compared with district code 1.

The probability of usage of banks at least once a month gives a notional value of intent on financial inclusion. There are three main issues that need to be addressed. First, several factors might contribute to such usage, some of which might not be indicative of financial inclusion. If for example, banks are used for directly depositing salary but are withdrawn at the earliest date and not used till the next pay date a month

later. Second, binary Probit model that is used estimate the probability of bank usage makes fairly strong assumption of the structure of dependence of bank usage on a multitudes of factors including demographic, socio-economic and financial factors. In particular, it suffers from the dependent variable in this regression is binary and hence it relies on a limited dependent variable model. Regression framework on continuous or near continuous variables are more interpretable than binary variables.

To address the issues mentioned and additionally to accommodate for the intensity of financial inclusion not measured by simply the usage of bank accounts we investigate the proportion of active bank accounts over all bank accounts (ABNKACP1). The additional benefit of using the proportion of bank accounts is that it also indirectly deals with solving an agency problem (a Moral Hazard Problem) in the financial sector where there could be several bank accounts opened however the level of activity is not adequate.

After accommodating for the fixed effects of the periods and location when the waves were collected (May and August, 2016), our finding suggests that age and college education seems to have a significant impact on increasing the proportion of active bank accounts (Table 3 Panel A). There are some variation in the location of stay like in Huyện Hóc Môn (District Code 23) decreases the proportion of active bank accounts compared to District 1. However, in contrast, gender, marital status, duration of stay in HCMC or they work near home have no impact on the proportion of active bank accounts.

Socio-economically, unemployment decreases the proportion of active bank accounts. However, individuals who are professional managers and owners of companies do not seem to have any impact on the proportion of active bank accounts. On the other hand, experience and monthly income does not have an impact on proportion of active bank accounts. This is in contrast to the findings for the bank usage where both income and experience played some role in higher bank usage.

From the side of empowerment, individuals who are at least a joint decision maker in the household seem to have some impact on the proportion of active bank accounts though only at a marginal level allowing for 10% margin of error. Unlike in the case of bank usage, being aware of economic issues doesn't significantly change the proportion of active bank accounts. Furthermore, expectations of future income growth, exchange rate movements, following media, levels of uncertainty about inflation, interest in learning about financial awareness, taught money management by family members or proportion of investment next year does not seem to have an impact on the proportion of bank accounts that are active.

On the financial services front, individuals who are open to payments through the internet significantly increases the proportion of active accounts. Furthermore, individuals who get their paychecks directly deposited in banks understandably have a higher proportion of active bank accounts. So does the ones who have better control on their spending though only marginally at 10% level. Having said that, other factors like expectations of innovation in financial services, accepting indirect payments, who identified cost or distance as barriers to financial services, controlled finances or have government transfers through the net had no impact on active bank accounts. Overall, the model can explain around 16.3% of the variation in the proportion of active bank accounts.

Budget share of aggregated households of necessary items form one of the cornerstones of economic development for countries, we explore such a variable for financial inclusion among individuals (BDGNSCT1). Lower the budget share is higher the level of wealth is for the country. Furthermore, as this is a continuous variable we can run standard regression diagnostics besides the results of such a regression. The regression of budget share that is collected in the August 2016 on the existing demographic, socio-economic, expectations and future financial services perceptions data are shown in the Table 3 Panel C.

We find that budget-share of necessary items are affected by gender, duration and marital status. However while duration of stay at HCMC and being married decreases your budget share of necessary items although being female tends to increase it, explaining why women tend to be less financial included

and hence worse off. We further found that education, experience and employment status does not seem to play a role in changing budget share of necessary items in the presence of other covariates. Having said that, we find monthly income is statistically and economically significant to reduce the budget share.

However, it is surprising that being a joint decision maker in the household and being aware of economic issues and following media reports do not significantly impact the budget share. We further found that having higher expectations of salary is not statistically significant but higher appreciation of expected exchange rate does have a positive marginal impact.

Having access to financial services, through owning a home, seems to have strong impact in reducing the amount of financial exclusion. The other aspect that increased the likelihood of financial inclusion with a lower budget share of necessary items was for those respondents who would like having more innovation in financial services. Having a paycheck deposited in the bank also had significant reduction in the proportion of necessary items in the budget share. The effects of other financial services variables like accepting mobile or net based indirect payments, having better control of spending and having financial records does not seem to have an impact on budget share in the presence of other covariates.

We have explored and investigated several measures of financial inclusion including proportion of active bank accounts, bank usage, borrowing for business, having a regular savings plan and finally having some insurance. We have also explored the proportion of budget share on necessary items as a possible alternate measure of financial inclusion. However, as we have only one wave on the data on budget share this is of future interest. We will first explore how we can combine the measures of financial inclusion as a single comprehensive measure to accommodate for different facets of financial inclusion including active use of financial services including banks, borrowing for business, having a regular savings plan and finally some insurance for times of need.

We use the first *principal component* to represent such a factor and call it the *Financial Inclusion Score*. In order to test whether this factor is indeed correlated with the different components we look at the correlation table in Table 2. We find the financial inclusion score has significant and positive correlation with all the component factors. Hence we run a panel regression on this financial inclusion factor (Table 3 Panel B) on all the demographic, socio-economic, expectations and financial control variables to identify what are the pivotal factors that impact overall financial inclusion. Overall the model explains 41% of the variation of the financial inclusion score after accommodating for period and location fixed effects.

Duration of stay in HCMC is a significant demographic factor that negatively influences financial inclusion. Educational achievement like a college degree has a significant and positive impact on financial inclusion. As expected, monthly income has a strong positive impact on financial inclusion. Furthermore, professionals who are owners or managers are also more financially included.

Being at least a joint decision maker of the household increases the level of financial inclusion and so does awareness of economic conditions facing the household and the world at large. Following media on economics related issues also improves the level of financial inclusion. All these factors suggests being engaged in an informed economic decision making process is definitely a very important aspect of financial inclusion.

Respondents with higher future expectations of income seem to be better engaged in financial inclusion. The ones who invest a higher fraction of their investable wealth in non-governmental securities are also more included financially. Knowledge seems to be the key, hence keenness to acquire more financial awareness also facilitates financial inclusion. Controlling ones spending and budgeting well seems to all encourage financial inclusion. It is also found that money management learned from family members seems to encourage financial inclusion. This really corroborates the evidence that Financial Awareness and the expectation if more innovation in financial services does indeed have a positive impact on the composite measure of financial inclusion.

From the perspective of financial services, the ones who prefer more innovation in the financial services including mobile and internet based systems seem to be better integrated in the process of financial inclusion. Having credit cards does seem to increase financial inclusion possibly through creation of a credit history. Having a direct deposit of paycheck also significantly improves financial inclusion. From a producer side who are willing to accept innovative payments including through the internet are more financially included. In Figure 4 Panel A, we look at the distribution of the top and bottom 20% population in terms of the proposed financial inclusion score, while in Figure 4 Panel B we see the numbers of the top and bottom 20% in each district surveyed to get a unique insight into the financially excluded by location.

Conclusion:

The main objectives of this project were fourfold. A good measure of financial awareness like inflation expectations in the population is challenging, particularly if that includes the financially underserved, unbanked and unconnected sectors of the population. The biggest impediment is the identification of the above mentioned group of the financially excluded. As a first aim of the project we developed questionnaires to survey consumer and investor perception, financial literacy and awareness. This multiplatform delivery and gathering of information increased sample size and enabled us to approach the less accessible sectors of the society. These aggregated results helped us gauge the perceptions and sentiments of the market on various aspects to create effective benchmarks on financial inclusion.

Second, the data collected in HCMC, Vietnam enable us to establish and compare with benchmarks of inflation expectations that we are creating for Singapore using instruments like the SInDex survey (Ghosh and Yu, 2012, 2013). These measures will also enable us in each country to help “anchor” expectations of inflation and other macroeconomic variables (Bernanke, 2007, Ghosh and Yu, 2012). This is greatly impactful in the US where measures of the aggregate and leading indicators of the economy are available from different government and private sectors sources. The biggest challenge comes in because the more uncertain the inflation outlook is for the local economy, the more cash would be held by market participants which will in turn possibly reduce financial inclusion.

Third, as the famous management adage often (mis-)attributed to the twentieth century statistician Edwards Denning, “...you can’t manage what you can’t measure…” These measurements will help us setup tools to better manage outcomes from the policy perspectives to alleviate conditions and in particular awareness of the financially disadvantaged sectors of the society, so help them back to the financial mainstream of these potentially fast growing economies in ASEAN like Vietnam. We created a composite measure of financial inclusion and identified the bottom 20% of this measure to have insufficient financial inclusion.

Finally, going forward we want to assess the need for products like inflation-linked instruments that could alleviate the conditions of fixed income and low wage earners to help grow a nest egg. Vietnam since the *doi moi* economic reforms in 1986, have reduced but still significant fluctuations in inflation rate and bouts of negative real rates (Bhattacharya, 2013, p. 9, Figure 3). Currently, there is a risk and opportunity in Vietnam. The risk is an aging population…with 2019 projections of one in ten above 60 years is projected by the Vietnam Census to become one in six in 2029. In 2012, about 39% of the aged workforce is still working (Vietnamnet, 2012). So financial health will be as much part of the problem as medical health identified as “successful aging” by Rowe and Kahn (1998). We also plan to delve into the feasibility of such an innovative products like inflation protected bonds to hedge against inflation risk and erosion of purchasing power. In particular, this can be done in conjunction with schemes like the Direct Benefit Transfer Scheme through the Unique Identification Authority of India (UIDAI/ADHAAR card) in India to alleviate issues with unbanked population.

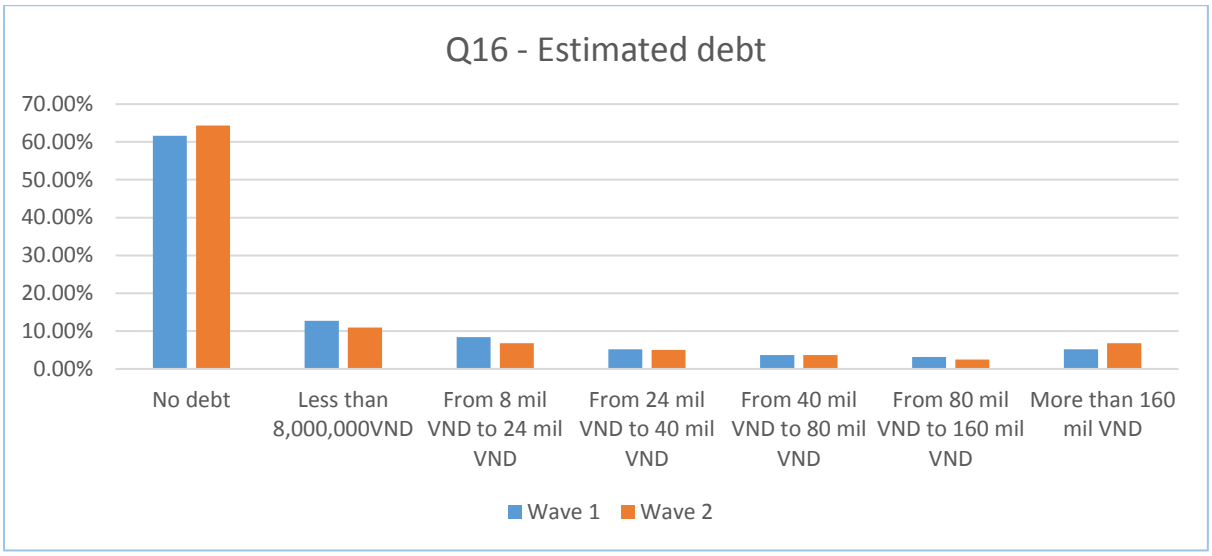

Figure 1: Levels of Debt between the Waves in May 2016 and August 2016

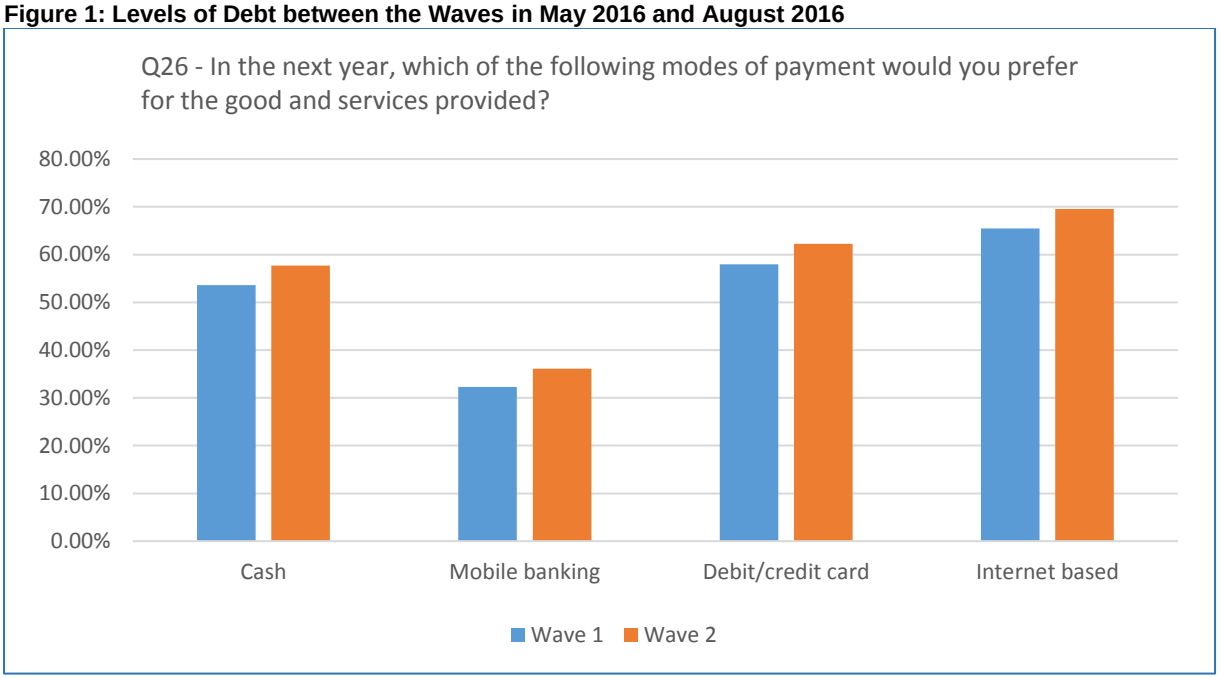

Figure 2: Modes of Payment for One-Year-Ahead between waves in May 2016 and August 2016

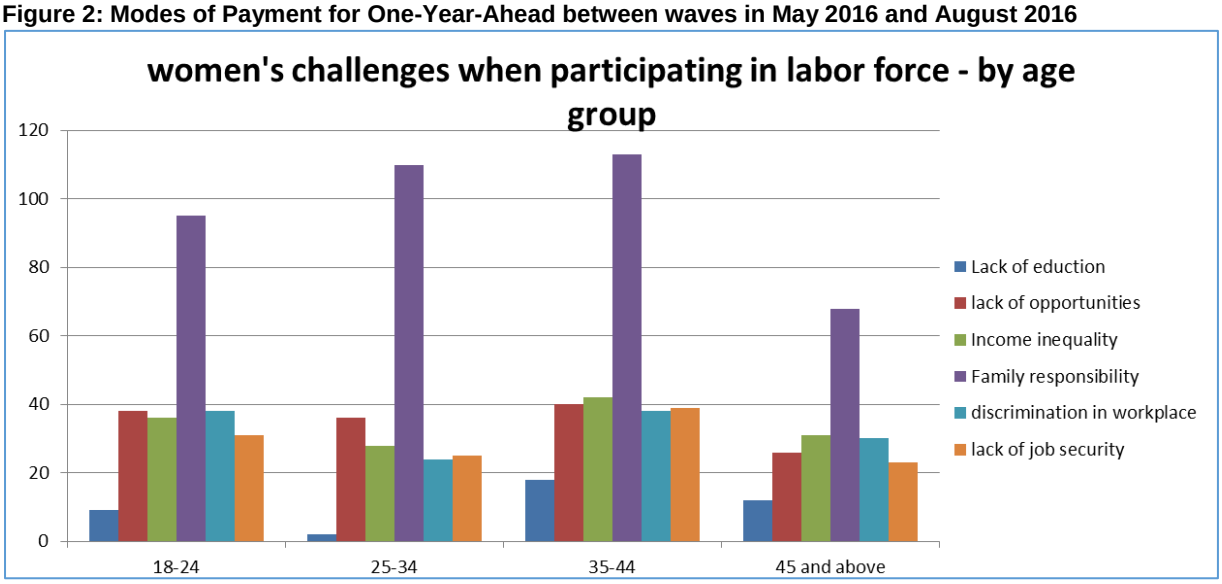

Figure 3: Main Challenges for participation in labor force for Women by Age Groups in Aug 2016

Dep. Variable	Bank Usage	Regular Savings	Borrowed for Business	Some Insurance
Controls for Binary Probit Model	**Panel A**	**Panel B**	**Panel C**	**Panel D**
Age	-0.012	0.013	-0.009	**0.020** *
Female	-0.020	0.135	**-0.307** **	0.265
Duration in HCMC	**-0.078** ***	0.029	**-0.048** *	-0.045
College Education	**0.654** ***	0.161	-0.243	-0.132
Experience	**0.138** *	-0.051	0.095	**-0.175** **
Monthly Income	**0.042** ***	-0.002	**0.024** **	0.017
Decision Maker	**0.686** **	0.077	0.009	0.449
Aware of Economic Issues	**0.616** **	0.155	0.134	0.162
Follow media coverage	-0.112	**0.647** ***	0.464	0.351
Expected Increment next year	0.862	**2.535** ***	1.127	0.036
Expect Exchange rate (USD)	1.851	**-3.394** **	1.936	0.129
Invested in next 12 months	**0.972** *	**1.699** ***	**1.435** ***	1.011
Individual inflation uncertainty	-0.021	-0.028	-0.011	0.024
Keen on financial awareness	0.126	**0.295** **	0.185	**0.449** ***
Keen on financial innovation	**0.688** ***	-0.058	-0.056	0.030
Accept net banking next year	**0.727** ***	-0.004	0.232	-0.042
Accept indirect payment	**0.293** **	**-0.271** **	-0.035	0.039
Control Spending	0.039	**1.000** ***	-0.084	-0.035
Keep accounts of spending	0.011	**0.619** ***	-0.051	-0.053
Financial Services barrier distance	**-0.352** *	**0.410** **	-0.273	**0.534** **
Receive Government Transfers	**-0.244** *	-0.020	0.192	**0.254** *
Owners or Managers	-0.265	-0.013	**-0.380** **	0.060
Relatives taught managing money	0.073	**0.235** *	**0.239** **	0.072
Paycheck to bank account	**0.937** ***	0.174	-0.097	0.127
Work near home	**-0.254** *	0.211	0.102	0.280
Home to Work Distance	**-0.038** *	-0.013	**0.038** *	0.041
***Signif at 1%, **Signif at 5%, *Signif at 10%				
Sample Size	760	759	760	760
Proportion	**0.7329**	**0.701**	**0.2553**	**0.8697**
Location fixed effect	Yes	Yes	Yes	Yes
R-Squared	0.37	0.29	0.15	0.18

Table 1: Binary Probit Regression for Panel A: Bank Usage, Panel B: Regular Savings; Panel C: Borrowing for Business; Panel D: Having Some Insurance

Correlation

Probability	Financial Inclusion	Active Bank Acct	Bank Usage	Regular Savings	Borrow for Business	Some Insurance
Financial Inclusion	1.000000					

Active Bank Acct	**0.500167**	1.000000				
	0.0000	-----				
Bank Usage	**0.666508**	0.138457	1.000000			
	0.0000	0.0000	-----			
Regular Savings	**0.568646**	0.138304	0.114419	1.000000		
	0.0000	0.0000	0.0007	-----		
Borrow for Business	**0.267716**	-0.041771	0.074251	0.012735	1.000000	
	0.0000	0.2160	0.0277	0.7062	-----	
Some Insurance	**0.484188**	0.004632	0.127363	0.072949	0.105057	1.000000
	0.0000	0.8909	0.0002	0.0306	0.0018	-----

Table 2: Correlation Table between different measures of financial inclusion

Dep. Variable	Active Bank Account Proportion	Financial Inclusion Score	Budget Proportion of Neccessities
Controls for Panel Model	Panel A	Panel B	Panel C
Age	**0.005** ***	0.008	0.000
Female	0.014	0.042	**0.057** ***
Duration in HCMC	-0.001	**-0.037** **	**-0.013** ***
Married	0.005	-0.018	**-0.074** ***
College Education	**0.088** **	**0.312** **	-0.020
Unemployed	**-0.144** *	-0.232	-0.051
Experience	-0.017	-0.002	0.019
Monthly Income	0.003	**0.017** ***	**-0.004** ***
Decision Maker	**0.093** *	**0.478** ***	0.047
Aware of Economic Issues	0.066	**0.374** **	-0.051
Follow media coverage	-0.024	**0.377** **	0.034
Expected Increment next year	0.019	**1.029** **	0.127
Expect Exchange rate (USD)	-0.217	-0.367	**0.410** *
Invested in next 12 months	-0.013	**0.963** ***	0.008
Keen on financial awareness	-0.032	**0.202** **	-0.010
Keen on financial innovation	0.011	**0.202** ***	**-0.043** *
Accept net banking next year	**0.062** **	**0.329** ***	0.039
Accept indirect payment	0.023	0.029	-0.005
Control Spending	**0.053** *	**0.400** ***	0.012
Keep accounts of spending	-0.045	0.128	0.025
Financial Services barrier distance	-0.020	0.017	0.023
Owners or Managers	-0.047	**-0.251** **	-0.005
Relatives taught managing money	0.019	**0.144** **	0.006
Number of Credit Cards		**0.125** ***	
Owner Occupied Accomo.			**-0.058** **
Paycheck to bank account	**0.090** ***	**0.459** ***	**-0.074** ***
Work near home	0.012	0.031	0.008
Home to Work Distance	0.003	-0.010	0.000
***Signif at 1%, **Signif at 5%, *Signif at 10%			
Sample Size	760	759	380
Fixed Effect	Period, Location	Period, Location	None
R-Squared	0.16	0.41	0.17

Table 3: Panel Regression with Fixed Effects for Panel A: Active Bank Accounts; Panel B: Financial Inclusion Score, Panel C: Portion of Budget for Necessities

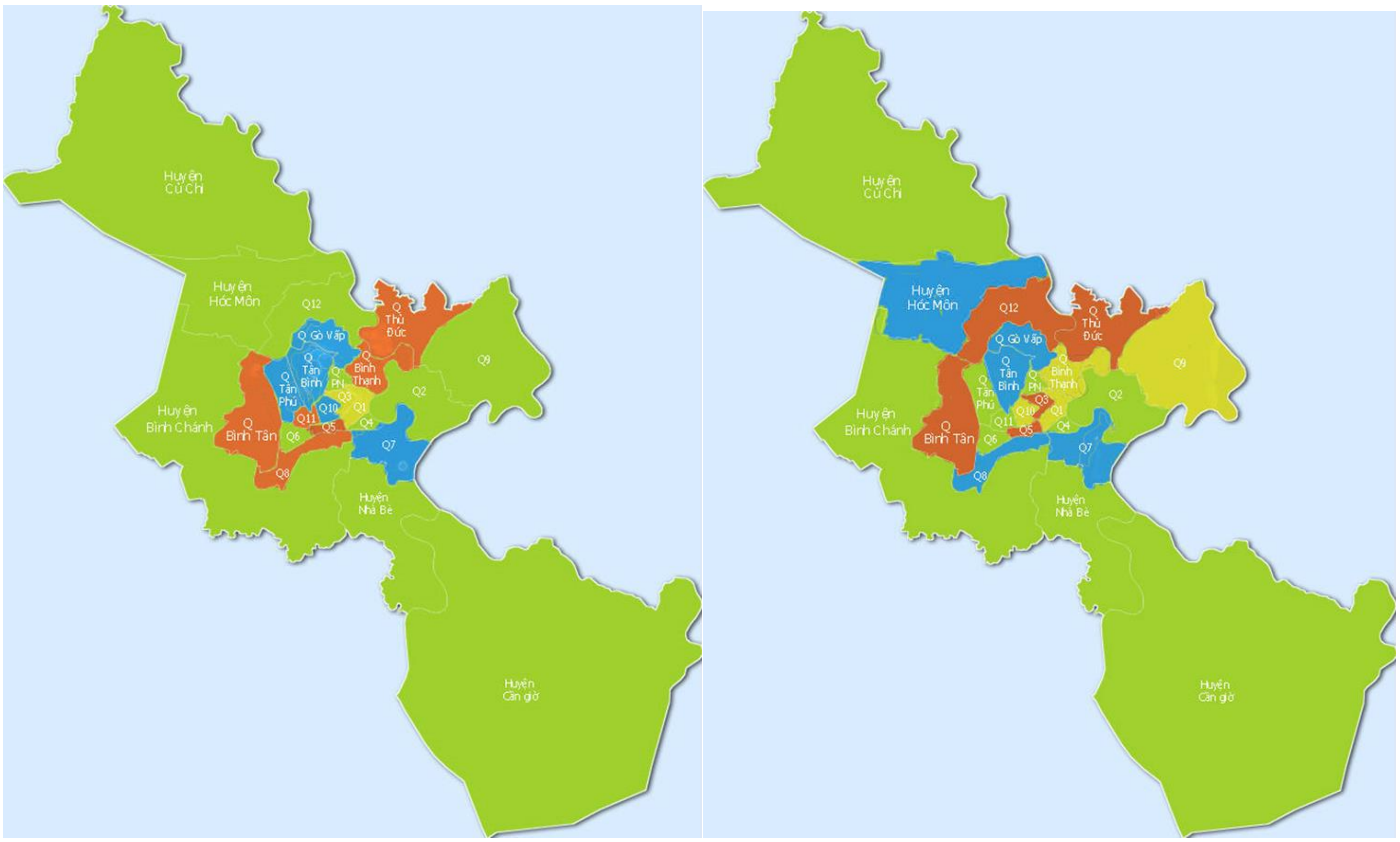

Figure 4 Panel A: Map of Ho Chi Minh City in May and August 2016 Financial Inclusion Scores. Red ones are majority are in below 20 percentiles, blue are majority in top 20 percentile, Yellow are equal mix of top and bottom 20 percentile in scores.

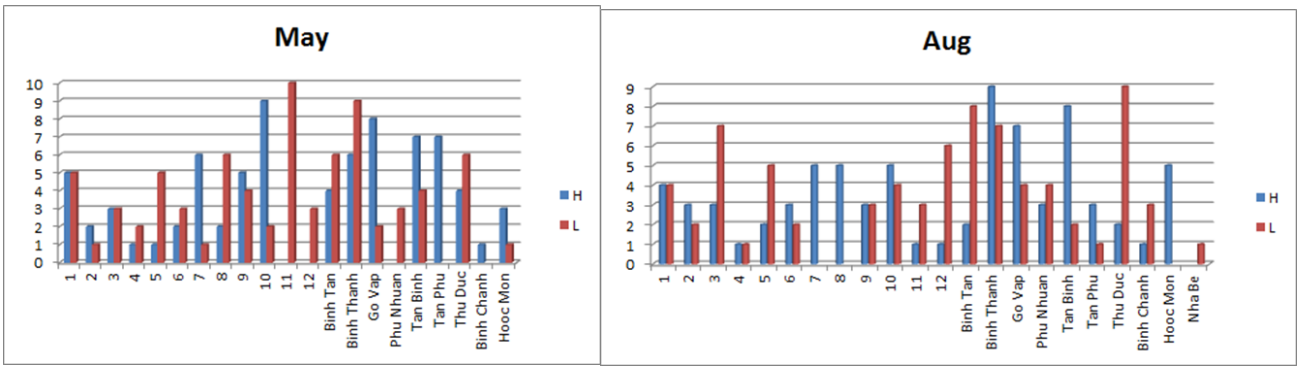

Figure 4 Panel B: The coverage of districts in Ho Chi Min City with blue are the numbers in top 20 percentile and red in bottom 20 percentile in each district in May and August Surveys.

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