# Financial Reform, Inclusion and Mobile Money in Nigeria

*By* Lisa D. Cook and Yanyan Yang*

Draft: November 2016

*This paper examines the effect of financial literacy on the usage of financial products in Nigeria. In contrast to the previous studies on financial literacy and development using country-level data, by applying comprehensive household survey data over three years, we investigate the determinants of financial development in Nigeria at an individual level. We find that the marginal effects of financial literacy and some demographic characteristics such as employment status and education change significantly pre- and post-banking crisis. Another interesting discovery is that coefficients of financial literacy vary across regions.*
*JEL: D14*
*Keywords: Financial Inclusion, Financial Literacy, Nigeria*

Understanding the critical link between finance and economic growth has been a central question for economists over the last two decades (Levine (1997), and Rajan and Zingales (1998)). As a logical extension of this line of inquiry, economists have increasingly become interested in mechanisms and financial inclusion, or increased access to and use of formal financial services (Guiso, Sapienza and Zingales (2004),Honohan (2008) Aker and Mbiti (2010) Cook (2011) Karlan et al. (2012) Sahay et al. (2015), and Demirguc-Kunt et al. (2015)).

Economists and economic policymakers alike have embraced these questions with greater urgency following recent economic and financial crises and have sought to understand not only the factors augmenting participation in the fi-

* Cook: Michigan State University,lisacook@msu.edu. Yang: Claremont Graduate University, yanyan.yang@cgu.edu.

nancial system but also factors deterring use of financial services. Two rounds of high-profile bank closures in Nigeria in 2010 and 2013 provide a natural experiment that can be exploited with household survey data from that period to examine both sets of factors.

Rather than policies targeting the financially excluded, we find that, all else equal, on average, policies broadly targeting the safety and soundness of the banking system were as or more effective than targeted policies. Specifically, we find that over time individuals in states with more financial instability  high-profile bank closures  were less likely to use formal financial products. Similarly, individuals in states with no high-profile bank closures were more likely to use more financial products over time. Consistent with the broader literature on financial inclusion and from countries with relatively developed banking systems, across years, we also find that access to and use of financial products increases with income, employment, education, having a bank account, financial literacy, and proximity to a post office. Over time, it also increases with ownership of a mobile phone, self-employment status, and interest in financial matters, and declines with urbanization status.

These findings are particularly interesting and potentially important, given financial market imperfections and poor banking supervision in Nigeria, Africas largest economy, and in other developing countries and given the adoption by the UN of financial inclusion as a Sustainable Development Goal in 2014.

## I. Bank Crisis and Failure in Nigeria

Financial market imperfections are widespread throughout many developing countries. Many households  30 percent in Nigeria  report owning their own business, which suggests that many households are operating as small firms[1]. Incomplete markets circumscribe decision-making by households and firms in such countries. While reform of the Nigerian banking system in 2005 brought about

[1]EFInA (2008

the creation and supervision of banks to better serve small firms and households 133 new microbanks under and new regulatory framework a major criticism of the otherwise successful reform was that it did not address corporate governance, a longstanding problem in the Nigerian financial system (see Cook [2011]). To avert a systemic crisis that started in 2010, the Central Bank of Nigeria (CBN) instituted a number of public and extraordinary measures related to corporate governance to restore confidence in the banking system, including jailing a number of high-profile bankers and replacing the management of eight banks. That year, 103 microfinance banks were closed by the CBN (see Figure 1).

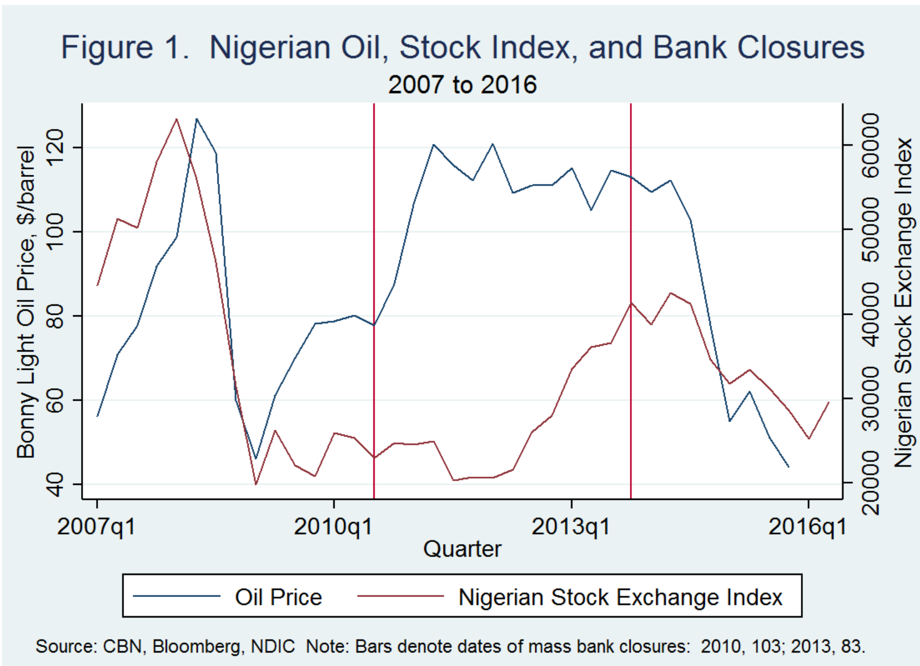


Figure 1. Caption for figure below.

*Note:* Figure notes without optional leadin.

*Sentix Data:* Figure notes with optional leadin (Source, in this case).

Again in 2013, 83 additional microfinance banks failed. These events provide a unique window on consumer behavior following financial crisis. Mass bank failure is not unusual in Nigeria (it had happened a decade earlier). The availability of detailed household data on use of financial products before and after these crises is new. Examination of these data is the contribution of this paper.

## II. Cross-Sectional Evidence from Households over Time

### A. Data

To examine the relation between financial inclusion and confidence in the financial system, we use household-level data on personal finance for 36 states and the Federal Capital Territory (Abuja) in Nigeria as collected by Enhancing Financial Innovation  Access (EFInA) in 2008, 2010, and 2014. Surveys were sent to and completed by representative samples of over 20,000 households in each survey year[2]. There are 65,723 observations total and variables related to financial engagement, as well as demographic data, that are common to all three surveys. The data set comprises three repeated cross sections,and households are not identical over time. Nonetheless, we believe that the large samples in each year remain representative. In estimation, this feature of the data set gives us greater confidence in our findings, because our results are consistent across three different samples of respondents.

A number of studies, such as Biener, Eling and Schmit (2014), show that increases in financial literacy improve financial decision-making. Following these studies, we construct indices (counts) of financial literacy and financial use from the common financial variables in the surveys. The financial-literacy (-knowledge) index reflects the ability of individuals to obtain, understand, and evaluate information required to make financial decisions and includes knowledge of the following products or terms from the survey data: check, savings or current account, credit card, loan, mortgage, pension, stock (share), stock exchange, collateral, interest, insurance, ATM, and microfinance. The financial-use index captures actual

[2]After the 2008 survey, EFInA replaced unweighted sampling with population-weighted sampling by state. This change in methodology provides more representative samples in later years and more valid estimates in regression analysis. The 2008 sample will bias our estimated coefficients downwards, since greater financial knowledge and use are more likely in the most populous states in Nigeria.

use by individuals and includes the following financial products: ATM/debit and credit cards; current, savings, and fixed-deposit accounts; mortgage; loans from family friends, employer, microfinance or community banks, or money lender; overdraft; car, life, household, property, accident, travel, medical, or livestock insurance; and endowment or investment saving plan or education plan offered by an insurance company.

Following Lusardi and Mitchell (2014), we collect data from the surveys on demographic characteristics including gender, marital status, education, employment, income, and location in order to identify the effects of financial instability.

### *B. Results*

Table 2 summarizes the results from estimation. The financial channel, including financial literacy and banking account ownership, is significantly correlated with use of financial products. This finding is consistent with previous literature. The share of bank account ownership increases from 22 percent to 26 percent from 2008 to 2010, but slightly decreases to 24 percent in 2014. The usage of mobile phone increases from 39 percent in 2008, to 53 percent in 2010, and to 57 percent in 2014.

One potential caveat concerning the results above is that the improvement of financial literacy is slower but more important than physical access, such as mobile ownership and access to a post office to financial services. Usage of financial products and access to financial knowledge are less. One potential explanation for this result is that the large negative impact on the Nigerian economy due to the decline in the price of oil.

Figure 2 plots the predicted number of financial products from the regression model. The mean predicted values of financial use based on employment status suggest that the more consumers are employed, the more they use financial products. This finding is similar to those in the finance literature. We are most interested in the self-employed, or entrepreneurs, because of their potential impact

Table 1—Fama Estimation results : 1-Month during Euro Crisis

| | 2008 | 2010 | 2014 |
|---|---|---|---|
| Financial Literacy | 0.0228*** | 0.0169*** | 0.0158*** |
| | (11.02) | (11.77) | (10.73) |
| Interest in Finance | -0.0229 | 0.0227* | 0.0304* |
| | (-1.51) | (2.25) | (2.41) |
| Banked | 1.613*** | 1.652*** | 1.566*** |
| | (76.34) | (118.73) | (105.45) |
| Mobile Ownership | -0.00402 | 0.00225 | 0.0289* |
| | (-0.24) | (0.21) | (2.55) |
| Employed Full Time | 0.167*** | 0.137*** | 0.263*** |
| | (3.82) | (6.51) | (11.63) |
| Self-employed | 0.0696 | 0.0280 | 0.0333* |
| | (1.75) | (1.65) | (2.05) |
| Access to Post Office | 0.0277 | -0.000391 | 0.0392** |
| | (1.56) | (-0.03) | (3.13) |
| Urban | 0.146*** | 0.0631*** | -0.00474 |
| | (8.13) | (5.55) | (-0.39) |
| Akwa Ibom | 0.492*** | 0.138** | -0.0719 |
| | (8.82) | (3.08) | (-1.60) |
| Benue | 0.210*** | 0.106** | -0.00280 |
| | (3.99) | (2.58) | (-0.07) |
| Gombe | 0.0610 | 0.0432 | 0.131** |
| | (1.13) | (0.93) | (2.83) |
| Jigawa | 0.223*** | 0.204*** | 0.391*** |
| | (4.28) | (4.91) | (9.65) |
| Kogi | 0.113* | 0.204*** | 0.0160 |
| | (2.07) | (4.67) | (0.36) |
| Lagos | -0.172** | 0.0266 | -0.0116 |
| | (-2.60) | (0.66) | (-0.27) |
| FCT Abuja | 0.311*** | 0.0388 | 0.239*** |
| | (5.45) | (0.84) | (5.07) |
| $N$ | 14105 | 14935 | 14349 |
| *Adjusted* $R^2$ | 0.627 | 0.761 | 0.731 |

$t$ statistics in parentheses

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

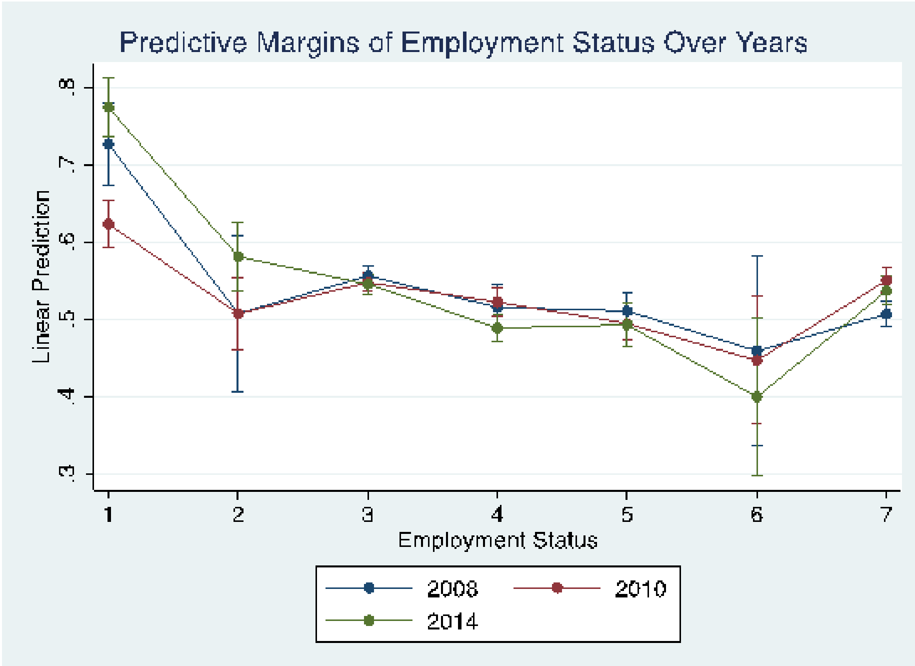


Figure 2. Predictive Margins of Employment Status Over Years

*Note:* Notes:1=Full Time 2=Part Time 3=Self-employed 4=Unemployed 5=Student 6=Retired 7=Housewife.

on employment and economic growth.

Our conjecture is that the effects would be still comparable, but with larger marginal effects of financial literacy, education, and income levels over time. Financial reform may have increased the appeal of financial services in Nigeria and increased knowledge of its products, but it did not increase access to financial services. In fact, the rapid expansion of microfinance banks and an increase in their closures may have been destabilizing to potential users of the formal financial system. By observing significant state effects, we obtain intuitive results, which can help explain the involuntarily financial exclusion. In states which experienced a substantial number of bank closures in 2010 and 2013, such as Akwa Ibom, Benue, and Kogi there is declining use of financial products over time. In states which experienced no bank closures in 2010 and 2013, such as Gombe and Jigawa, there is increasing and significant use of financial products. Lagos State and the FCT are anomalies. Lagos had the lions share of bank closures (and banks) prior to the first household survey, and the most high-profile imprisonment of a bank president happened in Lagos. That its residents do not use financial products as much as others appears reasonable. The FCT had three bank closures in 2010 and four in 2013. Yet, consumers use financial products more than they did in 2008. Since the FCT is the seat of government, we conjecture that households believe that there is an implicit (or functioning explicit) government guarantee of these banks. For example, consumers may have greater confidence in a payout of deposit insurance at these banks if any one closes, given that the supervisory authority is close by. In such a case, bank closures will not have the deterrent effect on consumers use of banking products in the FCT as in other states.

Nonetheless, on average, people in Nigeria have been increasingly exposed to financial knowledge and have more access to financial services than before. Yet, the use of financial services does not improve in the face of financial instability. Our finding is consistent with that of Sahay et al. (2015)who show there may be diminishing returns to financial inclusion in the form of excess credit that leads to financial instability.

## III. Conclusion

Building on the extensive literature on the relation between finance and economic growth, our main results explore within-country variation of financial access and use among households in Nigeria to examine further its determinants. We find that traditional determinants, such as education, employment status, and financial literacy are significantly correlated with use of formal financial products. We also find that the more households are exposed to bank instability, the less they use financial products. Diminished take-up of financial products may have unintended consequences for households, entrepreneurs, and economic growth. This is an important time to understand these linkages, as financial inclusion and

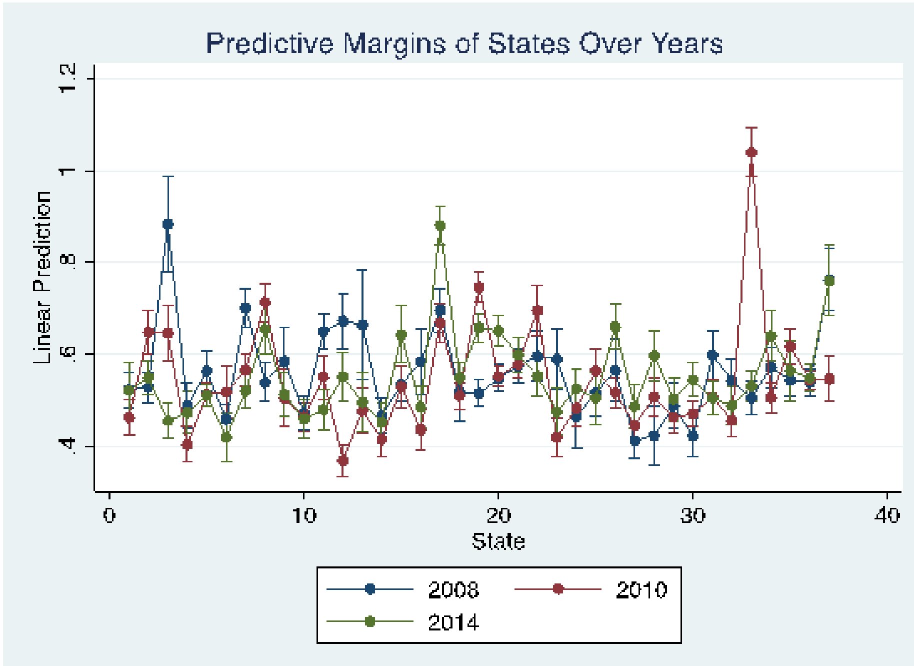


FIGURE 3. PREDICTIVE MARGINS OF STATES OVER YEARS

*Note:* abia 1 adamawa 2 akwa ibom 3 anambra 4 bauchi 5 bayelsa 6 benue 7 borno 8 cross river 9 delta 10 ebonyi 11 edo 12 ekiti 13 enugu 14 gombe 15 imo 16 jigawa 17 kaduna 18 kano 19 katsina 20 kebbi 21 kogi 22 kwara 23 lagos 24 nassarawa 25 niger 26 ogun 27 ondo 28 osun 29 oyo 30 plateau 31 rivers 32 sokoto 33 taraba 34 yobe 35 zamfara 36 abuja (fct) 37

economic growth are separately UN Sustainable Development Goals that many developing countries are trying to attain. To be sure, governments cannot think of financial inclusion as simply for the poor and unconnected to macroeconomic management. Financial inclusion efforts have to work for the financially excluded and the financial system simultaneously.

We must be cautious about the limitations and interpretation of our results. Our results are suggestive, based on the timing and location of bank closures. There may be other factors not captured by the survey data, including trust, social capital, and historical events. These would need to be examined further as this research continues.

## REFERENCES

**Aker, Jenny C., and Isaac M. Mbiti.** 2010. "Mobile Phones and Economic Development in Africa." *Journal of Economic Perspectives*, 24(3): 207–32.

**Biener, Christian, Martin Eling, and Joan T. Schmit.** 2014. "Regulation in Microinsurance Markets: Principles, Practice, and Directions for Future Development." *World Development*, 58(C): 21–40.

**Cook, Lisa D.** 2011. "Were the Nigerian Banking Reforms of 2005 A Success ... And for the Poor?" National Bureau of Economic Research Working Paper 16890.

**Demirguc-Kunt, Asli, Leora Klapper, Dorothe Singer, and Peter Van Oudheusden.** 2015. "The Global Findex Database 2014 : measuring financial inclusion around the world." The World Bank Policy Research Working Paper Series 7255.

**Guiso, Luigi, Paola Sapienza, and Luigi Zingales.** 2004. "The Role of Social Capital in Financial Development." *American Economic Review*, 94(3): 526–556.

**Honohan, Patrick.** 2008. "Cross-country variation in household access to financial services." *Journal of Banking & Finance*, 32(11): 2493–2500.

**Karlan, Dean, Robert Darko Osei, Isaac Osei-Akoto, and Christopher Udry.** 2012. "Agricultural Decisions after Relaxing Credit and Risk Constraints." National Bureau of Economic Research Working Paper 18463.

**Levine, Ross.** 1997. "Financial Development and Economic Growth: Views and Agenda." *Journal of Economic Literature*, 35(2): 688–726.

**Lusardi, Annamaria, and Olivia S. Mitchell.** 2014. "The Economic Importance of Financial Literacy: Theory and Evidence." *Journal of Economic Literature*, 52(1): 5–44.

**Rajan, Raghuram G, and Luigi Zingales.** 1998. "Financial Dependence and Growth." *American Economic Review*, 88(3): 559–86.

**Sahay, Ratna, Martin Cihak, Papa M N'Diaye, Adolfo Barajas, Srobona Mitra, Annette J Kyobe, Yen N Mooi, and Reza Yousefi.** 2015. "Financial Inclusion; Can it Meet Multiple Macroeconomic Goals?" International Monetary Fund IMF Staff Discussion Notes 15/17.

## Appendix

Table A1—Summery of Statistics

| **Year** | **Income** | **Female** | **Employed** | Marital | **Education** | **House** | **Interests** | **Banked** |
|---|---|---|---|---|---|---|---|---|
| 2008 | 4.32 | 0.44 | 4.09 | 2.68 | 3.55 | 0.76 | 0.77 | 0.22 |
| | 1.96 | 0.50 | 1.35 | 2.47 | 2.06 | 0.43 | 0.42 | 0.41 |
| 2010 | 4.04 | 0.50 | 4.12 | 2.81 | 3.65 | 0.70 | 0.76 | 0.26 |
| | 2.45 | 0.50 | 1.69 | 2.55 | 2.03 | 0.46 | 0.43 | 0.44 |
| 2014 | 4.34 | 0.52 | 3.84 | 2.74 | 3.44 | 1.86 | 0.82 | 0.24 |
| | 2.71 | 0.50 | 1.71 | 2.48 | 1.99 | 10.47 | 0.38 | 0.43 |
| Total | 4.23 | 0.49 | 4.02 | 2.74 | 3.55 | 1.10 | 0.78 | 0.24 |
| | 2.40 | 0.50 | 1.60 | 2.50 | 2.03 | 6.06 | 0.41 | 0.43 |

*Source:* EFinA Survey Data

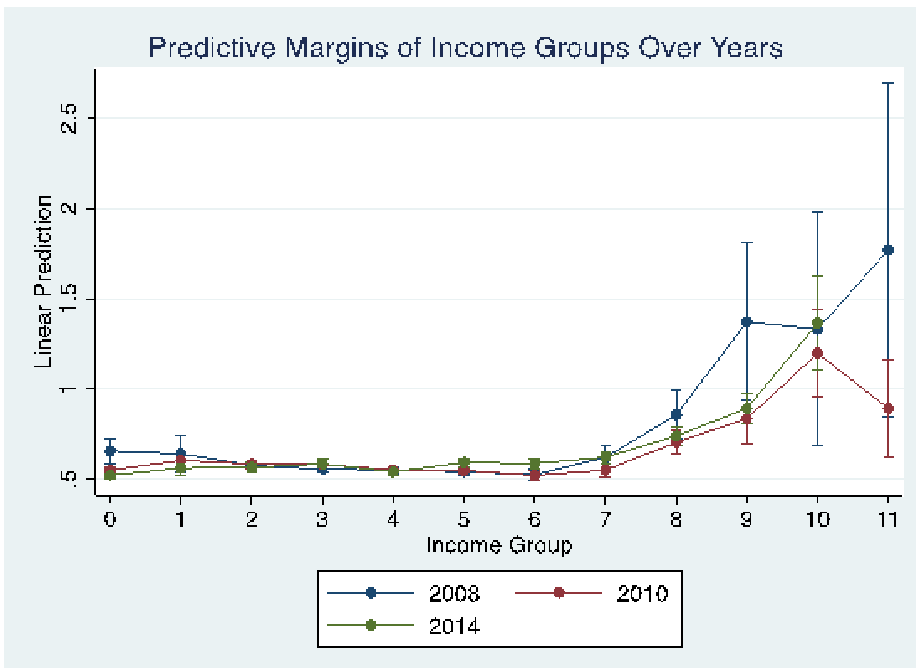


Figure A1. Predictive Margins of Income Groups Over Years

*Note:* Notes:0 No income 1 250 or less 2 251  1000 3 1 001  3000 4 3 001  6 000 5 6 001  13 000 6 13 001 20 000 7 20 001  40 000 8 40 001  70 000 9 70 001  100 000 10 100 001  200 000 11 200 000 +

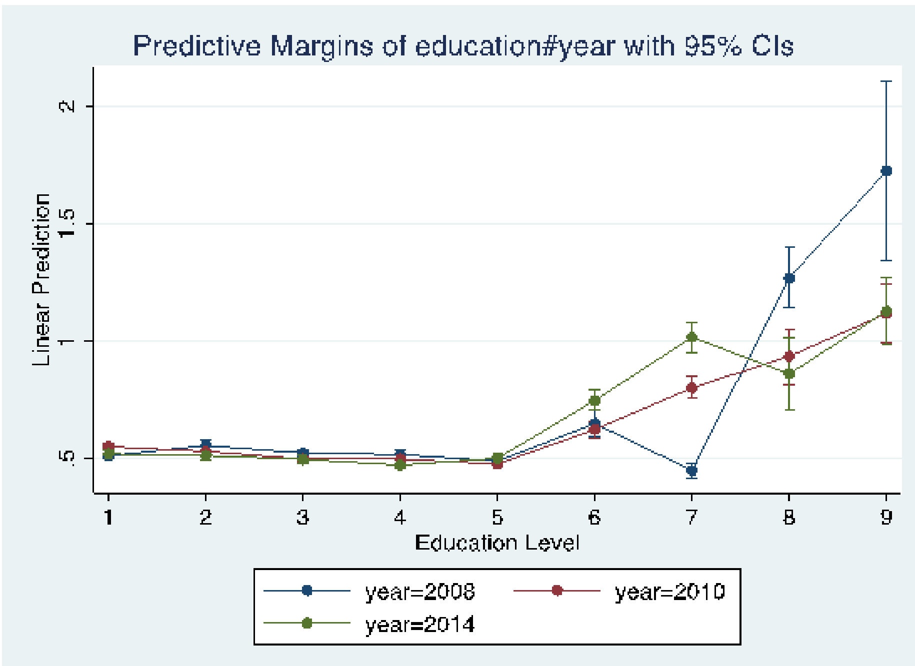


FIGURE A2. PREDICTIVE MARGINS OF EDUCATION OVER YEARS

*Note:* Notes:No education 1 Primary incomplete 2 Primary complete 3 Secondary incomplete 4 Secondary complete 5 University/Polytechnic OND 6 University/Polytechnic HND 7 Post-university incomplete 8 Post-university complete 9