Financial inclusion and business cycles

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Abstract

The current debate on financial inclusion pays little attention to whether financial inclusion is pro-cyclical with the fluctuating business cycle. This article investigates the relationship between financial inclusion and the business cycle. The findings reveal that the level of savings and the number of active formal accounts are pro-cyclical with fluctuations in the business cycle. Also, the level of savings by adults particularly for women and poor people decreases during recessionary periods while the number of active formal accounts decline for the adult population especially for women during recessionary periods. The findings also reveal that not all indicators of financial inclusion are pro-cyclical with fluctuating business cycles. The implication of the findings is that poor people and women will exit the formal financial sector during a recession, as banks become unwilling to lend money to poor individuals and households during bad times, and this will lead to financial exclusion and vice versa. Policy makers seeking to increase the level of financial inclusion should focus on the timing of financial inclusion policies along the business cycle as the findings suggest that it might be more difficult to achieve financial inclusion objectives during recessions.

Keywords: Financial inclusion, pro-cyclicality, business cycle, financial crisis, access to finance, economic cycles, GDP, formal account ownership, borrowing, savings

JEL classification: D14, D18, G21, G28.

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1. Introduction

Financial inclusion is defined as having access to, and the use of, formal financial services. Financial inclusion makes it possible for individuals and households to save, invest in education and to launch businesses (Zins and Weill, 2016; Ozili, 2018). Financial inclusion can create opportunities for individuals and households to save money for the future, and such savings can serve as a more stable deposit base for banks in troubled times (Zins and Weill, 2016). One of the main objectives of international development organisations like the World Bank is to substantially increase the level of global financial inclusion by encouraging national governments to develop economic policies and programs that can help in reducing the number of unbanked adults across countries (Demirguc-Kunt, et al, 2018). This suggest that economic resources would be used to achieve financial inclusion outcomes. If economic resources are used to achieve financial inclusion outcomes, the availability of such economic resources will depend on the state of the business cycle, which opens up a new debate about the potential pro-cyclical effect that financial inclusion may have on the state of the business cycle.

In the current debate on pro-cyclicality, not much attention is being paid to the pro-cyclicality created by financial inclusion. Although there is some agreement that financial inclusion will bring more people into the formal financial sector by ensuring that they own a bank account at the very least while promising them great benefits (Allen et al, 2012; Ozili, 2018), but the reality is that the larger the number of people in the formal financial sector, the larger the deposit base of the banking sector, the higher the risk and the deposit liability of banks and the higher the risk of financial loss to each individual in the formal financial sector during financial crises or recessions. In fact, the frustration, uncertainty and hardship that severe economic slowdowns bring to the population can make individuals exit the formal financial sector, preferring to manage their money themselves using informal means. Also, the fear of bank failure is often high during economic slowdowns, and members of the population who are concerned about banks failing may withdraw their money from the formal financial sector. These behaviors will lead to a decline in the overall level of financial inclusion since a large number of accounts may become inactive, savers may withdraw their savings from banks, coupled with banks' refusal to lend money to individuals and households due to high credit risk concerns during economic downturns, and this can reinforce the current state of the business cycle. Given this close relationship between financial inclusion and business

cycle pro-cyclicality, it is important for policy makers and academics to understand the pro-cyclical effects of the business cycle on the level of financial inclusion. This article is precisely an investigation into financial inclusion and its dependence on the business cycle. This paper investigates whether the level of financial inclusion is higher (lower) during economic booms (slowdowns). A few recent studies investigate financial inclusion using 2011 data from the World Bank's Global Findex database. For instance, Fungáčová and Weill (2015) find that higher income, better education, being a man, and being older are associated with greater financial inclusion in China while the limited use of formal credit is a problem in China. Demirgüc-Kunt and Klapper (2013) analyze three indicators of financial inclusion: ownership of a bank account, savings on a bank account, and use of bank credit. They show that differences in income among countries and among individuals within countries influence the level of financial inclusion. Allen et al (2012) identify the determinants of financial inclusion for 123 countries, and find that individuals' income and education have positive effects for financial inclusion. Allen et al (2014) show that population density and innovation in financial services improves the level of financial inclusion in African countries. To date, no work has focused on financial inclusion and its pro-cyclical effects with the business cycle. The findings reveal that financial inclusion is pro-cyclical with business cycle fluctuations. More specifically, the level of savings and the number of active formal accounts are significantly associated with fluctuating business cycles while savings by adults particularly women and the poor decreases during recessionary periods.

This study makes three contributions to the literature. One, the study contributes to the literature that examine the factors that reinforce the state of the business cycle (Christiano et al, 2016; Bikker and Metzemakers, 2005). This literature identifies the factors that makes a crisis more severe than it should, so that policy makers can put in measures to control such events. In this study, I show that a decrease in financial inclusion programs during a recession can reinforce the current state of the business cycle and make a recession more severe. Secondly, the study contributes to the financial inclusion literature (Demirgüç-Kunt and Klapper, 2013; Fungáčová and Weill, 2015; Ozili, 2018). The findings show that some, not all, indicators of financial inclusion are pro-cyclical with fluctuating business cycle conditions. Thirdly, this paper contributes to the literature on regulating financial inclusion (see Claessens and Rojas-Suarez, 2016; Chen and Divanbeigi, Raian, 2019, Ozili, 2020a&c). Finally, the study contributes to the policy literature that seek to understand the impact of inclusive development on economic growth, by suggesting ways in which financial

inclusion can spur growth. For instance, I argue that, if financial inclusion is pro-cyclical, financial authorities and regulators can enhance the level of financial inclusion during a downturn in order to get the economy back on the path of growth. The findings from this paper can also help financial institutions to learn and analyze how to deal with their financial inclusion projects according to the business cycle phase.

The remainder of the paper is organized as follows. Section 1 presents the introduction. Section 2 presents the literature review. Section 3 develops the hypothesis. Section 4 report the data and methodology. Section 5 presents the empirical results. Section 6 concludes.

2. Related Literature

2.1. Financial inclusion determinants

Few studies identify some determinants of financial inclusion such as: the increase in the use of mobile money (Donovan, 2012), greater use of digital finance products and platforms (Ozili, 2018; Ozili, 2020a&b), greater stability in the financial system (Morgan and Pontines, 2014), mobile phone penetration in rural areas (Andrianaivo and Kpodar, 2012), improved financial literacy (Grohmann et al, 2018), the presence of microfinance banks (Brown et al, 2016), the use of social cash transfers (Bold et al, 2012), and many more. Other studies examine how social and economic policies help to increase the level of financial inclusion to increase the level of economic activities. Mehrotra and Yetman (2014), using a theoretical model, show that autonomous central banks are likely to use optimal monetary policies to increase the level of financial inclusion. Anarfo et al (2019) investigate the link between monetary policy and financial inclusion in sub-Saharan Africa, and find that a bi-causal relationship exists between monetary policy and financial inclusion. The findings suggest that monetary policy affects financial inclusion, and financial inclusion is also influenced by monetary policy, for instance, for the government to increase the level of financial inclusion, the government will reduce their monetary policy rates. Ozili (2020b) investigate the association between social inclusion and financial inclusion, and find a positive and significant correlation between social inclusion and financial inclusion for Asian countries, Middle Eastern countries and African countries while the correlation between social inclusion and financial inclusion is negative for European countries. So far, existing studies have not examined the direct

link between financial inclusion and business cycles to determine whether certain states of the business cycle reinforce higher levels of financial inclusion or exclusion.

2.2. Business cycles

There is a large literature on business cycles. Some studies develop models to estimate changes in the business cycle such as the impulse-response analysis, Markov-switching model, a Markov-switching vector-equilibrium-correction model, the Beckerian model etc (see., Krolzig, 2013; Krolzig and Toro, 2001; Artis and Zhang, 1997; Greenwood and Hercowitz, 1991; Gilchrist and Williams, 2000). Other studies investigate the impact of fiscal, monetary and trade policies on business cycles. Lee and Sung (2007) investigate the responsiveness of fiscal policy to business cycles and the effectiveness of fiscal policy in reducing economic fluctuations. They find that the government's current expenditures, subsidies and transfers move counter-cyclically with the business cycle, whereas taxes and capital expenditures move pro-cyclically with the business cycle. Bhattarai et al (2016) investigate the effect of policy regimes and policy shift on U.S. business cycles in the pre-Volcker or post-Volcker period. They find that unanticipated increases in interest rates increased inflation and output while unanticipated increases in lump-sum taxes decreased inflation and output. They also observed that unanticipated shifts in monetary and fiscal policies did not substantial explain the variation of inflation and output at any horizon in either of the pre-Volcker or post-Volcker periods. Artis and Zhang (1997) show that a successful fixed exchange rate regime can impose policy discipline that will likely lead to conformity in the business cycles of the participating countries in the Economic and Monetary Union in Europe, in contrast, Inklaar and De Haan (2001) argue that there was little evidence in support of the view that increased exchange rate stability is related to more synchronised business cycles in Europe.

Artis et al (2008) find that countries characterized by large bilateral trade and financial flows tend to have more correlated business cycles. Also, countries with divergent fiscal policies and highly regulated labour markets are subject to idiosyncratic cycles. Koellinger and Roy Thurik (2012) investigate the interplay between the entrepreneurship and the business cycle in a cross-country panel of 22 OECD countries for the period 1972 to 2007. They find that the entrepreneurial cycle is positively affected by the national unemployment cycle. Sometimes, entrepreneurs are agents of change and economic development who anticipate and may even trigger economic booms (Baumol, 2002). On the other hand, many business owners tend to perform only marginal activities

during economic downturns (Kirchhoff, 1994), and may resort to entrepreneurship to escape hardship only if no regular jobs are available (Koellinger and Roy Thurik, 2012). Bar-Isaac and Shapiro (2013) investigate the quality of the credit ratings of credit rating agencies (CRA) during business cycles. They find that the ratings quality of CRAs is countercyclical with the business cycle, for instance, a CRA is more likely to issue less-accurate ratings when fee-income is high and when default probabilities on securities are low during booms and vice versa.

2.3. Financial inclusion and economic growth

Some studies examine the link between financial inclusion and economic growth, but these studies did not consider the effect of financial inclusion during upturns and downturns in the business cycle. For instance, Andrianaivo and Kpodar (2012), in their study, measure financial inclusion by the number of deposits or loans per head, and investigate whether financial inclusion and mobile phone development promotes economic growth. They find that mobile phone development contributes significantly to economic growth in African countries while only a part of the positive effect of mobile phone penetration on economic growth comes from greater financial inclusion. Kim et al (2018) examine the relationship between financial inclusion and economic growth for 55 countries in the Organization of Islamic Cooperation (OIC) countries. They find that financial inclusion had a positive effect on economic growth. Sharma (2016) assess the relationship between financial inclusion and economic development for the Indian economy during the 2004 to 2013 period. The findings reveal that there is a positive association between economic growth and various dimensions of financial inclusion, particularly, banking penetration, and the availability and use of banking services and bank deposits. Kpodar and Andrianaivo (2011) examine the impact of information and communication technologies (ICT), especially mobile phone penetration, on economic growth for African countries from 1988 to 2007. Financial inclusion was measured as the number of deposits or loans per head. They find that ICT, including mobile phone development, contribute significantly to economic growth in African countries. Hariharan and Marktanner (2012) estimate a simple Solow growth model to investigate the impact of financial inclusion on economic growth. They find that a 10 percent increase in financial inclusion has the potential to increase income per worker on average by 1.34 percent, thus improving economic growth. Lenka and Sharma (2017) examine whether financial inclusion leads to economic growth in India, and find that financial inclusion has a positive impact on economic growth both in the

long run and short run. In addition, financial liberalization policy contributed to the economic growth in India. Mohan (2006) show that increased financial inclusion and greater financial deepening in the financial sector led to economic growth in India. Ozili (2020a) showed that, although financial inclusion has a positive effect for economic growth for many countries, the rate of progress in achieving financial inclusion goals differ substantially across countries.

3. Hypothesis development

During economic boom, the level of local economic activities increases, and may give rise to higher employment. Banks will be willing to lend money to ordinary people and poor households who are employed and are considered to be less risky. This would increase access to finance for poor individuals and households who need basic financial services, and will increase the level of financial inclusion (or decrease financial exclusion). The excluded population will also enjoy some benefits during economic booms because the friends, family and relatives they rely on will have enough money for themselves, and will be able to send money to meet the needs of their dependents that are excluded from the formal financial sector.

On the other hand, prior studies have shown that the level of economic activity decreases during periods of economic slowdown (Brunetti and Torricelli, 2009), and economic slowdowns may lead to unemployment, hardship and frustration (Hoynes et al, 2012; Pissarides, 2013). During economic slowdown, the level of local economic activities decreases, and may give rise to unemployment coupled with bank's unwillingness to lend to individuals and households during bad times. Banks will reduce lending during economic slowdowns due to high credit risk considerations (Ozili and Outa, 2017, Ozili, 2018), and banks may stop offering some basic financial services to poor individuals and households such as credit products and overdraft facilities if the cost of offering these financial services exceed the benefits especially during economic downturns. The lack of access to finance to poor individuals and households during economic downturns may force poor individuals and households to exit the formal financial sector, which will reduce the level of financial inclusion or increase financial exclusion. Also, the excluded population may be affected during economic downturns because the friends, family and relatives they rely on may not have enough money for themselves, and may not be able to send money to meet the needs of their dependents that are excluded from the formal financial sector.

When banks become reluctant to lend during bad times, individuals will be forced to look away from banks and turn to family, friends and relatives for financial assistance. Many individuals may withdraw their savings from formal financial institutions, preferring to hold their money themselves due to fear that banks might fail during severe economic downturn or during a recession. The unwillingness of banks to lend to individuals and households during bad times, and the inability of friends and relatives to provide significant financial assistance to their dependents during economic downturns, can make dependents exit the formal financial sector in search for better alternatives in the informal financial sector.[1] Therefore, the prediction is that economic downturns will increase financial exclusion or reduce financial inclusion while economic booms will increase financial inclusion or reduce financial exclusion, and this is the inclusion-procyclicality hypothesis. The relationship is shown by the positive relationship between the financial inclusion variable and the gross domestic product (GDP) growth rate variable.

H1: the level of financial inclusion increases (decreases) during economic booms (downturns).

4. Data and Methodology

4.1. Data

Country data was collected from the G-20 financial inclusion database of the World Bank. Only countries that had full data for all the financial inclusion variables were included in the final sample. A final sample of 22 countries was chosen as these were the only countries that had full data for the financial inclusion indicators and the business cycle indicators. Data for real gross domestic product growth rate was collected from the World Economic Forum archived in the World Bank database. The countries are Afghanistan, Bangladesh, Cambodia, Cameroon, Dominica, Ghana, Haiti, Kenya, Malawi, Mali, Mauritania, Nigeria, Pakistan, Senegal, Sierra Leone, Sudan, Tanzania, Togo, Uganda, Yemen Republic, Zambia and Zimbabwe. The sample

[1] Moreover, the money borrowed from family and friends by poor individuals and households may not be used to revive local economic activities rather it may be used for non-emergency, personal and consumption expenditures during bad times, and also, the savings withdrawn from banks during bad times may be hoarded and kept out of the formal financial sector for a long time if savers feel the recession may be prolonged. This would further worsen the state of the business cycle.

period includes 2011, 2014 and 2017, because data on financial inclusion was available only for these three years in the database. See Table 1 for source of data and variable description.

(insert table 1 here)

4.2. Methodology

A univariate model is used to estimate the effect of business cycle fluctuation on the level of financial inclusion. The estimation technique used to estimate the model is the fixed effect regression estimation. The baseline model to determine the effect of the business cycle on the level of financial inclusion is given below.

$$FINi,t \ = \ c + \Delta GDPi,t + \ e \ldots\ldots\ldots\ldots (1)$$

Where,

FIN = a vector of financial inclusion indicators (AAC15, AACF15, AACP15, ACC15, ACCF15, ACCP15, BOR15, BORF15, BORP15, SAV15, SAVF15 and SAVP15)

ΔGDP = real domestic product growth rate in each country

t = year

i = country

The model above shows that the level of financial inclusion in a country is a function of the state of the business cycle of the country. The dependent variable 'FIN' is a vector of several indicators of financial inclusion: AAC15, AACF15, AACP15, ACC15, ACCF15, ACCP15, BOR15, BORF15, BORP15, SAV15, SAVF15, SAVP15 (see Table 1 for variable description).

The real gross domestic product growth rate (ΔGDP) variable is introduced into the model as the explanatory variable representing the state of the business cycle. Prior studies show that the level of economic activity decreases during periods of economic slowdown (see. Inklaar and De Haan, 2001; Fidrmuc, and Korhonen, 2006; Gilchrist and Zakrajšek, 2012; Artis et al, 2004), and economic slowdowns may lead to unemployment, hardship and frustration (Hoynes et al, 2012; Pissarides, 2013). It is expected that the frustration, uncertainty and hardship that severe economic slowdowns bring to the population can make individuals exit the formal financial sector, preferring to manage their money themselves using informal means rather than keeping their money in formal

financial institutions such as banks, thereby leading to a decline in the level of financial inclusion (or high financial exclusion). Also, the fear that banks will fail tend to be higher during economic slowdowns, and members of the population who are concerned about banks failing will immediately withdraw their money from the formal financial sector; these behaviors will lead to a decline in the overall level of financial inclusion, therefore, a positive relationship between the level of financial inclusion and the business cycle is expected.

Additional tests were performed to determine the effect of economic booms and recessions on the level of financial inclusion. To capture upturns and downturns in the business cycle, two binary variables were introduced into the model: the BOOM and REC binary variables. The REC variable takes the value '1' if the ΔGDP variable is negative and '0' otherwise, which captures recessionary periods in the ΔGDP data series. The 'BOOM' variable is a binary variable that takes the value '1' if the ΔGDP variable is above the median ΔGDP and '0' otherwise, which captures periods of economic expansions or economic booms. The REC and BOOM coefficients are then interacted with the ΔGDP variable as shown below, to determine the effect economic boom and recession on the level of financial inclusion. The estimation technique used to estimate model (2) is the fixed effect regression estimation.

$$FINi,t = c + \Delta GDPi,t + BOOMi,t + RECi,t + BOOM * \Delta GDPi,t + REi,tC * \Delta GDPi,t + e \dots\dots (2)$$

In the next section, the regression and correlation results are reported for each analysis in section 4. The regression estimation shows the linear causation between the level of financial inclusion and the business cycle while the correlation estimation shows the linear association between financial inclusion and the business cycle.

Table 1: Indicators of Financial Inclusion (the dependent variables)		
FIN vector	Indicator Name	Long definition
ACC15	Account (% age 15+)	percentage of respondents, age 15+, who report having an account (by themselves or together with someone else) at a bank or another type of financial institution or personally using a mobile money service in the past 12 months.
ACCF15	Account, female (% age 15+)	percentage of female respondents, age 15+, who report having an account (by themselves or together with someone else) at a bank or another type of financial institution or personally using a mobile money service in the past 12 months.
ACCP15	Account, income, poorest 40% (% age 15+)	percentage of respondents in the poorest 40% of households, age 15+, who report having an account (by themselves or together with someone else) at a bank or another type of financial institution or personally using a mobile money service in the past 12 months.
AAC15	Active account (% age 15+)	percentage of respondents, age 15+, who report either making a deposit or a withdrawal using their account (by themselves or together with someone else) at a bank or another type of financial institution or personally using a mobile money service in the past 12 months.
AACF15	Active account, female (% age 15+)	percentage of female respondents, age 15+, who report either making a deposit or a withdrawal using their account (by themselves or together with someone else) at a bank or another type of financial institution or personally using a mobile money service in the past 12 months.
AACP15	Active account, income, poorest 40% (% age 15+)	percentage of respondents in the poorest 40% of households, age 15+, who report either making a deposit or a withdrawal using their account (by themselves or together with someone else) at a bank or another type of financial institution or personally using a mobile money service in the past 12 months.
BOR15	Borrowed from a financial institution or used a credit card (% age 15+)	percentage of respondents, age 15+, who report borrowing any money from a bank or another type of financial institution in the past 12 months.
BORP15	Borrowed from a financial institution or used a credit card, income, poorest 40% (% age 15+)	percentage of respondents in the poorest 40% of households, age 15+, who report borrowing any money from a bank or another type of financial institution in the past 12 months.
BORF15	Borrowed from a financial institution or used a credit card, female (% age 15+)	percentage of female respondents, age 15+, who report borrowing any money from a bank or another type of financial institution in the past 12 months.
SAV15	Saved at a financial institution (% age 15+)	percentage of respondents, age 15+, who report saving or setting aside any money by using an account at a bank or another type of financial institution in the past 12 months.
SAVF15	Saved at a financial institution, female (% age 15+)	percentage of female respondents, age 15+, who report saving or setting aside any money by using an account at a bank or another type of financial institution in the past 12 months.
SAVP15	Saved at a financial institution, income, poorest 40% (% age 15+)	percentage of respondents in the poorest 40% of households, age 15+, who report saving or setting aside any money by using an account at a bank or another type of financial institution in the past 12 months.
Source of 'long definition' is from the G-20 financial inclusion database of the World Bank		

5. Empirical Results

5.1. Account ownership

5.1.1. Effect of business cycle fluctuation on account ownership

Here, the effect of business cycle fluctuation on account ownership is analyzed. The regression results are reported in Table 2. In the active account ownership category, the ΔGDP coefficient is positive and significant in the AAC15 and AACP15 models. The positive and significant relationship suggest that the number of active account ownership (a measure of the level of financial inclusion) increases during periods of economic boom while the number of active account ownership falls during bad times such as recessions, and this supports the inclusion-procyclicality hypothesis. This result is consistent with Ozili (2018) who show that the level of economic activities falls during recessions due to low demand as individuals and households are unwilling to spend money and are less likely to open new bank accounts (Ozili, 2018). The result is also consistent with Kim et al (2018) who find a positive relationship between financial inclusion and economic growth. The ΔGDP coefficient is not significant in the AACF15 model. In the ordinary account ownership category (where account owners may be active or inactive), the ΔGDP coefficient is insignificant in the ACC15, ACCF15 and ACCP15 models.

Table 2: Effect of business cycle on account ownership						
	Active account ownership			Account ownership		
	(1)	(2)	(3)	(4)	(5)	(6)
	AAC15	AACF15	AACP15	ACC15	ACCF15	ACCP15
	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
C	24.835*** (10.79)	20.522*** (8.756)	15.591*** (6.28)	27.527*** (14.71)	23.709*** (12.52)	19.388*** (9.38)
ΔGDP	0.833* (1.72)	0.774 (1.56)	0.915* (1.75)	0.253 (0.69)	0.165 (0.45)	0.083 (0.20)
Fixed effect?	Yes	Yes	Yes	Yes	Yes	Yes
R^2	95.45	95.12	93.34	89.29	88.78	83.39
Adjusted R^2	89.62	88.89	84.33	82.69	81.87	73.20
f-stat	16.40	15.26	10.36	13.54	12.85	7.83
p(f-stat)	0.000	0.000	0.000	0.000	0.000	0.000
Observation	42	42	42	64	64	61

Country and year effects are included. ACC15 = Account-holders (% age 15+); ACCF15 = Account-holders, female (% age 15+); ACCP15 = Account-holders, income, poorest 40% (% age 15+); AAC15 = Active account-holders (% age 15+); AACF15 = Active account-holders, female (% age 15+); AACP15 =Active account-holders, income, poorest 40% (% age 15+); ΔGDP = gross domestic product growth rate: the higher the better. T-statistics are reported in parenthesis. ***, **, * represent significance level of 1%, 5% and 10% respectively.

5.1.2. Correlation: business cycle and account ownership

Here, the correlation between the business cycle and account ownership is analyzed. The correlation result is reported in Table 3. In the active account ownership category, the AAC15, AACF15 and AACP15 variables have a low correlation with ΔGDP at -0.0004, -0.025 and 0.039 respectively, and the correlations are statistically insignificant. This indicate that there is a weak and insignificant linear association between active account ownership and the state of the business cycle. Similarly, in the general account ownership category (which may include both active and inactive account owners), the ACC15, ACCF15 and ACCP15 variables have a low correlation with ΔGDP at -0.02, -0.038 and 0.008 respectively, and the correlations are statistically insignificant.

Table 3: Correlation matrix: business cycle fluctuation and account ownership
Pearson correlation coefficients are reported. T-statistics are reported in single parenthesis. P-values are reported in double parenthesis

Variable	AAC15	AACF	AACP15	ACC15	ACCF15	ACCP15	ΔGDP
AAC15	1.000 ----- -----						
AACF	0.983*** (33.69) ((0.00))	1.000 ----- -----					
AACP15	0.974*** (26.85) ((0.00))	0.954*** (20.03) ((0.00))	1.000 ----- -----				
ACC15	0.988*** (41.14) ((0.00))	0.974*** (27.07) ((0.00))	0.955*** (20.35) ((0.00))	1.000 ----- -----			
ACCF15	0.968*** (24.25) ((0.00))	0.987*** (38.98) ((0.00))	0.929*** (15.72) ((0.00))	0.981*** (32.46) ((0.00))	1.000 ----- -----		
ACCP15	0.971*** (25.31) ((0.00))	0.955*** (20.21) ((0.00))	0.982*** (32.74) ((0.00))	0.978*** (29.98) ((0.00))	0.957*** (20.75) ((0.00))	1.000 ----- -----	
ΔGDP	-0.0004 (-0.002) ((0.99))	-0.025 (-0.15) ((0.87))	0.039 (0.24) ((0.81))	-0.021 (-0.13) ((0.89))	-0.038 (-0.23) ((0.81))	0.009 (0.055) ((0.95))	1.000 ----- -----

5.2. Borrowings and Savings

5.2.1. Effect of business cycle fluctuation on borrowings and savings

Here, the effect of business cycle fluctuation on the level of borrowings and savings is analysed. The regression results are reported in Table 4. In the 'borrowing from a formal financial institution' category, the ΔGDP coefficient is statistically insignificant in the BOR15, BORF15 and BORP15 models. This suggest that the state of the business cycle does not have a significant effect on the number of borrowings from a formal financial institution (which is a measure of the level of financial inclusion). In the 'savings at a formal financial institution' category, the ΔGDP coefficient is positive and significant in the SAV15 model, indicating that the number of savings in a formal financial institution (which is a measure of the level of financial inclusion) increases

significantly during periods of economic expansion, and vice versa. This result supports Ozili (2018) who argue that the level of financial inclusion increases during good times and falls during bad times. Also, the ΔGDP coefficient is positive and significant in the SAVF15 model, indicating that the number of females saving money in a formal financial institution increases significantly during periods of economic expansion. However, the SAVP15 coefficient is statistically insignificant.

Table 4: Effect of business cycle fluctuation on borrowings and savings

	Formal borrowings from the financial sector			Formal savings in financial sector		
	(1)	(2)	(3)	(4)	(5)	(6)
	BOR15	BORF15	BORP15	SAV15	SAVF15	SAVP15
	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
C	10.313*** (12.16)	9.248*** (11.95)	6.217*** (6.39)	8.930*** (10.92)	7.423*** (9.01)	5.092*** (5.35)
ΔGDP	-0.238 (-1.32)	-0.193 (-1.18)	0.104 (0.50)	0.402** (2.52)	0.328** (2.03)	0.121 (0.68)
Fixed effect?	Yes	Yes	Yes	Yes	Yes	Yes
R^2	96.54	97.23	92.91	87.96	85.93	72.16
Adjusted R^2	92.11	93.71	83.32	80.55	77.27	53.32
f-stat	21.82	27.55	9.69	11.87	9.92	3.83
p(f-stat)	0.000	0.000	0.000	0.000	0.000	0.000
Observation	42	42	41	64	64	64

Country and year effects are included. BOR15 = Borrowed from a financial institution or used a credit card (% age 15+); BORP15 = Borrowed from a financial institution or used a credit card, income, poorest 40% (% age 15+); BORF15 = Borrowed from a financial institution or used a credit card, female (% age 15+); SAV15 = Saved at a financial institution (% age 15+); SAVF15 = Saved at a financial institution, female (% age 15+); SAVP15 = Saved at a financial institution, income, poorest 40% (% age 15+); ΔGDP = gross domestic product growth rate: the higher the better. T-statistics are reported in parenthesis. ***, **, * represent significance level of 1%, 5% and 10% respectively.

5.2.2. Correlation of the level of borrowings and saving on the state of the business cycle

Here, the correlation between the business cycle fluctuation, borrowings and savings is analyzed. The correlation result is reported in Table 5. In the borrowings category, only the BOR15 coefficient is significantly correlated with ΔGDP, which suggest that borrowings from a formal financial institution decreases in periods of economic expansion, while the BORF15 and BORP15 variables are not significantly correlated with ΔGDP. In the savings category, the SAV15, SAVF15 and SAVP15 variables report negative correlations which are statistically insignificant.

Table 5: Correlation: borrowing, savings and business cycle fluctuation

Pearson correlation coefficients are reported. T-statistics are reported in single parenthesis. P-values are reported in double parenthesis

Variable	BOR15	BORF15	BORP15	SAV15	SAVF15	SAVP15	ΔGDP
BOR15	1.000						

BORF15	0.977***	1.000					
	(28.55)	-----					
	((0.00))	-----					
BORP15	0.915***	0.918***	1.000				
	(14.03)	(14.29)	-----				
	((0.00))	((0.00))	-----				
SAV15	0.414***	0.324**	0.260	1.000			
	(2.81)	(2.11)	(1.66)	-----			
	((0.01))	((0.04))	((0.11))	-----			
SAVF15	0.460***	0.392***	0.287*	0.969***	1.000		
	(3.19)	(2.62)	(1.85)	(24.50)	-----		
	((0.003))	((0.005))	((0.07))	((0.00))	-----		
SAVP15	0.436***	0.357**	0.320**	0.939***	0.904***	1.000	
	(2.99)	(2.36)	(2.08)	(16.94)	(13.04)	-----	
	((0.01))	((0.02))	((0.04))	((0.00))	((0.00))	-----	
ΔGDP	-0.264*	-0.205	-0.002	-0.216	-0.219	-0.222	1.000
	(-1.68)	(-1.29)	(-0.01)	(-1.36)	(-1.38)	(-1.41)	-----
	((0.09))	((0.20))	((0.99))	((0.18))	((0.17))	((0.16))	-----

5.3. Further Tests

5.3.1. During recession: effect on account ownership

Here, the effect of economic recession on account ownership is analysed. The regression results are reported in Table 6. In the 'active account ownership' category, the REC*ΔGDP coefficient is negative and significant in the AAC15 and AACF15 models, and suggest that the number of active account owners and the number of active female account owners decreases during a recession, and this result supports the findings of Kim et al (2018). However, the REC coefficient remain insignificant in all the models in this category. In the general account ownership category, the REC*ΔGDP coefficient is insignificant in the ACC15, ACCF15 and ACCP15 models, indicating that recessions do not significantly affect the number of general account ownership.

Table 6: Effect of recession on account ownership

	Active account ownership			Account ownership		
	(1)	(2)	(3)	(4)	(5)	(6)
	AAC15	AACF15	AACP15	ACC15	ACCF15	ACCP15
	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
C	21.052*** (2.83)	17.325** (2.31)	11.395* (1.76)	19.845*** (4.24)	15.282*** (3.15)	12.466*** (3.10)
ΔGDP	1.557 (1.08)	1.368 (0.95)	1.709 (1.37)	1.711** (2.13)	1.761** (2.11)	1.406** (2.04)
REC	-10.869 (-0.59)	-12.149 (-0.67)	-.3.138 (-0.19)	6.777 (0.64)	7.747 (0.71)	5.810 (0.64)
REC*ΔGDP	-4.828* (-1.70)	-5.019* (-1.76)	-3.616 (-1.47)	-1.671 (-1.09)	-1.821 (-1.15)	-1.495 (-1.14)
Fixed effect?	Yes	Yes	Yes	Yes	Yes	Yes
R^2	21.07	17.88	23.17	31.87	25.15	36.13
Adjusted R^2	12.54	9.01	14.63	25.99	18.69	30.33
f-stat	2.46	2.01	2.71	5.43	3.89	6.22
p(f-stat)	0.000	0.000	0.000	0.000	0.000	0.000
Observation	42	42	42	64	64	61

Only year fixed effects are included. ACC15 = Account-holders (% age 15+); ACCF15 = Account-holders, female (% age 15+); ACCP15 = Account-holders, income, poorest 40% (% age 15+); AAC15 = Active account-holders (% age 15+); AACF15 = Active account-holders, female (% age 15+); AACP15 =Active account-holders, income, poorest 40% (% age 15+); ΔGDP = gross domestic product growth rate: the higher the better. REC = binary variable that takes the value '1' if the ΔGDP variable is negative and '0' otherwise, which captures recessionary periods. T-statistics are reported in parenthesis. ***, **, * represent significance level of 1%, 5% and 10% respectively.

5.3.2. During recession: effect on the level of borrowing and savings

Here, the effect of economic recessions on borrowings and savings is analysed. The regression results are reported in Table 7. In the 'borrowings from a formal financial institution' category, the REC*ΔGDP coefficient is negative and significant in the BOR15, BORF15 and BORP15 models, and suggest that the number of borrowings from a formal financial institution significantly decreases during a recession. However, the REC coefficient is not significant in the three models in this category. In the 'savings in a formal financial institution' category, the REC*ΔGDP coefficient is negative and significant in the SAV15 model, and suggest that the number of saving in a formal financial institution significantly decreases during a recession. However, the REC*ΔGDP coefficient is not significant in the SAVF15 and SAVP15 models. The REC coefficient is also not significant in the three models in this category.

Table 7 :Effect of recessions on the level of borrowing and saving

	Borrowing from a financial institution			Savings in a financial institution		
	(1)	(2)	(3)	(4)	(5)	(6)
	B0R15	BORF15	BORP15	SAV15	SAVF15	SAVP15
	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
C	5.481* (1.82)	4.138*** (1.31)	1.697 (0.67)	8.471*** (7.87)	6.755*** (5.94)	5.649*** (4.96)
ΔGDP	0.715 (1.23)	0.819 (1.34)	1.011** (2.08)	0.539*** (2.81)	0.497** (2.45)	0.044 (0.22)
REC	-4.759 (-0.65)	-3.704 (-0.47)	-1.489 (-0.24)	-5.216* (-1.75)	-3.799 (-1.21)	-6.040* (-1.83)
REC*ΔGDP	-3.738*** (-3.26)	-3.581*** (-2.95)	-2.551*** (-2.66)	-0.656* (-1.99)	-0.544 (-1.57)	-0.629 (-1.28)
Fixed effect?	Yes	Yes	Yes	Yes	Yes	Yes
R^2	27.96	23.11	19.40	89.62	86.71	73.63
Adjusted R^2	20.18	0.15	10.45	83.24	78.53	55.80
f-stat	3.59	2.78	2.17	14.03	10.60	4.13
p(f-stat)	0.000	0.000	0.000	0.000	0.000	0.000
Observation	42	42	41	64	64	58

Only year fixed-effect is included. BOR15 = Borrowed from a financial institution or used a credit card (% age 15+); BORP15 = Borrowed from a financial institution or used a credit card, income, poorest 40% (% age 15+); BORF15 = Borrowed from a financial institution or used a credit card, female (% age 15+); SAV15 = Saved at a financial institution (% age 15+); SAVF15 = Saved at a financial institution, female (% age 15+); SAVP15 = Saved at a financial institution, income, poorest 40% (% age 15+); ΔGDP = gross domestic product growth rate: the higher the better; REC = binary variable that takes the value '1' if the ΔGDP variable is negative and '0' otherwise, which captures recessionary periods. T-statistics are reported in parenthesis. ***, **, * represent significance level of 1%, 5% and 10% respectively.

5.3.2. During economic boom

5.3.2.1. Effect on account ownership

Here, the effect of economic boom on account ownership is analysed. The regression results are reported in Table 8. In the 'active account ownership' category, the BOOM*ΔGDP coefficient is negative but statistically insignificant in the AAC15, AACF15 and AACP15 models, and suggest that economic booms do not have a significant effect on the number of active account owners including females and poor active account owners. The BOOM coefficient is also insignificant. In the general account ownership category, the BOOM*ΔGDP coefficient is insignificant in the ACC15, ACCF15 and ACCP15 models, indicating that economic booms do not significantly affect the number of general account ownership.

Table 8: Effect of economic boom on account ownership

	Active account ownership			Account ownership		
	(1)	(2)	(3)	(4)	(5)	(6)
	AAC15	AACF15	AACP15	ACC15	ACCF15	ACCP15
	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
C	26.085*** (5.69)	22.468** (4.82)	16.422*** (4.14)	24.499*** (8.02)	20.576*** (6.47)	16.552*** (6.26)
ΔGDP	-0.393 (-0.34)	-0.524 (-0.45)	-0.087 (-0.09)	0.102 (0.14)	0.038 (0.05)	0.069 (0.11)
BOOM	40.283 (1.48)	36.124 (1.31)	33.579 (1.43)	2.847 (0.29)	2.354 (0.23)	2.987 (0.35)
BOOM*ΔGDP	-4.993 (-1.15)	-4.462 (-1.01)	-4.151 (-1.11)	0.634 (0.42)	0.706 (0.45)	0.393 (0.29)
Fixed effect?	Yes	Yes	Yes	Yes	Yes	Yes
R^2	22.77	17.62	25.38	31.48	24.15	35.22
Adjusted R^2	14.43	8.71	17.09	25.58	17.61	29.33
f-stat	2.73	1.98	3.06	5.33	3.69	5.98
p(f-stat)	0.000	0.000	0.000	0.000	0.000	0.000
Observation	42	42	41	64	64	61

Only year fixed effects are included. ACC15 = Account-holders (% age 15+); ACCF15 = Account-holders, female (% age 15+); ACCP15 = Account-holders, income, poorest 40% (% age 15+); AAC15 = Active account-holders (% age 15+); AACF15 = Active account-holders, female (% age 15+); AACP15 =Active account-holders, income, poorest 40% (% age 15+); ΔGDP = gross domestic product growth rate: the higher the better. BOOM = binary variable that takes the value '1' if the ΔGDP variable is above the median ΔGDP and '0' otherwise, which captures periods of economic expansions or economic booms. T-statistics are reported in parenthesis. ***, **, * represent significance level of 1%, 5% and 10% respectively.

5.3.2.2. Effect on the level of borrowing and savings

Here, the effect of economic booms on borrowings and savings is analysed. The regression results are reported in Table 9. In the 'borrowings from a formal financial institution' category, the BOOM*ΔGDP coefficient is positive but insignificant in the BOR15, BORF15 and BORP15 models, and suggest that the number of borrowings from a formal financial institution is not significantly affected by economic booms. Also, the BOOM coefficient is not significant in the three models in this category. In the 'savings in a formal financial institution' category, the BOOM*ΔGDP coefficient is positive but insignificant in the SAV15, SAVF15 and SAVP15 models, and suggest that the number of savings in a formal financial institution is not significantly affected by economic expansions. Also, the BOOM coefficient is not significant in the three models in this category.

Table 9 :Effect of economic boom on borrowings and savings

	Borrowing from the financial sector			Savings		
	(1)	(2)	(3)	(4)	(5)	(6)
	B0R15	BORF15	BORP15	SAV15	SAVF15	SAVP15
	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)	Coefficient (t-statistic)
C	11.509*** (5.79)	10.377*** (5.02)	11.509*** (5.79)	8.932*** (6.02)	7.336*** (5.29)	6.045*** (5.00)
ΔGDP	-1.226** (-2.46)	-1.129** (-2.18)	-1.225** (-2.46)	0.106 (0.30)	0.084 (0.26)	-0.323 (-1.02)
BOOM	-0.807 (-0.07)	-7.299 (-0.59)	-0.807 (-0.07)	2.548 (0.53)	1.282 (0.29)	-0.669 (-0.21)
BOOM*ΔGDP	1.175 (0.62)	2.147 (1.09)	1.175 (0.63)	0.002 (0.002)	0.145 (0.21)	0.424 (0.81)
Fixed effect?	Yes	Yes	Yes	Yes	Yes	Yes
R^2	18.95	15.84	18.95	4.77	4.571	3.95
Adjusted R^2	10.19	6.74	10.19	-3.43	-0.036	-5.28
f-stat	2.16	1.74	2.16	0.58	0.555	0.43
p(f-stat)	0.000	0.000	0.000	0.000	0.000	0.000
Observation	42	42	41	64	64	58

Only year fixed-effect is included. BOR15 = Borrowed from a financial institution or used a credit card (% age 15+); BORP15 = Borrowed from a financial institution or used a credit card, income, poorest 40% (% age 15+); BORF15 = Borrowed from a financial institution or used a credit card, female (% age 15+); SAV15 = Saved at a financial institution (% age 15+); SAVF15 = Saved at a financial institution, female (% age 15+); SAVP15 = Saved at a financial institution, income, poorest 40% (% age 15+); ΔGDP = gross domestic product growth rate: the higher the better; BOOM = binary variable that takes the value '1' if the ΔGDP variable is above the median ΔGDP and '0' otherwise, which captures periods of economic expansions or economic booms. T-statistics are reported in parenthesis. ***, **, * represent significance level of 1%, 5% and 10% respectively.

6. Conclusion

I examined whether financial inclusion is pro-cyclical with fluctuating business cycles. The findings reveal that the level of financial inclusion is pro-cyclical with the state of the business cycle. Specifically, there is greater level of savings in a formal financial institution and greater number of active account ownership during periods of economic expansion. Also, savings in a formal financial institution by adults especially women and the poor decreases during recessionary periods. Furthermore, the number of active account decreases for the adult population particularly for women during recessionary periods. Overall, the findings suggest that the level of financial inclusion depends significantly on the state of the business cycle, as evidenced by the direct positive relationship between GDP growth and financial inclusion indicators.

The implication of this cyclical effect is that individuals and households, especially women and poor people, will exit the formal financial sector during a recession, as banks become unwilling to lend money to them during bad times, and this will lead to financial exclusion. The findings of this study supports the inclusion-procyclicality hypothesis which states that the level of financial inclusion tend to be higher (low) in good (bad) years. However, the effects in individual countries may deviate from this general picture due to non-uniform financial inclusion models, policies and strategies adopted in different countries as well as differences in legal, regulatory and institutional frameworks and differences in the level of financial development across countries.

Policy makers seeking to increase the level of financial inclusion in their countries should focus on the timing of financial inclusion policies along the business cycle as it appears that it might be more difficult to achieve financial inclusion objectives during recessions or periods of economic downturns. Future research can explore ways to dampen the pro-cyclicality of financial inclusion. Future research can also investigate whether regulation can reduce the pro-cyclicality of financial inclusion with the business cycle.

Reference

Allen, F., Demirgüc-Kunt, A., Klapper, L., Peria, M. (2012). The Foundations of Financial Inclusion: Understanding Ownership and Use of Formal Accounts, World Bank Policy Research Paper 6290.

Allen, F., Carletti, E., Cull, R., Qian, J. Q., Senbet, L., & Valenzuela, P. (2014). The African financial development and financial inclusion gaps. Journal of African economies, 23(5), 614-642.

Anarfo, E. B., Abor, J. Y., Osei, K. A., & Gyeke-Dako, A. (2019). Monetary policy and financial inclusion in Sub-Sahara Africa: a panel VAR approach. Journal of African Business, 20(4), 549-572.

Andrianaivo, M., & Kpodar, K. (2012). Mobile phones, financial inclusion, and growth. Review of Economics and Institutions, 3(2), 30.

Artis, M., Krolzig, H. M., & Toro, J. (2004). The European business cycle. Oxford Economic Papers, 56(1), 1-44.

Artis, M. J., Fidrmuc, J., & Scharler, J. (2008). The transmission of business cycles Implications for EMU enlargement 1. Economics of Transition, 16(3), 559-582.

Artis, M. J., & Zhang, W. (1997). International business cycles and the ERM: Is there a European business cycle? International Journal of Finance & Economics, 2(1), 1-16.

Bar-Isaac, H., & Shapiro, J. (2013). Ratings quality over the business cycle. Journal of Financial Economics, 108(1), 62-78.

Baumol, William, The Free-Market Innovation Machine (Princeton, NJ: Princeton University Press, 2

Bhattarai, S., Lee, J. W., & Park, W. Y. (2016). Policy regimes, policy shifts, and US business cycles. Review of Economics and Statistics, 98(5), 968-983.

Bikker, J. A., & Metzemakers, P. A. (2005). Bank provisioning behaviour and procyclicality. Journal of international financial markets, institutions and money, 15(2), 141-157.

Bold, C., Porteous, D., & Rotman, S. (2012). Social cash transfers and financial inclusion: Evidence from four countries. Population (in millions), 193(46), 109.

Brown, M., Guin, B., & Kirschenmann, K. (2016). Microfinance banks and financial inclusion. Review of Finance, 20(3), 907-946.

Brunetti, M., & Torricelli, C. (2009). Economic activity and recession probabilities: information content and predictive power of the term spread in Italy. Applied Economics, 41(18), 2309-2322.

Chen, R; Divanbeigi, R. 2019. Can Regulation Promote Financial Inclusion? Policy Research working paper; no. WPS 8711. Washington, D.C: World Bank Group.

Christiano, L. J., Eichenbaum, M. S., & Trabandt, M. (2016). Unemployment and business cycles. Econometrica, 84(4), 1523-1569.

Claessens, S., & Rojas-Suarez, L. (2016). Financial Regulations for Improving Financial Inclusion. Center for Global Development.

Demirgüç-Kunt, A., & Klapper, L. (2013). Measuring financial inclusion: Explaining variation in use of financial services across and within countries. Brookings Papers on Economic Activity, 2013(1), 279-340.

Demirguc-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). The Global Findex Database 2017: Measuring financial inclusion and the fintech revolution. The World Bank.

Donovan, K. (2012). Mobile money for financial inclusion. Information and Communications for development, 61(1), 61-73.

Fidrmuc, J., & Korhonen, I. (2006). Meta-analysis of the business cycle correlation between the euro area and the CEECs. Journal of Comparative Economics, 34(3), 518-537.

Fungáčová, Z., & Weill, L. (2015). Understanding financial inclusion in China. China Economic Review, 34, 196-206.

Gilchrist, S., & Zakrajšek, E. (2012). Credit spreads and business cycle fluctuations. American Economic Review, 102(4), 1692-1720.

Gilchrist, S., & Williams, J. C. (2000). Putty-clay and investment: a business cycle analysis. Journal of Political Economy, 108(5), 928-960.

Greenwood, J., & Hercowitz, Z. (1991). The allocation of capital and time over the business cycle. Journal of political Economy, 99(6), 1188-1214.

Grohmann, A., Klühs, T., & Menkhoff, L. (2018). Does financial literacy improve financial inclusion? Cross country evidence. World Development, 111, 84-96.

Hariharan, G., & Marktanner, M. (2012). The growth potential from financial inclusion. ICA Institute and Kennesaw State University.

Hoynes, H., Miller, D. L., & Schaller, J. (2012). Who suffers during recessions? Journal of Economic perspectives, 26(3), 27-48.

Inklaar, R., & De Haan, J. (2001). Is there really a European business cycle? A comment. Oxford Economic Papers, 53(2), 215-220.

Kim, D. W., Yu, J. S., & Hassan, M. K. (2018). Financial inclusion and economic growth in OIC countries. Research in International Business and Finance, 43, 1-14.

Kirchhoff, Bruce A., Entrepreneurship and Dynamic Capitalism (West port, CT: Praeger, 199

Koellinger, P. D., & Roy Thurik, A. (2012). Entrepreneurship and the business cycle. Review of Economics and Statistics, 94(4), 1143-1156.

Krolzig, H. M. (2013). Markov-switching vector autoregressions: Modelling, statistical inference, and application to business cycle analysis (Vol. 454). Springer Science & Business Media.

Krolzig, H. M., & Toro, J. (2001). A new approach to the analysis of business cycle transitions in a model of output and employment.

Kpodar, K., & Andrianaivo, M. (2011). ICT, financial inclusion, and growth evidence from African countries (No. 11-73). International Monetary Fund.

Lee, Y., & Sung, T. (2007). Fiscal policy, business cycles and economic stabilisation: Evidence from industrialised and developing countries. Fiscal Studies, 28(4), 437-462.

Lenka, S. K., & Sharma, R. (2017). Does financial inclusion spur economic growth in India? The Journal of Developing Areas, 51(3), 215-228.

Mehrotra, A. N., & Yetman, J. (2014). Financial inclusion and optimal monetary policy.

Mohan, R. (2006). Economic growth, financial deepening, and financial inclusion. Dynamics of Indian Banking: Views and Vistas, 92-120.

Morgan, P., & Pontines, V. (2014). Financial stability and financial inclusion.

Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. Borsa Istanbul Review, 18(4), 329-340.

Ozili, P. K. (2020a). Financial inclusion research around the world: A review. Forum for Social Economics (pp. 1-23). Routledge.

Ozili, P.K. (2020b). Social Inclusion and Financial Inclusion: International Evidence. International Journal of Development Issues.

Ozili, P.K. (2020c). Theories of financial inclusion. Finance, Insurance and Risk Management Theory and Practices, Emerald.

Ozili, P. K. (2018). Bank loan loss provisions, investor protection and the macroeconomy. International Journal of Emerging Markets, 13(1), 45-65.

Ozili, P. K., & Outa, E. (2017). Bank loan loss provisions research: A review. Borsa Istanbul Review, 17(3), 144-163.

Pissarides, C. A. (2013). Unemployment in the great recession. Economica, 80(319), 385-403.

Sharma, D. (2016). Nexus between financial inclusion and economic growth: Evidence from the emerging Indian economy. Journal of Financial Economic Policy, 8(1), 13-36.

Zins, A., & Weill, L. (2016). The determinants of financial inclusion in Africa. Review of Development Finance, 6(1), 46-57.