

Reaching financial inclusion: Necessary and sufficient conditions

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Abstract

Financial inclusion is a vital development policy concern; different combinations and conditions of access to (supply) and use of (demand) financial services may predict levels of financial inclusion. With a fuzzy set qualitative comparative analysis, conducted across 61 countries worldwide, the current research establishes that financial literacy and human development are conditions of high financial inclusion; supply-side drivers, such as bank concentration and bank branches, represent substitutive conditions for attaining high levels of financial inclusion. With separate analyses of a split sample, designating developed and developing countries, the authors also determine that the absence of financial literacy and human development, as demand-side drivers, leads to diminished financial inclusion for both sets of countries. In turn, this research offers novel ideas for achieving more efficient policies to prompt financial inclusion.

KEYWORDS: financial inclusion, financial literacy, human development, financial infrastructure.

1. Introduction

Financial inclusion (FI), usually defined as access to and use of formal financial products and services, represents a vital, global development policy concern, prompting substantial attention from academics, policy makers, and financial market players, as well as status as a key policy tool for achieving the U.N. Sustainable Development Goals of 2030 (Klapper et al., 2016). The level of FI varies widely (Ababio et al., 2020); an estimated 3 billion people, or half the world's population, lack ready access to formal financial products and services (e.g., bank accounts,

credit facilities, payments, and insurance), according to U.N. (2019) assessments. FINDEX data confirm that 1.7 billion adults were unbanked in 2017, almost of 40% of the worldwide adult population (Demirgüç-Kunt et al., 2017). Being unbanked, with limited or no access to financial services, particularly in developing countries, implies being financially excluded (Adetunji & David-West, 2019).

The lack of FI is relevant at both individual and national levels, due to its potential for creating poverty traps and vast inequality (Beck et al., 2007). At the individual level, prior survey and randomized controlled trial research shows that improving FI reduces rural poverty (Burgess & Pande, 2005) and increases savings (Emara & Kasa, 2020), income (Omar & Inaba, 2020), and female empowerment (Esquivias et al., 2020), as well as granting small businesses access to credit so that they can launch, maintain, and grow their entrepreneurial activities (Chliova et al., 2015). At the country level, most studies examine FI by measuring financial access as an outcome of outreach efforts (e.g., Beck et al., 2007). Beck et al. (2008) establish that high transaction costs, uncertainty, and asymmetric information can help explain why banks and other financial institutions refuse to offer credit or savings accounts. As in that example, country-level studies tend to focus on the supply side and financial markets, linking FI to country and institutional factors, such as a strong legal system or the physical proximity of financial institutions (e.g., Allen et al., 2016).

But reducing extreme poverty and promoting FI requires more than overcoming barriers to access (supply side). That is, access to and uses of financial services might encourage economic growth (Omar & Inaba, 2020), but the development of FI also depends on economic, political, and social factors that help inform customers (demand side). Therefore, we explore multiple conditions that might predict high and low FI levels in combination, across supply-side drivers such as bank concentration (BC) and bank branches (BB), along with demand-side drivers such as consumers' financial literacy (FL) and human development index (HDI)

measures. For this propose a qualitative comparative analysis (QCA) was employed, in particular a fuzzy set QCA (fsQCA), to identify the configurations for the outcomes of interest (high and low FI).

Because it can combine simple antecedent conditions and assumes causal complexity, fsQCA allows for different paths to produce the same outcome. To capture these relevant combinations of determinants of FI, we need a wide geographic scope (Fu, 2020) and thus gather samples from 61 countries. To determine the effects of different drivers in separate analyses in countries with varying levels of development (Beck et al., 2007), we also replicate the fsQCA analysis for subsamples of developed versus developing countries.

The results establish several conditions that determine a country's level FI, which in turn provides several research contributions. First, the presence (absence) of FL and HDI contribute to higher (lower) levels of FI. Second, both BC and BB can contribute to explain high and low levels of FI. Third, the comparative analysis for sets of developed versus developing countries reveals that for the former, the presence (absence) of demand-side drivers leads to high (low) levels of FI. In developing countries, supply- and demand-side drivers have complementary effects on achieving high levels of FI, and both a lack of financial literacy and human development can account for financial exclusion. Beyond identifying the relevance of variables from the demand side and the supply side, this study particularly emphasizes demand-side variables as specific conditions for boosting FI.

The findings also have implications for policy makers. Because FL is critical for people to achieve FI, they should promote such literacy and actively work to eliminate poverty traps that hamper economic development. Improving FL, through a more inclusive financial system, can enhance both access to and uses of financial tools, such that people can invest in their education, become entrepreneurs, achieve empowerment, and ultimately attain greater human and economic development. For policy makers, it is not sufficient to examine the financial

system as a whole; they also must account for their national context to design effective policies to promote FI. Finally, with a configurational approach, we show that configurations that lead to high levels of FI are not exactly the opposite of configurations that invoke low levels of FI, which implies that different paths can induce the same outcome.

In the next section, we present the theoretical background. Then we outline the research design, which produces the results in Section 4 that we discuss in detail in Section 5. Finally, we conclude and offer suggestions for further research.

2. Background

The notion of FI, introduced at the end of the 20th century, reflected the awareness that development should be linked to a wide range of dimensions, not just gross domestic product (Kabacova & Plaksenkov, 2018). It implies efforts to integrate the majority of the population in economic development through conventional financial sectors (Ababio et al., 2020). According to Bongomin et al. (2018: 3), “financial inclusion acts as a basic tool that helps the poor to manage their day-to-day activities, navigate a crisis, and seize an opportunity,” such that it facilitates individual welfare. When people maintain accounts with formal institutions that allow them to save and borrow money formally, contract insurance, or use payment services, they can be considered financially included (Zins & Weill, 2016).

Although Kabacova and Plaksenkov (2018) assert no consensus approach for defining FI exists (for a further discussion, see Dev, 2006), some common dimensions are evident, such as the uniform availability of good quality financial services, regular usage, and the potential for increased welfare. Accordingly, research into FI often features three main research considerations: indicators that can measure FI, determinants of FI, and the nexus between inclusion and economic–financial–social aspects (Esquivias et al., 2020).

First, to find indicators of FI, researchers often use basic measures, such as the proportion of adults with access to financial services (e.g., bank account, credit, payments, insurance). However, possession of a bank account does not necessarily entail usage of it (Nuzzo & Piermattei, 2020). Beck et al. (2007) therefore propose a more specific measure of access to and uses of deposit and lending services, using a novel set of banking sector outreach indicators; their robustness tests establish the validity of their proposed indicators (e.g., number of branches and ATMs, number of loan and deposit accounts). Sarma (2008) instead suggests a multidimensional index to capture information about various FI dimensions, such as banking penetration, availability, and usage of banking systems. In a study of countries from Latin America, Europe, Middle East Africa, and Asia and using a principal component analysis, Emara and Kasa (2020) compute a financial access index as combination of the number of bank branches and number of ATMs per 100,000 adults. Similarly, Nizam et al. (2020) construct a multidimensional FI index across countries by applying parametric and non-parametric methods, which includes four dimensions: banking penetration, availability of banking services (supply side), usage of financial services, and digital financial technology (demand side). We also note studies that summarize the various ways to measure FI (e.g., Chakravarty & Pal, 2013; Demirgüç-Kunt et al., 2015).

Second, in seeking determinants of FI, Zins and Weill (2016) find that in Africa, being a man, richer, more educated, and older all predict greater FI. With cross-country data, Grohmann et al. (2018) analyze the impact of FL on FI and conclude that institutional and financial characteristics that promote FL also encourage better financial decisions. With their literature review, Di Giannatale and Roa (2019) assert that asymmetric information and transaction costs, lack of financial education, lack of trust in financial institutions, lack of income, social restrictions, behavioral biases, and cultural factors all represent barriers to FI. A more recent review, covering most world regions, leads Ozili (2020) to conclude that

financial innovation, poverty levels, stability of the financial sector, the state of the economy, FL, and regulatory frameworks determine FI. Esquivias et al. (2020) examine both voluntary and involuntary obstacles to FI: The voluntary obstacles relate to lack of money, religious motivations, and whether a family member has an account; the involuntary versions are linked to market failures caused by factors such as distance, costs, documentation requirements, and lack of trust in financial institutions. Finally, Adetunji and David-West (2019) assess FL and income levels as drivers of demand for financial services, and with survey data from 22,000 Nigerian respondents, they conclude that FL determines how often people save, both formally and informally, whereas income only exerts a significant effect on informal savings.

Third, at the nexus of inclusion and economic–financial–social aspects, Omar and Inaba (2020) investigate how FI might reduce poverty and income inequality in 116 developing countries. They find that it significantly reduces poverty rates and income inequalities; when Demir et al. (2020) analyze a panel of 140 countries, and Fouejieu et al. (2020) consider a large sample of developed and developing countries, they come to similar conclusions. With two different FI indexes, Le et al. (2019) test the impact of FI on income inequality in 22 transitional economies over 11 years. They find a negative relationship between FI and the GINI index, which offers a measure of unequal income distributions. Kim (2016) instead measure FI as financial accessibility and show that it has a positive effect on reducing income inequality, as well as on economic growth. With an explicit focus on the link between FI and economic growth, Sethi and Acharya (2018) conduct research across 31 countries and identify a positive, long-term relationship.

Even as they integrate these different perspectives, most studies exclusively address the supply side, focused on access to financial services (e.g., Di Giannatale & Roa, 2019; Grohmann et al., 2018). This approach is reasonable; improving access to financial services can allow (1) monetary authorities to stabilize prices, so that the financial system can stimulate

economic growth; (2) diminished uses of cash for transactions, such that more payments take place through formal systems, which should increase banks' confidence in customers; (3) banks to lend more and potentially reduce the incidence of poorly performing loans; and (4) banks to attract more deposits to be better positioned to lend to individuals or businesses (Adetunji & David-West, 2019). In line with this focus on the problem of FI and the barriers on the supply side, such as information asymmetries and transaction costs (Levine, 1997), or the impact of financial market structures on access to finance (Owen & Pereira, 2018), government policies tend to reflect the supply side, offering solutions such as opening more bank branches, adding ATMs to isolated areas, or developing basic saving products that are available for free (Di Giannatale & Roa, 2019).

But even if improved access can encourage economic growth, increasing demand for financial services also may prompt providers to offer greater financial access and deepen the development of financial sectors (Adetunji & David-West, 2019). Such considerations need to go beyond financial infrastructure or legal structures to acknowledge the role of the demand side. That is, it is important to analyze barriers from the supply side, but research also should identify any barriers on the demand side, such as financial education and FL (Bongomin et al., 2018; Grohmann et al., 2018), lack of income (Adetunji & David-West, 2019), or social restrictions (Dev, 2006).

2.1. Supply side: Access to financial services

A lack of access to financial services can result from information asymmetries, transaction costs, or both (Beck et al., 2008; Demir et al., 2020). Information asymmetry induces two major issues in the relationship between lenders and borrowers: adverse selection and moral hazard, both of which can determine access to credit and savings. For example, insufficient access to credit can occur due to demand for collateral, high interest rates, or documentation

requirements. With regard to savings, adverse selection and moral hazard problems are less prominent, related mainly to identifying new savers and gauging their ability to pay fees to receive savings products. Transaction costs, stemming from efforts to obtain and maintain financial services, take two main forms: monetary costs or pecuniary barriers, such as minimum amounts to open an account, minimum balances, account opening charges, and various fees, and then transportation costs (i.e., money and time) associated with geographic distance. These latter costs are particularly relevant in rural areas, where it is less profitable to open bank branches (Di Giannatale & Roa, 2019). As Ababio et al. (2020) show, in sub-Saharan Africa, nearly 32% of adults are unbanked because of their distance from any financial facility or branch. Similar to Adentuji and David-West (2019), most researchers use supply-side measures of access, such as distributions of bank branches per geographical unit or population.

Another important element of FI is the potential impact of financial market structures on access (Owen & Pereira, 2018). Some authors argue that more competition in the banking market reduces the cost of finance and improves the availability of financial services (e.g., Mengistu & Perez-Saiz, 2018). But more competition also might have negative impacts on access to financial services, by creating asymmetric information, such that more competition drives banks to rely less on customer relationships (Hauswald & Marquez, 2006), making it more difficult for customers to signal their quality to financial institutions. Alternatively, larger banks may be able to diversify their portfolio better, to increase economies of scale and scope (Boyd & Prescott, 1986). Overall and as Owen and Pereira (2018) highlight, the banking system structure likely determines cross-country variability in financial outreach for households. They conclude that more access to deposit accounts and loans results from banking industry concentration, which limits the market power of banks.

However, the lack of consensus about the impacts of financial market structures and asymmetric information on FI highlight the need for more empirical research on this topic. In

response, we propose that *bank concentration* may be a key means to promote FI from the supply side, and *bank branches* can provide a good measure of the impact of bank penetration and transportation costs related to geographical distance.

2.2. Demand side: Use of financial services

Studies of financial literacy show that greater FL improves financial decision making by empowering people to manage their everyday expenses (Kaiser & Menkhoff, 2017; Karakurum-Ozedemir et al., 2019). Their inability to manage basic financial products (e.g., access bank accounts, understand credit and debt) instead raises political concerns (OECD, 2020b). Despite the established relevance of FL to promote the U.N. Sustainable Development Goals, its levels remain unacceptably low, especially in developing countries (Bongomin et al., 2017; Philippas & Avdoulas, 2019). According Standard & Poor's Global Financial Literacy Survey, only one in three adults understand basic financial concepts (Klapper et al., 2014); an OECD/INFE survey (OECD, 2020a) also indicates an average FL score of 12.7, on a scale with a maximum of 21, indicating substantial room for improvement in terms of FL knowledge, behaviors, and attitudes. A lack of education and financial knowledge, unemployment, low income, mistrust of financial institutions, social restrictions, behavioral biases, and cultural factors all represent likely barriers to the use of credit and savings, on the demand side (Di Giannatale & Roa, 2019).

As world economies become more financially integrated and complex (Philippas & Avdoulas, 2019), individual consumers must make more sophisticated financial decisions, suggesting a heightened need to ensure some minimum level of FL understanding to assess and use financial products (Bongomin et al., 2016). That is, providing savings, credit, and other important financial services may be necessary but not sufficient to promote FI; instead, it

appears essential to provide financial services together with financial knowledge, to enable people to make better financial decisions (Bongomin et al., 2017).

If we use the OECD (2014: 33) definition of FL as the “knowledge and understanding of financial concepts and risks, and the skills, motivations and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life,” we can anticipate that greater FL implies understanding of the nature and forms of money, how it is used, and its consequences for consumer decisions (Cucinelli et al., 2019). Other definitions (for a discussion of various definitions, see Goyal & Kumar, 2020) also cite financial competences such as understanding core structures of basic financial services, attitudes toward spending or saving money, understanding financial records, mindfulness of the risks associated with financial products, and an appreciation of the relationship between risks and returns (Lusardi & Mitchell, 2014). In this view, FL is a relevant tool that benefits the poor through education, such that they are more well-informed about finance, so they can evaluate financial products and services to increase their savings (Bongomin et al., 2017), wealth (Philippas & Avdoulas, 2019), and access to microfinance, which in turn supports new entrepreneurial ventures (Bongomin et al., 2018).¹ That is, by improving financial behavior, FL promotes FI, which benefits the development of the real economy. Accordingly, we predict that FL is a precondition of FI.

Theoretical evidence also predicts a relationship between finance and economic growth (Peet & Hartwick, 2009), such that economic growth, as a human development factor, should be a basic condition for FI (Beck et al., 2009). Countries that lag behind in human development likely cannot promote FI, and enhanced human development requires a substantial share of the population to engage in economic growth, through the financial sector (Ababio et al., 2020;

¹ Even in developed countries, Klapper et al. (2013) highlight that the lack of FL leaves people more vulnerable to macroeconomics shocks (e.g., international financial crisis of 2008).

Beck et al., 2009). If any person, particularly the poor, have access to and use financial services, in the formal financial sector,² they should be better able to afford a good education (knowledge acquisition), healthcare (healthy lives), higher living standards (engagement), and participation in higher income activities (e.g., decent employment, start new business), all of which imply human development. In investigating whether the level of human development drives greater FI, or vice versa, in frontier markets, Ababio et al. (2020) conclude that more developed societies promote more FI. Because human development implies a better life for each person, in which people's basic needs are satisfied by sufficient access to food, health services, a place to live, and dignity and respect, this research highlights that human development is another essential condition for FI.

Based on this background, this study seeks to understand a configuration of pathways through which some attributes from supply side (*bank branches* and *bank concentration*) and from the demand side (FI and *human development*) can enhance FI. Thus, we follow a configurational approach where different combinations of conditions are considered to be possible, outlined in conceptual model presented on Figure 1.

[Insert figure 1 about here]

3. Research design

3.1. Data and attributes

We collect data from international, public databases, including the World Bank Data Catalog, Standard & Poor's Global Finlit Survey, and United Nations, for 2014—the last year for which full data were available at the time of this study. Combining these data sets creates a final

² Worldwide, 56% of adults do not use formal financial services, but this number diverges across high and low income countries. High income countries include 17% unbanked adults, but this number rises to 64% in low income countries (Ardic et al., 2011).

sample that spans 61 countries, of which 46% are classified as developed, 39% as developing, and 15% as transitional economies, according to the World Bank.

To explore the various combinations of factors that explain high and low levels of FI worldwide, we consider four attributes, identified in prior literature. Bank concentration (BC) and bank branches (BB) constitute critical barriers of access to financial services (i.e., supply side); financial literacy (FL) and the human development index (HDI) represent barriers to the use of financial products (i.e., demand side). The outcome variable, financial inclusion (FI) is a combination of access to finance and the use of financial products and services in a formal financial system (Demir et al., 2020). To capture both dimensions, we use two proxies for each dimension, with data from the World Bank Data Catalog database.³ For access to financial services, we measure the proportion of the population with a simple bank account at a formal financial institution (Esquivias et al., 2020), which is a basic form of FI. Then the second dimension reflects the proportion of adults in a country with a debit card (Kabacova & Plaksenkov, 2018). Pertaining to usage of financial products/services, a first indicator corresponds to the proportion of adults who use a bank account to save (Adetunji & David-West, 2019), and the second measures the proportion of adults that used a debit card to make a purchase in the past year (Grohmann et al., 2018; Zins & Weill, 2016). The final score is the average of these four dimensions.

To capture the conditions that facilitate or hinder access to financial products/services (i.e., supply side), we measure bank concentration (BC) as the assets of the three largest commercial banks as a share of total commercial banking assets, collected from the World Bank Data Catalog (Owen & Pereira, 2018). Then we gauge bank branches (BB), an assessment of bank penetration and transportation costs, as the distribution of branches per 1,000 km² (Beck et al. 2007). It reflects the geographic penetration of the banking sector by

³ World Bank Data Catalog, Databank, available at <https://databank.worldbank.org/source/world-development-indicators> (accessed April 2021).

indicating the average distance of a potential customer from the nearest physical bank branch. This information came from the 2014 Financial Access Survey.⁴

Because FI requires more than simple access to financial services, this study uses FL and HDI as proxy measures of outreach. The former comprises four dimensions of financial decision making: knowledge of interest rates, interest compounding, inflation, and risk diversification (Lusardi & Mitchell, 2014). It was collected from Standard & Poor's Global Financial Literacy Survey, carried out in 2014.⁵ The latter accounts for human development in several key sectors: a long and healthy life, being knowledgeable, and a decent standard of living (United Nations, 2019). The data come from and reflect the view of the United Nations Development Program that establish people and their capabilities as the decisive criteria for assessing the development of a country.⁶

3.2. Method

To ensure a configurational perspective to explore necessary and sufficient conditions to explain high and low FI as the outcome of interest, we adopt fuzzy set qualitative comparative analysis (fsQCA), which is based on Boolean algebra that supports comparisons of cases that represent configurations of factors (Ragin, 2000). The analysis pertains to the relationship between the outcome of interest (i.e., high and low FI) and a group of antecedent conditions (supply-side BB and BC; demand-side FL and HDI). Unlike linear approaches⁷, fsQCA allows

⁴Financial Access Survey (2014), International Monetary Fund, available at <https://data.imf.org/?sk=388dfa60-1d26-4ade-b505-a05a558d9a42> (accessed April 2021).

⁵S&P Global FinLit Survey (2014), available at <https://gflec.org/initiatives/sp-global-finlit-survey/> (accessed April 2021).

⁶Human Development Data Center, UNDP, available at <http://hdr.undp.org/en/data> (accessed April 2021).

⁷ More traditional correlation-based analyses (e.g., multiple regressions or structural equation modelling) assume causal relationships between explanatory variables and the outcome. Though, when the effects of the variables are asymmetrical, and the form of interactions among them is unknown, regression analysis may be inappropriate and under these circumstances, fsQCA may offer useful information by identifying the combinations of conditions that lead to a given outcome (Vis, 2012), and it distinguishes between necessary and sufficient conditions (Schneider & Eggert, 2014).

for asymmetrical causality, combinations of antecedent conditions linked to the outcome, multiple causal paths that lead to the same outcome, links among various combinations of causal conditions, and outcomes to be expressed as necessary or sufficient conditions (Schneider et al., 2010). Furthermore, fsQCA also does not impose restrictions on sample size, which is an important feature when the phenomenon is sporadic or exclusive to a specific situation (Kimmitt & Muñoz, 2017). With fsQCA, we can distinguish the degrees of sufficiency or necessity of a condition, as well as different pathways to attain a certain outcome of interest. Finally, it accounts for specific patterns and outliers, so if some specific combination of conditions explains only one case, it is not considered any less pertinent than another combination of conditions that explains many cases (Rihoux & Ragin, 2008).

Using fsQCA requires transforming the original values of the variables into fuzzy scores, defined in the $[0, 1]$ interval. This process involves the specification of both full membership and full non-membership thresholds, along with a cross-over point of maximum ambiguity. Each threshold translates into a specific fuzzy value. A standard approach uses fuzzy values of 0.95, 0.05, and 0.50 for full membership, non-membership, and the cross-over point, respectively (Ragin, 2008). We instead adopt the recommendation (e.g., Schneider & Wageman, 2010) to set the thresholds at the 90th, 10th, and 50th percentiles of the values of the original distribution of each variable.

4. Results

4.1. Analysis of necessary conditions

A condition is necessary if the outcome cannot occur in its absence. A consistency threshold of 0.90 is recommended for establishing necessary conditions, because high coverage indicates that these necessary conditions are relevant. In the case of a sufficient condition, the consistency value should be equal to at least 0.80 (Ragin, 2008). For this study, we use these

consistency thresholds and provide the results of the analysis of necessary conditions in Table 1, revealing that all the antecedent conditions are below 0.90. That is, none of the conditions is necessary for the outcome of interest, high (FI) and low (\sim FI) financial inclusion. But the presence of bank branches, bank concentration, financial literacy, and the human development index are closely related with financial inclusion (FI), and their absence or low levels instead are linked with low levels of financial inclusion (\sim FI).

[Insert Table 1 about here]

4.2. Analysis of sufficient conditions

To list all the different, logically possible combinations of causal conditions, we constructed a truth table with two thresholds: frequency and consistency. The frequency threshold specifies the minimum cases that should fit into a given configuration to be included in the causal analysis. For our analyses, we set a threshold of one case, which is acceptable if the sample is relatively small (Ragin, 2006). The consistency threshold then defines the minimum consistency needed to indicate that a particular configuration leads to the occurrence of the outcome of interest. We set a consistency threshold of 0.85.

Table 2 contains the results of the configurational analysis of both the parsimonious solution and the intermediate solution. Conditions that are part of both solutions represent core conditions; those that only appear in the intermediate solution are peripheral conditions (Fiss, 2011). Black circles (“●”) indicate the presence of a condition, circles with a cross (“⊗”) indicate its absence, and blank spaces indicate “don't care” situations, in which the causal condition may be present or absent. Large circles indicate core conditions, and small circles indicate peripheral conditions.

[Insert Table 2 about here]

The results of the configurational analysis establish that four configurations lead to high levels of FI (FI.1–4). All four configurations imply the simultaneous presence or absence of at least two conditions. Raw coverage values range from 0.357 to 0.801 though, so not all causal configurations are equally represented, even if they all achieve acceptable consistency (≥ 0.872). Approximately 91.7% of the outcomes lead to high levels of FI. The four configurations for high FI attain an overall consistency of 0.851. In the first configuration FI.1 (FL*HDI), high levels of FI require that the demand-side attributes FL and HDI are present. This configuration produces the highest raw coverage (0.801) and unique coverage (0.076); it is the configuration most frequently associated with higher levels of FI. Then configuration FI.2 (HDI*BB) reaches high FI with HDI, a demand-side variable, and BB, a supply-side variable. A configuration that consists of the presence of FL and BC and the absence of BB (FI.3, FL*BC*~BB) also leads to high levels of FI. Finally, FI.4 (FL*~BC*BB) entails a combination of conditions with the presence of FL and BB and the absence of BC.

Undertaking a national-level assessment of memberships in each configuration may provide more insights. For example, Norway belongs to configuration FI.1, with high levels of FL (0.71) and HDI (0.95) and thus of FI. Switzerland is good example of configuration FI.2, where the levels of HDI and BB are 0.94 and 81.28, respectively. Finland typifies configuration FI.3, showing higher levels of FL (0.63), higher levels of BC (91.70), and lower levels of BB (1.41) and thus high FI. Finally, Luxembourg represents configuration FI.4 by indicating higher levels of FL (0.53) and BB (151.85) and lower levels of BC (36.65), which also lead to greater FI.

Regarding the lower levels of FI (~FI), the configurational analysis reveals five combinations (~FI.1–5). Here, we carefully note that ~FI is not the mirror opposite of FI; the configurations differ and are not symmetric. Configuration ~FI.1 (~HDI*~BB) indicates that the absence of HDI and BB represent conditions that produce low levels of FI. Then

configuration \sim FI.2 (\sim BC* \sim BB) indicates a causal combination of the absence of BC and BB, two supply-side attributes, which also leads to low FI. The third configuration \sim FI.3 (\sim BC* \sim HDI) demonstrates that the absence of BC and HDI together leads to lower FI. In configuration \sim FI.4 (\sim FL* \sim HDI), the absence of two attributes from the demand side, FL and HDI, lead to diminished FI. This configuration attains the highest raw coverage (0.776) and unique coverage (0.055), such that it is the configuration most frequently associated with low levels of FI. Finally, \sim FI.5 (\sim FL* \sim BC) indicates that the absence of FL and BC bring about lower levels of FI. In summary, configurations that lead to low financial inclusion (\sim FI) attain an overall consistency of 0.821, and the combined configurations account for 90.3% of membership for this outcome. All configurations present acceptable consistency (\geq 0.868) and coverage (\geq 0.592).

In terms of countries that represent each configuration, we identify Mauritania as the main representative for configuration \sim FI.1, reporting lower levels of HDI (0.52) and BB (0.16). In our sample, Mauritania also is the country with the lowest HDI value. Ukraine fits configuration \sim FI.2, with lower levels of BC (30.11) and BB (0.51). For the third configuration \sim FI.3, Vietnam is a good example, in that it reports lower levels of BC (37.84) and HDI (0.68). Nicaragua embodies the fourth configuration (\sim FI.4), including lower levels of FL (0.20) and HDI (0.64). Finally, for configuration \sim FI.5, Turkey is a representative example, in that it demonstrates low levels of FL (0.24) and BC (38.49) and thus a lower level of FI.

In these analyses, we find that the account penetration variable differs widely across countries, according to their level of economic development (Demirgüç-Kunt & Klapper, 2013). That is, the share of adults with accounts at formal financial institutions in developed countries is more than twice the share in developing countries (Beck et al., 2007). The levels of FI also vary widely, so to capture relevant variations in combinations of determinants of FI,

we examine configurations that explain high and low FI for subsamples of developed and developing countries.

4.3. Analysis of sufficient conditions in two subsamples

To explore the configurations that explain high and low levels of FI but also focus on a narrower geographical scope, we run the analysis separately for two groups of countries: developed ($n = 28$) and developing ($n = 24$). We exclude economies classified as in transition ($n = 9$).

Among developed countries, the results in Table 3 reveal three configurations for higher levels of FI, with an overall consistency of 0.908, and the combined configurations account for 88.1% of the membership for this outcome. All configurations indicate acceptable consistency (≥ 0.846) and raw coverage (≥ 0.346). Configuration FI.1 (FL*HDI) shows that the presence of the two demand-side variables, FL and HDI, leads to higher levels of FI. This configuration produces the highest values for raw coverage (0.769) and unique coverage (0.161), such that it is the most frequent configuration associated with higher FI in developed countries. Then configuration FI.2 (FL*BC*~BB) combines variables from the demand and supply sides: The presence of FL and BC combine with the absence of BB to lead to higher levels of FI. Finally, configuration FI.3 (~BC*HDI*BB) shows that the presence of BB and HDI and the absence of BC imply higher FI.

With regard to low financial inclusion (~FI) in developed countries, we again find three configurations, for which the raw coverage ranges from 0.462 to 0.802, indicating that they are not equally represented. The consistency values are acceptable (≥ 0.865), and 86.7% of the outcomes can be explained by these configurations. The first configuration ~FI.1 (~HDI*~BB) shows that the absence of HDI and BB lowers levels of FI. Configuration ~FI.2 (~FL*~HDI) implies that the absence of FL and HDI has a similar impact on FI. For developed countries, it

is the most frequent configuration associated with low FI, with a unique coverage of 0.16. Finally, configuration \sim FI.3 (\sim FL* \sim BC*BB) entails the absence of FL and BC and the presence of BB.

[Insert Table 3 about here]

The subsample of developing countries (Table 4) produces four configurations for higher FI (FI.1-4), with an overall consistency of 0.776. The combined configurations account for 84.2% of the membership linked to this outcome. One configuration (FI.1) does not reach acceptable values for consistency though (≥ 0.800). Configuration FI.2 (FL*BC) produces the highest raw coverage (0.566) and unique coverage (0.187); it is the most frequent configuration associated with higher levels of FI for the group of developing countries. It includes the presence of FL and BC. Configuration FI.3 (\sim FL* \sim BC*HDI) indicates that the presence of HDI combined with the absence of FL and BC leads to higher levels of FI. In configuration FI.4 (FL* \sim HDI*BB), the absence of HDI combined with the presence of FL and BB contributes to higher levels of FI.

For low levels of financial inclusion (\sim FI) in developing countries, we note three configurations, with an overall consistency of 0.807, and 76.2% of membership accounts for this outcome. Configuration \sim FI.2 does not surpass the threshold of 0.800 though. Rather, configuration \sim FI.1 (\sim FL* \sim HDI) indicates that the absence of FL and HDI leads to lower levels of FI. This configuration, with higher raw coverage (0.686) and unique coverage (0.095) values, is the most frequent for this outcome (\sim FI). Finally, configuration \sim FI.3 (\sim FL*BC* \sim BB) shows that the absence of FL and BB and presence of BC leads to lower FI. Table 2 and 3 display a country example for each configuration.

[Insert Table 4 about here]

5. Discussion

This research identifies key attributes, from both supply (access) and demand (use) sides, as antecedents of FI; the findings establish that FI cannot result if someone just owns an account; instead, it requires the account to be used, preferably in a rational way. Because it offers a better understanding of financial decisions, FL relates to high levels of FI. Three of four configurations include the presence of FL as a core condition to achieve high FI, indicating that people must be financially literate to attain financial inclusion. This challenge is acute though, because today's financial products and services are diverse and complex.

Configurations that encourage greater FI, beyond FL, also involve the HDI (two of four configurations), which in turn pertains to a long and healthy life, being knowledgeable, and having a decent standard of living that can increase income, education, and/or health conditions. In such contexts, the advantages that people can attain from financial services increase (Datta and Singh, 2019). The findings also corroborate the idea that a lack of human development leads to low FI (Ababio et al., 2020). Enhancing human development and literacy will enable more people to become involved in formal financial systems. Norway is a good example reflecting that the presence of FL and HDI leads to higher levels of FI.

Configurations for high levels of FI include more bank branches (present in two of four configurations, absent in one) and bank concentration (present in one configuration, absent in another). These supply-side elements are conditions for creating an ecosystem that allows for FI, such that it is equally important to increase access to financial services by offering more bank branches, as an acknowledgment of the impact of geographical distance on access to financial services. Greater access and availability of financial products and services helps people allocate their financial resources better. Furthermore, larger banks in concentrated markets may be able to diversify their portfolios, through economies of scale and scope, such that they become more efficient (Owen & Pereira 2018). These findings indicate that access to

financial services is necessary but not sufficient. Four configurations produce high levels of FI, but to enhance these levels and ensure far-reaching financial development, improving the branch networks or offering cheap financial products and services targeting low-income people is not enough. Switzerland, Finland and Luxembourg are good examples. The goal must be to improve FL, because only when they understand the advantages of such products will people feel able to solicit the products. Nor can FI be achieved without higher levels of human development.

In the configurational analysis, five configurations seemingly explain why some countries fail to achieve FI. Specifically, configurations ~FI.2 and ~FI.4 (a mirror of configuration FI.1) indicate that the lack of supply (BB and BC) or demand (FL and HDI) can lead to low FI. Then configurations ~FI.1, ~FI.3, and ~FI.5 indicate that the absence of FL and/or HDI (demand-side variables), together with the absence of supply-side variables, can explain low levels of FI. To mitigate financial exclusion, governments should implement policies that enhance access to financial services, by reducing transaction costs, uncertainty, asymmetric information, or lack of physical access, while simultaneously enhancing financial literacy to prompt human development. Mauritania, Vietnam and Turkey are examples that characterize this situation.

When we split the sample into developed and developing countries to distinguish the effects of access and use conditions, we can specify that the two most frequent configurations for high and low levels of FI (FI.1 and ~FI.2) for developed countries indicate that the presence (absence) of demand-side conditions (FL and HDI) are complementary (see table 3 for country examples). Access to financial services in these countries is not a constraint to high FI. But in developing countries, the configuration that leads most frequently to high FI (FI.2) indicates the necessity of providing access through BC but also enhancing FL, such that the demand- and supply-side conditions are complements. The most frequent configuration here is ~FI.1; a

lack of literacy and human development (low or no income) prompts low levels of FI. Honduras features this configuration.

7. Conclusion

Financial inclusion, measured as access to and use of financial services, offers a dynamic indicator of sustainable, inclusive economic growth. To achieve it, most previous studies suggest focusing on the supply side and lowering access barriers, such as by improving branch network, reducing distances to bank branches, or offering cheaper and simplified financial products. Yet barriers remain, in the form of a refusal to use financial products. We therefore explore various configurations involving both access to and uses of financial services that explain high and low levels of financial inclusion, with a configurational, international approach.

Financial literacy is clearly part of the solution, together with human development. In addition, low levels of these demand-side attributes, when other antecedent conditions are absent too (i.e., bank branches or bank concentration), lead to low financial inclusion. Thus, financial literacy is a core condition that signals the need to ensure a rational use of financial services to promote people's active involvement in economic development processes and opportunities in mainstream financial sectors. The presence of one attribute from the supply side (bank branches or bank concentration) is part of the configurations that lead to financial inclusion. When we consider configurations that determine financial inclusion in the subsample of developed countries, the results again assign great relevance to demand-side variables, and supply- and demand-side attributes even function as substitutes in some cases. In developing countries, high scores on the supply- and demand-side antecedents instead are complementary, so the absence of financial literacy and human development represent key antecedents of low financial inclusion.

Thus, to clarify the drivers of financial inclusion, we account for drivers of both access and uses of financial services (Grohmann et al., 2018). The results offer several contributions to extant literature. First, by focusing on necessary and sufficient conditions for financial inclusion, we advance theory related to this emerging topic. In particular, our findings suggest that financial inclusion is a more inclusive, far-reaching extension of financial development. In so doing, we clarify ambiguities related to the definition of financial inclusion, by defining the concept using four dimensions. Second, we establish that financial literacy is a core condition for financial inclusion, working through savings accumulation, wealth, or microentrepreneurs' financial practices. Third, the cross-country evidence reveals that low financial inclusion mainly stems from the absence of demand-side drivers. Therefore, financial literacy and human development considerations should guide policies designed to increase financial inclusion.

The findings have implications for both researchers and policy makers. Financial literacy is a relevant antecedent of financial inclusion, so governments should promote it as a means to avoid poverty traps that can hamper economic and human development. Improving financial literacy through a more inclusive financial system promises to enhance both access to and uses of financial tools, which in turn should help people invest in their education, become entrepreneurs, gain empowerment, and then establish financial stability and sustainable, inclusive economic growth. Our use of fsQCA also highlights the relevance of configurational approaches; configurations that lead high levels of financial inclusion are not precisely the opposite of configurations that explain low levels of financial inclusion. Different paths can induce the same outcome: unlike combinations of variables could lead to higher (lower) levels of financial inclusion. So, different policies should be designed taking into account the economic level of development of each country. For instance, in Ukraine, policies should embrace firstly the supply side, which improves the access to financial services, whereas, in Nicaragua, policies should focus mainly on the demand side to boost FI. So, meaningful the

different combinations of variables that could lead to higher (lower) levels of financial inclusion can be useful for governments to ensure a more efficient allocation of resources in a more effective way, in terms of money and time. In line with the objectives of the United Nations' 2030 agenda, we highlight that financial inclusion should embrace a range of institutional forms and strategies that can enhance capabilities, whether informal, semi-formal, or formal. Government policies in turn should address severe market failures that limit access to and uses of financial services to expand inclusion.

As limitations, our study includes only a select set of countries ($N < 100$), so we cannot confirm predictive validity. The number of configurations that can be used in the analysis also is limited by the sample size; the model should be parsimonious and non-redundant.

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Table 1: Necessary conditions

	FI		~FI	
	Consistency	Coverage	Consistency	Coverage
BC	0.710091	0.724019	0.461269	0.497935
~BC	0.507594	0.470883	0.744342	0.731058
BB	0.649679	0.705904	0.469876	0.540521
~BB	0.577118	0.506967	0.744342	0.692262
FL	0.847452	0.851186	0.400701	0.426102
~FL	0.428620	0.403175	0.860057	0.856508
HDI	0.896389	0.834433	0.416640	0.410619
~HDI	0.366858	0.372643	0.832005	0.894755

Notes: BC = bank concentration, BB = bank branches, FL = financial literacy, HDI = human development index, FI = financial inclusion. The ~ symbol represents the absence of the condition.

Table 2: Configurations supporting high and low levels of financial inclusion

	Configurations									
	FI.1	FI.2	FI.3	FI.4	~FI.1	~FI.2	~FI.3	~FI.4	~FI.5	
BC			●	⊗		⊗	⊗		⊗	
BB		●	⊗	●	⊗	⊗				
FL	●		●	●				⊗	⊗	
HDI	●	●			⊗		⊗	⊗		
Country example	Norway	Switzerland	Finland	Luxembourg	Mauritania	Ukraine	Vietnam	Nicaragua	Turkey	
Consistency	0.900	0.872	0.901	0.910	0.908	0.868	0.937	0.935	0.890	
Raw coverage	0.801	0.617	0.429	0.357	0.662	0.592	0.653	0.776	0.668	
Unique coverage	0.076	0.075	0.034	0.004	0.009	0.023	0.006	0.055	0.031	
Overall consistency		0.851					0.821			
Overall coverage		0.917					0.903			

Notes: BC = bank concentration, BB = bank branches, FL = financial literacy, HDI = human development index, FI = financial inclusion. The ~ symbol represents the absence of the condition. Black circles (“●”) indicate the presence of a condition; circles with a cross-out (“⊗”) indicate its absence; blank spaces indicate “don't care”; larger circles indicate core conditions, and small circles are peripheral conditions.

Table 3: Configurations supporting high and low levels of financial inclusion, developed countries

	Configurations					
	FI.1	FI.2	FI.3	~FI.1	~FI.2	~FI.3
BC		●	⊗			⊗
BB		⊗	●	⊗		●
FL	●	●			⊗	⊗
HDI	●		●	⊗	⊗	
Country example	Denmark	Norway	Luxembourg	Latvia	Bulgaria	Italy
Consistency	0.946	0.918	0.846	0.911	0.949	0.865
Raw coverage	0.769	0.525	0.346	0.593	0.802	0.462
Unique coverage	0.161	0.044	0.068	0.042	0.160	0.024
Overall consistency		0.908			0.864	
Overall coverage		0.881			0.867	

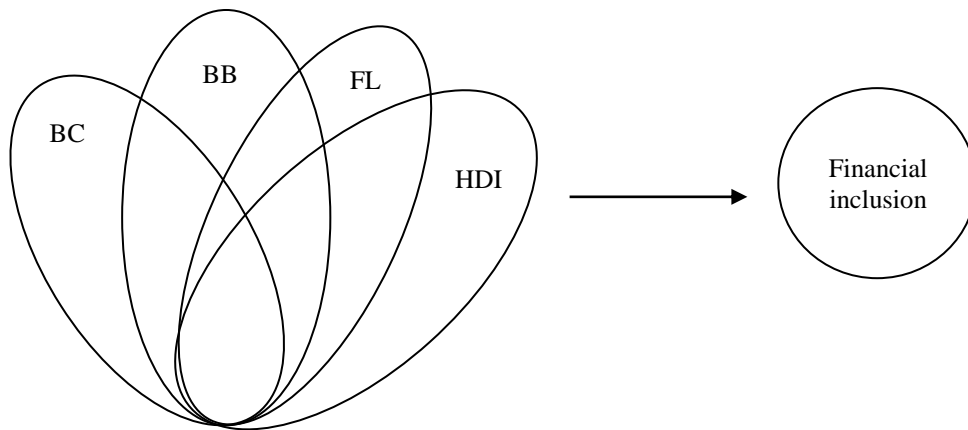
Notes: BC = bank concentration, BB = bank branches, FL = financial literacy, HDI = human development index, FI = financial inclusion. The ~ symbol represents the absence of the condition. Black circles (“●”) indicate the presence of a condition; circles with a cross-out (“⊗”) indicate its absence; blank spaces indicate “don't care”; larger circles indicate core conditions, and small circles are peripheral conditions.

Table 4: Configurations supporting high and low levels of financial inclusion, developing countries

	Configurations						
	FI.1	FI.2	FI.3	FI.4	~FI.1	~FI.2	~FI.3
BC		●	⊗				●
BB	⊗			●		●	⊗
FL		●	⊗	●	⊗		⊗
HDI	●		●	⊗	⊗	⊗	
Country example	Argentina	Mongolia	Turkey	Indonesia	Honduras	Guatemala	Nicaragua
Consistency	0.788	0.859	0.927	0.932	0.842	0.775	0.905
Raw coverage	0.522	0.566	0.452	0.305	0.686	0.485	0.361
Unique coverage	0.017	0.187	0.068	0.014	0.095	0.042	0.034
Overall consistency		0.776				0.807	
Overall coverage		0.842				0.762	

Notes: BC = bank concentration, BB = bank branches, FL = financial literacy, HDI = human development index, FI = financial inclusion. The ~ symbol represents the absence of the condition. Black circles (“●”) indicate the presence of a condition; circles with a cross-out (“⊗”) indicate its absence; blank spaces indicate “don't care”; larger circles indicate core conditions, and small circles are peripheral conditions.

Figure 1: Conceptual model



Notes: BC = bank concentration, BB = bank branches, FL = financial literacy, HDI = human development index.