Effect of Poverty on Financial Development in Developing Countries

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Abstract

Numerous studies in the literature have investigated the effect of financial development on poverty, and tend to report a poverty reduction effect of financial development. The present paper considers the issue in the other way around, by examining the effect of poverty on financial development. In particular, it has investigated the financial development effect of poverty that passes through three main channels, including the education level, the level of trade openness, and the degree of export product concentration. The analysis is carried out using a sample of 97 developing countries over the period 1980-2017, and the two-step Generalized Methods of Moments (GMM). Results have shown that poverty genuinely affects financial development through these three channels. Specially, lower poverty rates induce greater financial development in countries that experience higher education levels. Similarly, a rise in poverty rates in the context of restrictive trade policies (that eventually result in lower levels of trade openness) undermines the development of the financial sector. Finally, higher poverty levels adversely affect financial development in countries that experience an increase in the level of export product concentration.

Keywords: Poverty; Financial development; Education; Trade openness; Export product concentration.
JEL Classification: G20; I32.

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1

1. Introduction

Poverty reduction is at the heart of the international development agenda[2], as well as national development strategies. Enhancing domestic financial development is one means available to policymakers at the national level to achieve the poverty reduction objective. For example, several studies[3] have reported empirical evidence that financial development contributes to reducing poverty. While financial development remains an important factor for poverty reduction, one can also question whether the level of poverty in a country matters for the development of its financial sector. The relevance of this issue rests on the fact that the literature on the macroeconomic effects of poverty has shown that poverty influences negatively human capital (e.g., Azariadis and Stachurski, 2005; Bain et al. 2013; Bowles et al., 2006; Haushofer and Fehr, 2014; Perkins et al., 2012), trade openness (Gnangnon, 2019a), and export product diversification (Gnangnon, 2019b). These three factors, including human capital, trade openness and export product diversification, are important ingredients for the development of the financial sector. Specially, human capital accumulation is positively associated with financial development (e.g., Cole et al., 2014; Ibrahim and Sare, 2018; Khan et al., 2020; Sibel et al., 2015; Zaidi et al., 2019). Trade openness has been found to affect positively financial development (e.g., Ashraf, 2018; Baltagi et al., 2009; Kim et al., 2010; Rajan and Zingales, 2003; Zhang et al., 2015); and export product upgrading, including export product diversification drives positively financial development (e.g., Contessi and De Nicola, 2013; Cho et al., 2019; Do and Levchenko, 2007; Gnangnon, 2019a; Hattendorff, 2014; Ramcharan, 2006).

To the best of our knowledge, little attention (if not any) has been paid in the literature to the issue concerning the effect of poverty on financial development. Therefore, the current paper aims to fill this void in the literature by examining the effect of poverty on financial development in developing countries. In so doing, it contributes to two strands of the literature. The first one is the literature[4] on the macroeconomic effects of poverty, and the second one is the voluminous literature on the macroeconomic determinants of financial development.

The analysis has been conducted using an unbalanced panel dataset of 97 countries over the period 1980-2017, and the system Generalized Methods of Moments (GMM) in the context of dynamic panel data analysis. The following findings have been established. First, higher poverty leads to lower financial development over the full sample. Second, the effect of poverty on financial development translates through the education level, the level of trade openness, and the degree of export product concentration.

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[2] For example, at the United Nations Sustainable Development Summit in New York in September 2015, the United Nations Members adopted 17 Sustainable Development Goals (SDGs), and the first of these goals is "to end poverty in all its forms everywhere" (see page 14 of the United Nations document A/RES/70/1 titled "*Transforming our world: the 2030 Agenda for Sustainable Development*").

[3] These studies include for example, Ahlin and Jiang (2008); Akhter and Daly (2009); Beck et al. (2007); Boukhatem (2016); Burgess and Pande (2005); Donou-Adonsou and Sylwester (2016); Sehrawat and Giri (2016); Guillaumont-Jeanneney and Kpodar (2011); Honohan (2004); Jalilian and Kirkpatrick (2005); Khandker (2005); Mookerjee and Kalipioni (2010); Perez-Moreno (2011); Rewilak (2017) and Yusupov (2012).

[4] Related studies include for example, the effect of poverty on economic growth (e.g., Bagchi and Svejnar, 2015; Breunig and Majeed, 2020; López and Servén, 2015; Ravallion, 2012), on economic development (e.g., Mehanna, 2004; Nakabashi, 2018), human capital (e.g., Azariadis and Stachurski, 2005; Bain et al. 2013; Bowles et al., 2006; Haushofer and Fehr, 2014; Perkins et al., 2012), on trade openness trade openness (Gnangnon, 2019a), and on export product diversification (Gnangnon, 2019b).

In the remainder part of the analysis, we discuss in Section 2 how poverty can affect financial development. In section 3, we lay down the model specification that allows assessing the effect of poverty on financial development. Section 4 provides a preliminary data analysis. Section 5 discusses the econometric approach adopted to carry out the empirical exercise. Section 6 presents the regressions' results. We conclude in Section 7.

2. Theoretical discussion on the effect of poverty on financial development

Poverty prevents people from enjoying a decent life (e.g., Galbraith, 1958). Low incomes constrain the growth of individuals' wealth, and can potentially trap them in poverty (e.g., Azariadis and Stachurski, 2005; Barrett et al. 2006; Bowles et al. 2006; Dutta and Kumar, 2016; Galster et al., 2008; Naschold, 2013; Mirza et al. 2019).

Higher poverty also limits children's achievement, and increases the risk that they are dropped out early of school (e.g., Hill and Sandfort, 1995). According to Hanson et al. (2013), children in families with poor and near-poor socioeconomic status experience lower brain total gray matter volumes than those in families with high socioeconomic status. Therefore, such children are more exposed to difficulties at school and, accumulate less human capital, in light of the criticality of brain gray matter for processing information and executing actions. Furthermore, Mullainathan and Shafir (2013) have underlined the psychology effect of poverty on children' parents as far as the decision related to investment in human capital accumulation is concerned. As they are averse to undertake risky investments (such as in the education and health enhancement of their children), poor parents tend to favour short-term financial outcomes at the expense of goal-directed ones that could generate long term returns (e.g., Galster et al., 2008; Haushofer and Fehr, 2014; Pender, 1996; Yesuf and Bluffstone, 2008). The negative effect of poverty on human capital development is particularly enhanced when poor people have limited access to credit markets (e.g., Banerjee and Duflo, 2008; 2014; Carvalho et al., 2016).

Thus, a rise in poverty reduces poor people's investment in human capital (i.e., education and health) (e.g., Azariadis and Stachurski, 2005; Bowles et al., 2006; Haushofer and Fehr, 2014; López, 2006; Perkins et al., 2012; Sachs, 2005), and generate a less productive workforce (e.g., Breunig and Majeed, 2020; Hill and Sandfort, 1995). In the meantime, the accumulation of human capital is critical for financial development (e.g., Cole et al., 2014; Ibrahim and Sare, 2018; Khan et al., 2020; Sibel et al., 2015; Zaidi et al., 2019). For example, Cole et al. (2014) have obtained empirical evidence that improvement in the education levels enhances both the participation in financial markets, while also reducing significantly the probability of bankruptcy, foreclosure, or delinquency on a loan by individuals. A positive effect of human capital development on financial development has been reported by authors such as Ibrahim and Sare (2018), Khan et al. (2020), Sibel et al., (2015) and Zaidi et al. (2019).

Overall, higher poverty results in lower human capital accumulation, including lower levels of education, while at the same time, higher education levels have been shown to be positively associated with financial development. Therefore, we expect that higher poverty levels would be associated with lower development of the financial sector. We additionally postulate that lower poverty rates would enhance financial development in the context of improvement in the education levels (**hypothesis 1**).

The effect of poverty on financial development can also translate through the trade openness and export product diversification channels. As for the trade openness channel, the effect of

poverty on financial development depends on the direction in which poverty affects trade openness, and the direction in which trade openness influences financial development. On the one hand, Gnangnon (2019a) has found empirical evidence that poverty is positively associated with trade openness in 'advanced' developing countries, but reduces the level of trade openness in relatively less advanced developing countries, including poorest ones. Theoretically, such effects take place, in general, through the poverty-induced fall in financial and human resources for both households and the government[5]. However, the author has explained the enhanced trade openness effect of higher poverty in 'advanced' developing countries by the capacity of these countries, even in the context of rising poverty, to secure financial resources so as to redistribute income in favour of poor people, and to provide subsidies to poor trading firms. In these circumstances, poor people would be incentivized to consume, both domestically and through imports (notably when the trade regime is sufficiently liberalized on products imported by poor people). Trading firms would also be inclined to invest in trade-related activities so as to enhance their export performance in the international trade market. In this scenario, higher poverty could induce greater trade openness.

On the other hand, the literature has shown that trade openness can contribute to strengthening financial development (e.g., Ashraf, 2018; Baltagi et al., 2009; Kim et al., 2010; Hauner et al., 2013; Kletzer and Bardhan, 1981; Rajan and Zingales, 2003; Zhang et al., 2015). For example, Kletzer and Bardhan (1987) have argued that trade openness can promote financial development in countries that have a relatively well-developed financial sector, and a comparative advantage in industries and sectors that rely on external finance. In their analysis concerning the influence of interest groups on countries' financial development path, Rajan and Zingales (2003) have shown that the opening-up of an economy to both trade and capital flows would promote financial development, as both trade and finance breeds competition and threatens the rents of special interest groups representing established business. Baltagi et al. (2009) have, to some extent, challenged these findings by providing empirical evidence that economies do not necessarily need to open-up to both international trade and capital flows before developing the banking sector. In fact, according to Baltagi et al. (2009), opening up the economy only to international trade (or only to capital inflows) without the other, could still generate gains in terms of banking sector development. Ashraf (2018) has obtained empirically that greater trade openness induces a higher demand for finance, the liberalization of the domestic financial sector, and the enhancement of opportunities for lending diversification. All of these contribute to the decrease in the cost and risk of bank credit, and to the concomitant rise in the volume of bank credit.

Meanwhile, trade openness may not always result in greater financial development. For example, Kim et al. (2010) have found for relatively low-income countries or high-inflation economies that a positive long-run relationship between trade openness and financial development coexists with a negative short-run relationship. Zhang et al. (2015) have shown for China that both trade and financial openness exert a negative effect on the size of financial development, even though they influence positively financial efficiency and competition. The authors explain these

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[5] Higher poverty levels can be associated with lower public revenue (and constrain governments' investments in public infrastructure), while also limiting the capacity of firms to enhance their productive capacity. Additionally, lower public revenue would constrain the government's supply of public services such as education and health. All these would negatively affect firms' competitiveness in the international trade market, and the country's level of trade openness, including by raising trade costs (due in particular to the lack of sufficient hard infrastructure in the economy) (Gnangnon, 2019b). These effects can be particularly severe in poor countries, which already suffer from very low levels of financial resources, compared to relatively advanced developing countries.

outcomes by the possible existence of a mismatch problem between the distribution in the types of trading companies and the distribution of financial resources. Another explanation provided by the authors to justify the negative effect of trade and financial development is that local incumbents may significantly impede financial development in China.

In a nutshell, it is difficult to anticipate the direction of the indirect effect of poverty on financial development through the trade openness channel. Nonetheless, we can postulate that if poverty induces greater trade openness, and if in turn, trade openness results in greater financial development, then poverty would likely result in greater financial development in countries that improve their level of trade openness (**hypothesis 2**). Conversely, if poverty leads to a lower level of trade openness, while at the same time, the latter influences negatively financial development, then we can expect the rise in poverty rates to undermine the development of the financial sector as countries further open-up their economies to international trade (**hypothesis 3**).

Let us now consider the indirect effect of poverty on financial development that translates through the export product diversification channel. The effect of poverty on financial development through export product diversification would depend on how poverty influences export product diversification, and in turn, how export product diversification affects financial development. On the one hand, Gnangnon (2019b) has provided empirical evidence that the lower human capital accumulation and decline in public revenue induced by higher poverty rates would lead to a greater export product concentration in countries that experience a rise in the poverty level. On the other hand, some few studies have uncovered a positive effect of export product diversification on financial development (e.g., Contessi and De Nicola, 2013; Cho et al., 2019; Do and Levchenko, 2007; Gnangnon, 2019b; Hattendorff, 2014; Ramcharan, 2006). One of the theoretical links through which export product diversification can affect positively financial development is that greater export product diversification, including towards financially dependent products (such as manufactured exports) induces a higher demand for external finance (i.e., a an increase in the demand for credit by firms that export financially-dependent products). In turn, the rise in the demand for external finance promotes financial development (see Do and Levchenko, 2007). The reverse reasoning holds for countries where firms export products that are not financially dependent (this is for example the case for primary commodities). In such countries, the low demand for credit would result in an under-developed financial system.

Another explanation for the positive effect of export product diversification on financial development has been provided by Hattendorff (2014), who has drawn from the theoretical work of Hausman and Rigobon (2003). The latter have demonstrated that the lack of specialization on non-resource tradable goods (such as manufacturing products) by resource abundant countries prevents them from relying on an efficient allocation of production inputs so as to cope with demand shocks. This situation generates a higher volatility of the real exchange rate (i.e., the relative prices of tradable and non-tradable goods), a demand by lenders for higher risk premium in the context of financial frictions (e.g., higher bankruptcy costs or higher real exchange rate volatility), and ultimately a rise in real interest rates. Building on these findings, Hattendorff (2014) has argued that export product concentration would be associated with higher real interest rates and exchange rate volatility, which would undermine investment, reduce the volume of credit allocated, and constrain the development of the financial sector. Hattendorff (2014) has provided empirical support for his hypothesis. The author has uncovered empirically that export product

diversification influences positively financial development in both developed and developing countries, even though in poor countries, it has no significant effect on financial development.

Finally, to justify theoretically the positive effect of export product diversification on financial development, Ramcharan (2006) has built on the argument that risk diversification across a range of imperfectly correlated sectors would promote financial development.

Against this backdrop, we postulate that poverty would induce lower financial development in countries that experience a higher export product concentration (including on low value-added products, as it is the case for many developing countries) (**hypothesis 4**). This is because on the one hand, poverty induces a higher degree of export product concentration (Gnangnon, 2019b), while on the other hand, export product concentration is likely to result in lower degree of financial development (e.g., Contessi and De Nicola, 2013; Cho et al., 2019; Do and Levchenko, 2007; Gnangnon, 2019b; Hattendorff, 2014; Ramcharan, 2006).

We test below each of the hypotheses highlighted above.

3. Empirical model

To examine empirically the effect of poverty on financial development, including through the education level, trade openness, and export product diversification channels, we consider a baseline model specification where our key variable of interest is the indicator of poverty and where control variables are drawn from the voluminous literature[6] on the macroeconomic determinants of financial development. Specially, we consider a few control variables that are likely to affect the influence of poverty on financial development. These include the real per capita income ("GDPC"), which acts as a proxy for the economic development level; the level of financial open ("FINPOL"); the level of democracy[7] ("POLITY2), which represents a proxy for the quality of institutions and governance; and the population density ("POPDENS"). It is worth noting that the variables capturing respectively the education level, the trade openness, and the level of export product diversification (which have not been included in the baseline model because they represent the channels through which poverty can affect the depth of financial development (we henceforth refer these variables as channel-variables). Later in the analysis, each of these channel-variables are included (once) in the baseline model specification later in the analysis, so as to test hypotheses 1 to 4.

In terms of the expected effect of control variables on financial development, Patrick (1966) has underlined the 'supply-leading' and 'demand-following' aspects of financial development. The 'supply-leading' role of financial institutions rests on the idea that financial institutions facilitate the transfer of resources from traditional to modern sectors (see also Gurley and Shaw, 1955; Goldsmith, 1969; Xu, 2000). This is particularly the case in countries that enjoy an improvement in the economic development level, as such countries are likely to experience greater economies of scale in financial services provision, which in turn, would spur financial development. The argument underlying the 'demand-following' aspects of financial development is the following: as an economy expands, its financial sector develops because the private sector may increase its

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[6] For a literature review on the macroeconomic determinants of financial development, see for example, Aluko and Ajayi (2018); Huang (2010); and Voghouei et al. (2011).

[7] A number of studies have underlined that the degree of a country's democratization can reflect for the institutional and governance quality. These include Charron and Lapuente (2010); Desbordes and Verardi (2017); Guerin and Manzocchi (2009); Rodrik (1996); and Sung (2004).

demand for new financial instruments, and get better access to external finance (e.g., Al-Yousif, 2002; Ang and McKibbin, 2007; David et al. 2014; Kuznets, 1955; Robinson, 1952).

Concerning the effect of financial openness on financial development, Zhang et al. (2015) have reported that financial openness is negatively associated with financial development in China. Rajan and Zingales (2003) have noted that the rise in financial development rests on a simultaneous openness of both trade and capital flows. Karimu and Marbuah (2017) have provided empirical support for this argument, over a set of developing countries. However, Baltagi et al. (2009) have found that financial openness can lead to greater financial development in the absence of higher trade openness.

Improvements in the institutional and governance quality can contribute to strengthening financial development through several avenues, including the protections for creditors and investors (e.g., La Porta et al. 1997), the channelling of resources to productive activities, the minimization of their waste and misuse (e.g., Capasso, 2004), and the political interference in lending decisions, which in countries with fewer constraints on the executive power, may reduce the efficiency of credit allocation (e.g., Tressel and Detragiache, 2008). The positive effect of the institutional and governance quality on financial development has been highlighted by other studies (e.g., Bui and Bui, 2019; Dwumfour and Ntow-Gyamfi, 2018; Ho et al. 2018; Huang, 2010; Khan et al., 2020; Le et al. 2016; Levine, 1997).

Finally, at their early stage of financial development, countries usually concentrate the development of financial sector activities in geographical areas of a high population density, and where there exists economies of scale in the delivery of most financial services. This is particularly the case in counties where the geographical areas of high population density are those of relatively higher average incomes and low levels of poverty (e.g., Allen et al. 2014; Aluko and Ajayi, 2018; de la Torre et al., 2013; Shahbaz et al., 2018). We postulate that the population density would be positively associated with financial development.

Following the empirical literature on the macroeconomic determinants of financial development, we postulate the following baseline dynamic model:

$$FINDEV_{it} = \alpha_1 FINDEV_{it-1} + \alpha_2 POV_{it} + \alpha_3 GDPC_{it} + \alpha_4 FINPOL_{it} + \alpha_5 POLITY2_{it} + \alpha_6 POPDENS_{it} + \mu_i + \omega_{it} \quad (1)$$

The subscripts i and t represent respectively the country's index and the time-period. Based on available data, the panel dataset is unbalanced and contains 97 developing countries over the period 1980-2017. Following the practice in the relevant empirical literature, the effect of business cycles on variables in model (1) have been smoothed using non-overlapping sub-periods of 5-year average data. These non-overlapping sub-periods include 1980-1984; 1985-1989; 1990-1994; 1995-1999; 2000-2004; 2005-2009; 2010-2014, and 2015-2017 (the last sub-periods covers only 3 years). α_1 to α_6 are coefficients that would be estimated. μ_i are countries' time invariant specific effects; ω_{it} is a well-behaving error term. We provide the description and source of all variables in model (1) as well as all channel-variables cited above, in Appendix 1.

The dependent variable "FINDEV" represents the index of financial development. In the literature, there is no consensus on the best and single indicator that could fully reflect the extent of a country's financial development. In that respect, several indicators of financial development

have been utilized in the empirical literature. The present analysis uses the recently developed index of financial development by the International Monetary Fund (see Sahay et al., 2015). This index is all encompassing, as it includes multiple dimensions of financial development. It summarizes how developed financial institutions and financial markets are in terms of their: depth (size and liquidity), access (ability of individuals and companies to access financial services), and efficiency (ability of institutions to provide financial services at low costs and with sustainable revenues, and the level of activity of capital markets). The one period lag of the variable "FINDEV" has been introduced in model (1) with a view to taking into account the partial adjustment of the degree of financial development to its long-run equilibrium (e.g., Baltagi et al., 2009).

The dependent variable "POV" is the measure of poverty rate. We rely on the huge literature on the determinants and effects of poverty, and use two indicators of poverty that are widely used in the empirical literature. These include the poverty headcount ratio at $1.90 a day, denoted "POVHC", and the poverty gap at $1.90 a day, denoted "POVGAP", with the former being our main indicator of poverty, and the latter being used for robustness check analysis. The poverty headcount at $1.90 a day represents the percentage of the population living with less than $1.90 a day, at 2011 international prices. The poverty gap at $1.90 a day (at 2011 international prices) reflects the depth and incidence of poverty. It represents the mean shortfall in income or consumption from the poverty line $1.90 a day (counting the nonpoor as having zero shortfall), expressed as a percentage of the poverty line.

As variables in model (1) as well as channel-variables (that will be introduced later in the analysis) are expressed in different units of measurements, we transform them using a standardization procedure. This procedure helps address eventual problems related to the various units of measurements of variables in the empirical analysis, and more importantly it helps rank variables in terms of their contribution to the dynamics of financial development. This standardization procedure consists of computing for each variable, the ratio of the difference between this variable and its mean (average) to the standard deviation of this variable. It eliminates de facto time dummies, which should have been included in the baseline model to reflect global shocks that affect financial development paths in all countries together. Finally, this standardization procedure allows to handle possible outliers problems in the dataset. We have reported in Appendices 2a and 2b the descriptive statistics, respectively on unstandardized (i.e., non-transformed) variables, and standardized variables. Appendix 3 presents the list of the 97 countries used in the full sample.

4. Some preliminary data analysis

According to statistics related to unstandardized variables reported in Appendix 2a, the maximum and minimum values of the indicator of financial development are respectively 0 and 0.7. Standard deviation and average values of this indicator over the full sample amount respectively to 0.2 and 0.13. Values of the indicator of poverty headcount ratio in the full sample range between 0 and 94.4, with a mean of 27.2 and a standard deviation of 26.8. Values of the poverty gap indicator range between 0 and 64.5, with a standard deviation amounting to 14, and an average amounting to 11.7.

[Insert Figure 1, here]

We provide in Figure 1 the evolution over time of the two indicators of poverty and the measure of financial development, over the full sample. Figure 2 presents for the full sample, the

correlation pattern between poverty and financial development, using both unstandardized (i.e., non-transformed) variables and standardized variables. Figure 1 shows that poverty rates have steadily declined over time, while financial development has steadily increased.

[Insert Figure 2, here]

Figure 2 indicates a negative correlation pattern between poverty indicators and the financial development indicator, when we use either unstandardized or standardized indicators of poverty and financial development. However, the graphs based on unstandardized variables show a left-skewed distribution of data, which is addressed in the graphs based on the standardized variables.

5. Econometric approach

Drawing from previous works on the macroeconomic determinants[8] of financial development (e.g., Aluko and Ajayi, 2018; Baltagi et al. 2009; Gnangnon, 2019b), we investigate empirically the effect of poverty on financial development by using the two-step system Generalized Methods of Moments (GMM) estimator suggested by Arellano and Bover (1995) and Blundell and Bond (1998). This estimator is suitable for dynamic panel datasets featured by a small time-period and a large cross-section. It helps address the endogeneity issues such as measurement errors, and the bi-directional causality between regressors and the dependent variable. In the present analysis, we consider all variables, except the population density variable, as endogenous (see also Gnangnon, 2019b). To illustrate this reverse causality problem, let us take the specific case of the poverty variable. While we expect poverty to influence financial development, an important strand of the literature has shown that financial development affects poverty (see studies cited in footnote 2 of Section 1).

The use of the two-step system GMM estimator entails the estimation of a system of equations that combines an equation in differences with an equation in levels, where lagged first differences are used as instruments for the levels equation and lagged levels are used as instruments for the first-difference equation. Additionally, compared to the difference GMM estimator proposed by Arellano and Bond (1991), the two-step system estimator is more appropriate for estimating model (1) because of the high persistence over time of all regressors, in particular the financial development indicator and the poverty indicators. In this case, the two-step system GMM estimator generates estimates that are more efficient than the ones obtained from the difference GMM estimator, given that the difference GMM can generate weak instruments when series are persistent. Additionally, the difference GMM estimator magnifies gaps when panel dataset is unbalanced (e.g., Roodman, 2009).

The consistency of the two-step system GMM estimator is evaluated by three tests, including the Arellano-Bond test of first-order serial correlation in the error term (denoted AR(1)), the Arellano-Bond test of no second-order autocorrelation in the error term (denoted AR(2)), and Sargan-Hansen test of over-identifying restrictions (OID), which determines the validity of the instruments used in the regressions. In addition, the absence of the autocorrelation in the error term at the third-order (AR(3)) may indicate that the model does not suffer from an omitted variable bias.

All regressions based on the two-step system GMM estimator are performed in the analysis use the two indicators of poverty, i.e., poverty headcount, and poverty gap. The outcomes arising

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[8] See for example, Aluko and Ajayi (2018); Huang (2010); and Voghouei et al. (2011) for a literature review.

from the FE-based estimation are reported in columns [1] and [2] of Table 1. In columns [3] and [4] of the same Table, we present the results of the estimation of the dynamic model (1) (as specified in Section 3) by means of the two-step system GMM approach. Columns [5] and [6] of Table 1 display estimates arising from the estimation of the specification of model (1) that allows examining how the effect of institutional quality on financial development varies across countries in the full sample. This specification of model (1) includes the interaction between the variable "POLITY2" and the real per capita income variable. We explain later why we perform these two later regressions.

Tables 2 to 4 contain the outcomes of the estimation (by means of the two-step system GMM) of different specifications of model (1) that allow testing hypotheses 1 to 4.

Table 2 presents estimates that allow testing hypothesis 1. To recall, these estimates help examine whether the effect of poverty on financial development translates through the education level channel. To obtain these outcomes, we estimate different specifications of model (1) (i.e., alternatively with poverty headcount ratio and poverty gap) in which we introduce a variable capturing the education level, and its interaction with the relevant poverty variable. We first measure the education level by the variable denoted "EDUSUM", which represents the sum of the gross primary school enrolment (%), gross secondary school enrolment (%), and gross tertiary school enrolment (%). Second, in the model specifications, we replace this variable with each of its components (introduced once in the model). These components are the gross primary school enrolment (%) denoted "EDUPRIM"; the gross secondary school enrolment (%) denoted "EDUSEC"; and the gross tertiary school enrolment (%), denoted "EDUTERT". These three components of "EDUSUM" are extracted from the World Development Indicators (WDI) developed by the World Bank.

Table 3 contains the regressions' outcomes that help to test hypothesis 2 (or alternatively hypothesis 3). These outcomes are obtained by estimating different variants of model (1) in which we include a variable measuring the level of trade openness, and the interaction between the latter and the relevant poverty variable (i.e., either the poverty headcount ratio, or the poverty gap). We use three different indicators of trade openness. The first indicator is a measure of de jure trade openness, i.e., a measure of trade policy liberalization that reflects policymakers' decision (and measures adopted) to open their economy to international trade. This indicator, denoted "TRJURE", is the de jure trade globalisation index (see Dreher, 2006; Gygli et al. 2019). It is in fact a composite index of trade regulations, trade taxes, tariffs, and trade agreements. The other two indicators of trade openness are measures of de facto trade openness, i.e., the level of trade openness that results from several factors, of which the de jure trade openness (i.e., trade policy liberalization), economic policies, and other factors such as the geography, history, as well as domestic and international politics. One of the de facto trade openness indicators, denoted "OPEN", is the indicator of trade openness often utilized in the empirical literature, and measured by the share of the sum of exports and imports in percentage of GDP. The other trade openness indicator, denoted "OPENSW", is proposed by Squalli and Wilson, 2011: p1758) and computed as the share of the sum of exports and imports in percentage of GDP, adjusted by the proportion of a country's trade level relative to the average world trade. This indicator of trade openness better shows a country's degree of integration into the international trade market, and consequently reflects much more countries' level of participation in international trade, compared to the standard trade openness indicator (i.e., "OPEN").

Results in Table 4 allow testing hypothesis 4, i.e., the extent to which the effect of poverty on financial development depends on the level of export product diversification. To that end, we estimate a specification of model (1) that includes the indicator of export product concentration, denoted "ECI", and its interaction with the relevant poverty indicator. Data on "ECI" is extracted from the IMF's diversification toolkit. It is calculated using the Theil Index and following the definitions and methods employed by Cadot et al. (2011). Higher values of "ECI" indicate an increase in the level of overall export product concentration, while lower values of the index show a rise in the level of export product concentration (or conversely a greater export product diversification).

6. Estimations' results

The two-step system GMM estimator. The results of the diagnostic tests (presented in Section 5) to assess the consistency of this estimator are presented in Table 1 and in Tables 2 to 4. We first note from these Tables that the one-period lag of the financial development variable always holds a positive and significant coefficient at the 1% level. We conclude that the use of the dynamic specification of model (1) in the analysis is suitable for examining empirically the effect of poverty on financial development. Second, the p-values related to the statistics of the AR(1) test are zero (i.e., lower than the 10% level of statistical significance), while the p-values related to the statistics of the AR(2) and AR(3) tests are higher than 0.10 (i.e., higher than the 10% level of statistical significance). Furthermore, the p-values of the statistic related to the OID test are all higher than 0.10. On the basis of these outcomes, we conclude that the two-step system GMM is consistent, and appropriate to perform the empirical analysis based on the dynamic model (1).

[Insert Table 1, here]

Results in columns [1] and [2] of Table 1 indicate negative and significant (at the 10% level) coefficients of the poverty variables. Moreover, the coefficients of the two indicators of poverty are quite similar. We deduce that higher poverty rates influence negatively financial development, at the 10% level. A 1 standard deviation rise in poverty headcount ratio induces a decline in the indicator of financial development by a 0.051 standard deviation. Likewise, a 1 standard deviation rise in poverty gap leads to a fall in the indicator of financial development by a 0.055 standard deviation. The outcomes of control variables in columns [1] and [2] of Table 1 are similar. They indicate that at the 1% level, a higher real per capita income, greater financial openness, and a higher population density influence positively and significantly financial development. However, the level of democracy is negatively associated with financial development. This finding runs against our theoretical prediction, and may reflect the fact that the effect of democracy on financial development depends on countries' level of real per capita income. Before testing this hypothesis, we note from columns [1] and [2] of Table 1 that, in absolute value, and at the 10% level, the population density contributes the most to the dynamics of financial development in countries of the full sample. This variable is followed by the real per capita income, financial openness, the institutional quality, and finally, the poverty indicators. Therefore, poverty appears to contribute the least to the dynamics of financial development, while population density contributes the most to the dynamics of financial development. However, this ranking might change once we take into account the channel-variables in the analysis.

We now turn to better understand what is hidden under the peculiar outcome concerning the negative effect of the level of democracy (the proxy for institutional quality) on financial

development. Results in columns [3] and [4] of Table 1 show that the interaction term related to the interaction variable "[POLITY2*GDPC]" is positive and significant at least at the 1% level, while the coefficient of "POLITY2" is negative and significant at the 1% level. These two results suggest that there is a turning point of the real per capita income above which the effect of democracy on financial development becomes positive. Focusing on results in columns [5] of Table 1, we obtain that the standardized value of this turning point of the real per capita income is 1.62 (= 0.102/0.0628), and its equivalence in terms of unstandardized value amounts to US\$ 10299.3 [(=1.62*4052.992 + 3733.477]. Note that US\$ 4052.992 and US\$ 3733.477 are respectively the standard deviation and the average of the "GDPC" variable over the full sample (see Appendix 2a), while 0.102 and 0.0628 are respectively the estimates of "POLITY2" and "[POLITY2*GDPC]". To also recall, unstandardized values of the real per capita income range between US\$ 153.9 and US\$ 22000. Thus, counties whose real per capita income is lower than US\$ 10299.3 experience a negative effect of democracy on financial development, while in the other countries, democracy is positively associated with financial development, and the greater the level of real per capita income, the higher is the positive effect of democracy on financial development. The same reasoning applies to the findings in column [6] of Table 1, with the specificity here being that the standardized value of the turning point of the real per capita income is 1.89 (= 0.111/0.0586), and its equivalence in terms of unstandardized value amounts to US\$ 11393.6 [(= 1.89*4052.992 + 3733.477]. Overall, for high levels of real per capita income, the institutional quality (proxied by the level of democracy) influences positively financial development, while for relatively lower levels of real per capita income, the institutional quality exerts a negative effect on financial development.

[Insert Table 2, here]

We now consider the outcomes displayed in Table 2. These outcomes serve to test hypothesis 1. We note across all columns (except in column [5]) of this Table that the coefficients of the interaction variable between the education level and the poverty indicator are negative and significant at least at the 5% level (the interaction term of "POVHC*EDUPRIM" is significant at the 5% level, while all other interaction terms are significant at the 1% level). These results tend to suggest that lower poverty rates promote the development of the financial sector in countries that enjoy a rise in the education level. These findings lend support to hypothesis 1. However, for a better interpretation of the outcomes, we need to take into account the statistical significance of the coefficient of the poverty variables. Taking up results in columns [1] and [2] of Table 2, we observe that the coefficients of poverty indicators are not significant at the conventional levels. Therefore, by combining these results with those of the interaction variables (described above), we conclude that lower poverty rates (either poverty headcount or poverty gap) consistently influence positively financial development in countries where the total education level rises (i.e., where the sum of primary, secondary and tertiary education levels increases). The higher the total education level, the greater is the size of the positive effect of 'the decline in poverty rates' on financial development. Likewise, results in columns [3] and [4] show that the coefficients of the poverty variables are not significant at the conventional levels. Thus, by combining these outcomes with those of the interaction variables in the same columns (already discussed above), we conclude that hypothesis 1 is once again confirmed: lower poverty rates are positively associated with financial development in countries that enjoy a rise in the primary education level, thereby

confirming hypothesis 1. The size of the positive effect of 'a fall in poverty rates' on financial development rises as the level of the gross primary school enrolment increases.

Outcomes in columns [5] indicate that both the coefficient of "POVHC" and the interaction term of the variable "[POVHC*EDUSEC]" are not significant at the 10% level. These results indicate that the effect of poverty headcount ratio on financial development does not depend on level of the gross secondary school enrolment. As for results in column [6], the interaction term of "[POVGAP*EDUSEC]" appears to be negative and significant at the 1% level, and the coefficient of "POVGAP" is negative but significant at the 5% level. Taken together, these two outcomes suggest that lower poverty gap rates influences positively and significantly financial development in countries that enjoy an increase in the rate of the gross secondary school enrolment. Furthermore, the higher the gross secondary school enrolment rate, the greater is the magnitude of the positive effect of the 'decline in poverty gap rates' on financial development. These findings validate ***hypothesis 1***. Finally, in both columns [7] and [8], the coefficients of the poverty indicators are not significant at the 10% level. Thus, in light of the negative and significant effect of the interaction variables in these columns, we conclude that lower poverty rates (either poverty headcount ratio or poverty gap) affect positively and significantly financial development in countries that experience higher rates of he gross tertiary school enrolment. These findings confirm again ***hypothesis 1***.

Overall, the estimates presented in Table 2 tend to confirm hypothesis 1, whereby declining poverty rates in the context of rising education levels influence positively financial development. The higher the education level, the greater is the magnitude of the positive effect of the 'declining poverty rates' on financial development.

[Insert Table 3, here]

Turning to results presented in Table 3, we note that the coefficient of the variable "POVHC*TRJURE" and "POVGAP*TRJURE" are positive and significant at the 1% level, and the coefficients of "POVHC" and "POVGAP" are negative and significant respectively at the 1% level, and the 5% level. These outcomes indicate that while poverty influences positively financial development as the level of trade liberalization increases, there exists a threshold of "TRJURE" below which the effect of poverty on financial development is negative and significant. Based on results in column [1] of Table 3, the standardized value of this turning point of the trade liberalization variable is 0.764 (= 0.0752/0.0984), and its equivalence in terms of unstandardized value is 57.6 [(= 0.764*20.757 + 41.739]. It is worth noting that values of the variable "TRJURE" range between 7.440 and 93.6 (see Appendix 2a). The numbers "20.757" and "41.739" are respectively the standard deviation and the average of "TRJURE" over the full sample (see Appendix 2a). We conclude that countries whose level of trade policy liberalization is lower than 57.6 experience a negative effect of poverty headcount ratio on financial development; the lower the degree of trade policy liberalization, the higher is the magnitude of the negative effect of poverty headcount ratio on financial development. In contrast, in countries where the degree of trade policy liberalization exceeds 57.6, poverty headcount ratio influences positively financial development, and the higher the degree of trade policy liberalization, the greater is the magnitude of the effect of poverty headcount ratio on financial development. These findings tend to **confirm hypothesis 2** (at the expense of hypothesis 3). Furthermore, outcomes based on the poverty gap (in column [2] of Table 3) show similar patterns to those in column [1] of the same Table. However, here, the turning point of the variable "TRJURE" is different from the one obtained

from the results reported in column [1] of Table 3. The standardized value of the threshold of "TRJURE" above which poverty gap exerts a positive effect on financial development amounts to 0.514 (= 0.0555/0.108), and its equivalence in terms of unstandardized value is 52.41 [(= 0.514*20.757 + 41.739].

In column [3] of Table 3, we find that the coefficient of "POVHC*OPEN" is positive and significant at the 1% level, while that of the variable "POVHC" is significant only at the 10% level. Therefore, we conclude that at the 5% level, poverty headcount consistently induces greater financial development as countries further open-up their economies to international trade; and the higher the level of trade openness, the greater is the magnitude of the effect of poverty headcount ratio on financial development. Results in column [4] of Table 3 show a positive and significant (at the 1% level) of the interaction variable between poverty gap and trade openness ("OPEN"). Concurrently, the variable "POVGAP" holds a negative and significant at the 5% level. The combination of these two results suggests that there is a turning point of the trade openness variable "OPEN" above which the effect of poverty gap on financial development becomes positive, as below this threshold, this effect is negative. The standardized value of this threshold amounts to 0.846 (= 0.0390/0.0461), and its equivalence in terms of unstandardized value is 103.45 [(= 0.846*36.483 + 72.586] (the numbers "36.483" and "72.586" are respectively the standard deviation and the average of the variable "OPEN" over the full sample, and values of "OPEN" range between 15.6% and 229.64% - see Appendix 2a). Thus, for levels of trade openness ("OPEN") lower than 103.45%, countries experience a negative effect of poverty gap on financial development, and the lower the level of trade openness, the higher is the magnitude of the negative effect of poverty gap on financial development. In contrast, countries that enjoy a trade openness level higher than 103.45% experience a positive effect of poverty gap on financial development; for these countries, the higher the trade openness level, the greater is the magnitude of the positive effect of poverty gap on financial development. These findings also confirm hypothesis 2.

Turning to the estimates reported in columns [5] and [6] of Table 3, we obtain that the interaction terms associated respectively with the variables "POVHC*OPENSW" and "POVGAP*OPENSW" are positive and significant at the 1% level, while at the same time, the coefficients of variables "POVHC" and "POVGAP" are not significant at the conventional levels. Therefore, we conclude that as the level of trade openness ("OPENSW") increases, poverty (be it poverty headcount ratio or poverty gap) exerts a positive and significant effect on financial development, and the magnitude of this positive effect consistently rises as the degree of openness increases. Once again, these findings confirm hypothesis 2.

Overall, the outcomes reported in Table 3 convey the message that countries that experience a rise in the poverty levels, but adopt measures conducive to greater trade liberalization or that result in a greater openness of their economies to international trade, enjoy a greater development of their financial sector. In contrast, countries that experience a rise in the poverty levels, but adopt restrictive trade measures that even result in lower trade openness, experience a lower level of financial development.

[Insert Table 4, here]

We now consider outcomes displayed in Table 4. They show negative and significant (at the 1% level) coefficients of variables "POVHC*ECI" and "POVGAP*ECI". At the same time, the coefficients of "POVHC" and "POVGAP" are not significant at the 10% level. Taken together, these outcomes suggest a rise in the poverty level (whether it is poverty headcount ratio or poverty

gap) is negatively associated with financial development in countries that experience a higher level of export product concentration. Specially, the higher the degree of export product concentration, the greater is the magnitude of the negative effect of poverty on financial development. These findings confirm hypothesis 4 set out in Section 2.

The key message conveyed by the results in Table 4 is that in countries with a high degree of export product concentration, poverty reduces the level of financial development. In simple terms, this means that poverty leads to greater financial development in countries that endeavour to diversify their export product baskets.

Results of control variables in Tables 2 to 4 are fully consistent with those reported in columns [3] and [4] of Table 1.

7. Conclusion

This paper has examined the effect of poverty on financial development, using a set of 97 developing countries, with data spanning the period 1980-2017. The analysis has shown that while poverty can influence negatively and significantly financial development, its negative effect passes through three main channels tested in the empirical analysis. These channels include the education level (as a proxy for human capital), the degree of trade openness, and the level of export product concentration. In particular, lower poverty rates tend to be associated with greater financial development level in countries that experience a rise in the education level. Similarly, a rise in poverty rates is associated with lower financial development in countries that adopt restrictive trade measures, which eventually result in lower degrees of trade openness. In other words, poverty induces greater financial development in countries that open-up their economies to international trade, in particular when the level of trade policy liberalization or trade openness exceeds a certain threshold. Finally, a rise in poverty levels influences negatively financial development in countries that experience a rise in their degree of export product concentration.

These findings show that not only can financial development help reduce poverty in developing countries, but in turn, poverty can also influence countries' financial development path. Financial development is essential for economic development. It can promote economic growth by, *inter alia*, mobilizing and channeling savings towards productive investments, optimizing capital allocation, and attracting foreign capital flows that themselves generate important spillovers in the host countries. The limited resources available to developing countries for financing their development needs requires the deepening of the domestic financial sector. This can take place through the adoption of measures that help reduce poverty, while concurrently providing opportunities and means for citizen, including the poorest ones to enhance human capital, notably their education level. Even in countries that experience a rise in the poverty levels, measures that are favorable to the development of the financial sector include those that result in greater trade openness as well as greater export product diversification.

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FIGURES

Figure 1: Poverty and financial development_Over the full sample
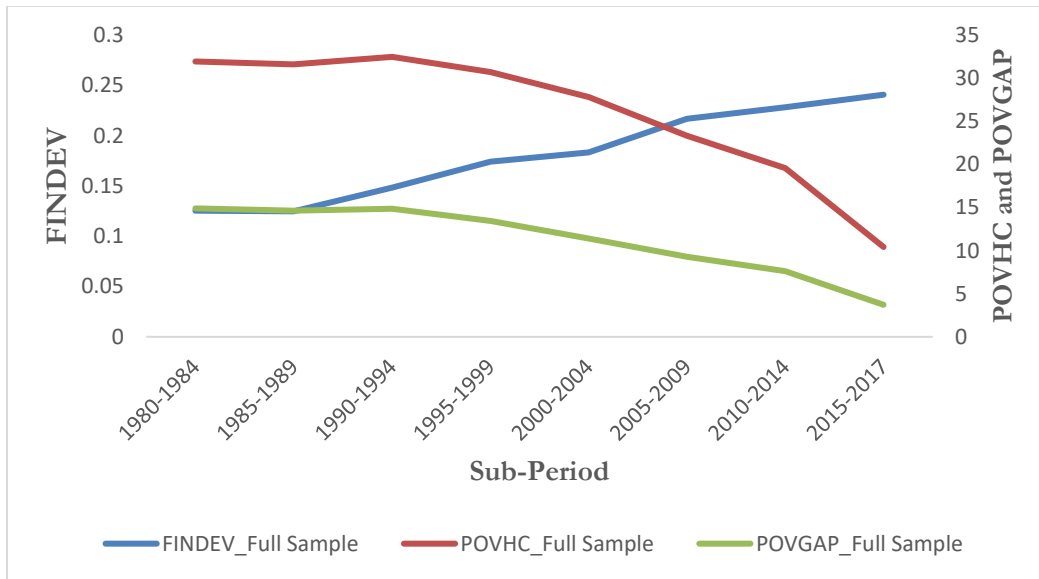
Source: Author

Figure 2: Correlation pattern between poverty and financial development_Over the full sample
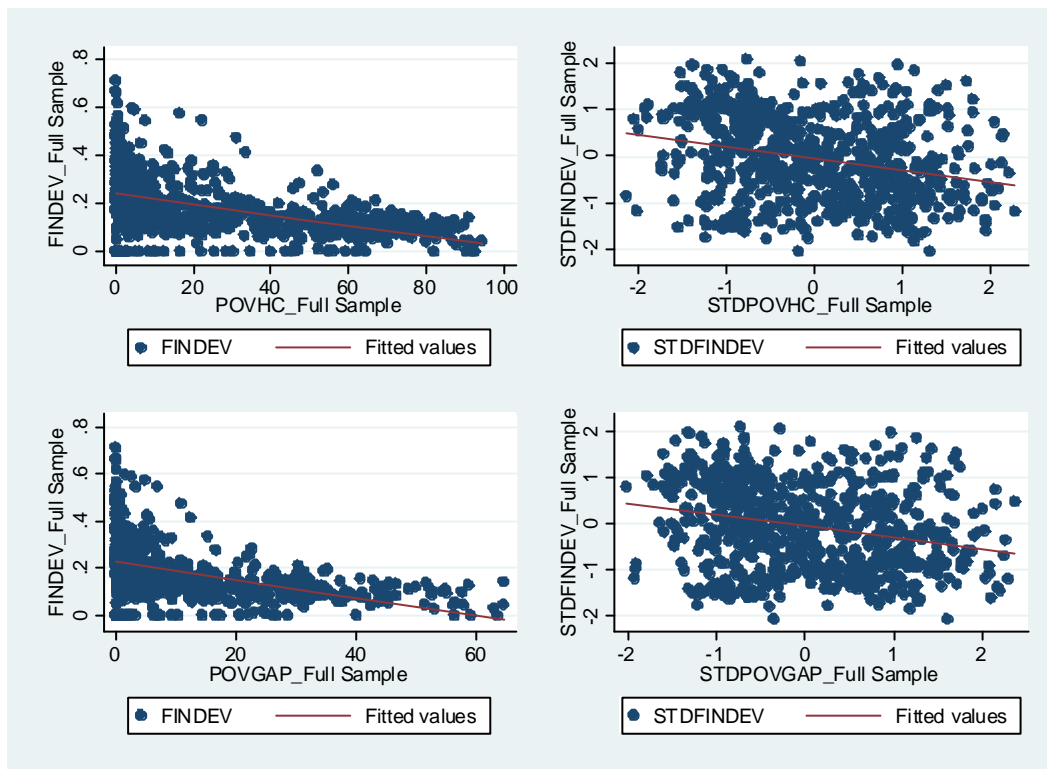
Source: Author

TABLES

Table 1: Effect of poverty on financial development
Estimator. Two-Step System GMM

Variables	FINDEV (1)	FINDEV (2)	FINDEV (3)	FINDEV (4)
FINDEV$_{t-1}$	0.568***	0.574***	0.616***	0.617***
	(0.0179)	(0.0197)	(0.0240)	(0.0233)
POVHC	-0.0513*		-0.0500**	
	(0.0265)		(0.0251)	
POVGAP		-0.0553*		-0.0514*
		(0.0291)		(0.0263)
POLITY2*GDPC			0.0628***	0.0586***
			(0.0187)	(0.0187)
GDPC	0.151***	0.144***	0.102***	0.102***
	(0.0237)	(0.0235)	(0.0268)	(0.0270)
FINPOL	0.143***	0.141***	0.137***	0.128***
	(0.0207)	(0.0210)	(0.0205)	(0.0226)
POLITY2	-0.0776***	-0.0920***	-0.102***	-0.111***
	(0.0219)	(0.0235)	(0.0279)	(0.0274)
POPDENS	0.209***	0.221***	0.234***	0.243***
	(0.0239)	(0.0283)	(0.0314)	(0.0311)
Constant				
Observations - Countries	581 - 97	581 - 97	581 - 97	581 - 97
Within R-squared				
AR1 (P-Value)	0.0000	0.0000	0.0000	0.0000
AR2 (P-Value)	0.4452	0.4251	0.4531	0.4384
AR3 (P-Value)	0.9540	0.9392	0.9086	0.9216
OID (P-Value)	0.1161	0.1202	0.0945	0.1037

*Note: *p-value < 0,1; **p-value < 0,05; ***p-value < 0,01. Robust Standard errors are in parenthesis. All variables used in the regressions have been standardized. The variables "POVHC", "POVGAP", "GDPC", "FINPOL", and "POLITY2" have been considered as endogenous. The regressions have used 4 lags of the dependent variable as instruments, and 3 lags of endogenous variables as instruments.*

Table 2: Effect of poverty on financial development for varying education levels
Estimator: Two-Step System GMM

Variables	FINDEV	FINDEV	FINDEV	FINDEV	FINDEV	FINDEV	FINDEV	FINDEV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$FINDEV_{t-1}$	0.538***	0.542***	0.612***	0.608***	0.537***	0.547***	0.543***	0.546***
	(0.0163)	(0.0150)	(0.0158)	(0.0170)	(0.0112)	(0.0155)	(0.0153)	(0.0151)
POVHC*EDUSUM	-0.0619***							
	(0.0175)							
POVGAP*EDUSUM		-0.0648***						
		(0.0190)						
POVHC*EDUPRIM			-0.0518**					
			(0.0261)					
POVGAP*EDUPRIM				-0.0757***				
				(0.0262)				
POVHC*EDUSEC					-0.0488			
					(0.0309)			
POVGAP*EDUSEC						-0.106***		
						(0.0343)		
POVHC*EDUTERT							-0.114***	
							(0.0209)	
POVGAP*EDUTERT								-0.144***
								(0.0207)
EDUSUM	0.0826***	0.0563**						
	(0.0235)	(0.0243)						
EDUPRIM			0.00863	0.00428				
			(0.0216)	(0.0235)				
EDUSEC					0.0189	-0.0213		
					(0.0370)	(0.0335)		
EDUTERT							0.0211	0.000536
							(0.0244)	(0.0242)
POVHC	-0.00295		-0.0140		-0.0284		0.00300	

	(0.0197)		(0.0307)		(0.0213)		(0.0160)	
POVGAP		-0.0177		-0.0249		-0.0447**		-0.0275
		(0.0216)		(0.0245)		(0.0201)		(0.0174)
GDPC	0.147***	0.147***	0.188***	0.182***	0.232***	0.246***	0.216***	0.213***
	(0.0210)	(0.0219)	(0.0266)	(0.0257)	(0.0290)	(0.0325)	(0.0294)	(0.0252)
FINPOL	0.165***	0.178***	0.122***	0.147***	0.129***	0.137***	0.163***	0.171***
	(0.0120)	(0.0120)	(0.0197)	(0.0166)	(0.0216)	(0.0194)	(0.0117)	(0.0121)
POLITY2	-0.113***	-0.121***	-0.143***	-0.164***	-0.136***	-0.125***	-0.116***	-0.127***
	(0.0246)	(0.0252)	(0.0202)	(0.0281)	(0.0221)	(0.0249)	(0.0305)	(0.0325)
POPDENS	0.212***	0.223***	0.224***	0.236***	0.162***	0.136***	0.156***	0.157***
	(0.0296)	(0.0281)	(0.0266)	(0.0254)	(0.0288)	(0.0260)	(0.0221)	(0.0243)
Observations - Countries	566 - 97	566 - 97	560 - 96	560 - 96	510 - 96	510 - 96	490 - 95	490 - 95
Number of Instruments	84	84	84	84	84	84	84	84
AR1 (P-Value)	0.0000	0.0000	0.0001	0.0001	0.0008	0.0007	0.0003	0.0003
AR2 (P-Value)	0.5347	0.4905	0.6048	0.5539	0.3774	0.3503	0.6598	0.6503
AR3 (P-Value)	0.5769	0.5201	0.9864	0.9073	0.1687	0.1791	0.4205	0.4357
OID (P-Value)	0.1947	0.1932	0.1637	0.1425	0.1834	0.1399	0.2063	0.2135

Note: *p-value < 0,1; **p-value < 0,05; ***p-value < 0,01. Robust Standard errors are in parenthesis. All variables used in the regressions have been standardized. The variables "POVHC", "POVGAP", "EDUSUM", "EDUPRIM", "EDUSEC", "EDUTERT", "GDPC", "FINPOL", and "POLITY2" and the interaction variables have been considered as endogenous. The regressions have used 3 lags of the dependent variable as instruments, and 2 lags of endogenous variables as instruments.

Table 3: Effect of poverty on financial development for varying levels of trade openness
Estimator: Two-Step System GMM

Variables	FINDEV (1)	FINDEV (2)	FINDEV (3)	FINDEV (4)	FINDEV (5)	FINDEV (6)
$FINDEV_{t-1}$	0.526***	0.547***	0.588***	0.608***	0.586***	0.587***
	(0.0178)	(0.0187)	(0.0242)	(0.0245)	(0.0227)	(0.0228)
POVHC*TRJURE	0.0984***					
	(0.0174)					
POVGAP*TRJURE		0.108***				
		(0.0220)				
POVHC*OPEN			0.0790***			
			(0.0178)			
POVGAP*OPEN				0.0461***		
				(0.0174)		
POVHC*OPENSW					0.123***	
					(0.0232)	
POVGAP*OPENSW						0.0811***
						(0.0219)
TRJURE	0.146***	0.157***				
	(0.0231)	(0.0255)				
OPEN			0.136***	0.110***		
			(0.0188)	(0.0156)		
OPENSW					0.179***	0.149***
					(0.0200)	(0.0188)
POVHC	-0.0752***		-0.0427*		0.00433	
	(0.0197)		(0.0223)		(0.0304)	
POVGAP		-0.0555**		-0.0390**		0.00227
		(0.0224)		(0.0185)		(0.0169)
GDPC	0.135***	0.138***	0.128***	0.116***	0.0925***	0.106***
	(0.0207)	(0.0205)	(0.0227)	(0.0220)	(0.0349)	(0.0322)
FINPOL	0.145***	0.135***	0.0496**	0.0609***	0.0210	0.0358**
	(0.0208)	(0.0166)	(0.0206)	(0.0171)	(0.0175)	(0.0147)
POLITY2	-0.142***	-0.148***	-0.110***	-0.0994***	-0.0875***	-0.0865***
	(0.0222)	(0.0280)	(0.0183)	(0.0218)	(0.0234)	(0.0223)
POPDENS	0.176***	0.183***	0.209***	0.223***	0.288***	0.283***
	(0.0179)	(0.0188)	(0.0208)	(0.0203)	(0.0194)	(0.0195)
Observations - Countries	577 - 96	577 - 96	545 - 94	545 - 94	545 - 94	545 - 94
Number of Instruments	84	84	84	84	84	84
AR1 (P-Value)	0.0001	0.0001	0.0000	0.0000	0.0001	0.0001
AR2 (P-Value)	0.2939	0.2966	0.1798	0.1944	0.1860	0.1981
AR3 (P-Value)	0.7291	0.7578	0.8505	0.8280	0.8899	0.8327
OID (P-Value)	0.1588	0.1964	0.2088	0.2833	0.2152	0.2538

*Note: *p-value < 0,1; **p-value < 0,05; ***p-value < 0,01. Robust Standard errors are in parenthesis. All variables used in the regressions have been standardized. The variables "POVHC", "POVGAP", "TRJURE", "OPEN", "OPENSW", "GDPC", "FINPOL", and "POLITY2" and the interaction variables have been considered as endogenous. The regressions have used 3 lags of the dependent variable as instruments, and 2 lags of endogenous variables as instruments.*

Table 4: Effect of poverty on financial development for varying degrees of export product concentration

Estimator. Two-Step System GMM

Variables	FINDEV	FINDEV
	(1)	(2)
FINDEV$_{t-1}$	0.642***	0.645***
	(0.0245)	(0.0234)
POVHC*ECI	-0.0633**	
	(0.0309)	
POVGAP*ECI		-0.0805***
		(0.0310)
ECI	0.106***	0.103***
	(0.0345)	(0.0355)
POVHC	-0.0237	
	(0.0372)	
POVGAP		-0.0106
		(0.0349)
GDPC	0.192***	0.207***
	(0.0442)	(0.0421)
FINPOL	0.0928***	0.108***
	(0.0299)	(0.0304)
POLITY2	-0.114***	-0.119***
	(0.0327)	(0.0358)
POPDENS	0.190***	0.185***
	(0.0334)	(0.0332)
Observations - Countries	517 - 97	517 - 97
Number of Instruments	70	70
AR1 (P-Value)	0.0000	0.0000
AR2 (P-Value)	0.1451	0.1406
AR3 (P-Value)	0.9821	0.9916
OID (P-Value)	0.1085	0.1179

*Note: *p-value < 0,1; **p-value < 0,05; ***p-value < 0,01. Robust Standard errors are in parenthesis. All variables used in the regressions have been standardized. The variables "POVHC", "POVGAP", "ECI", "GDPC", "FINPOL", and "POLITY2" and the interaction variables have been considered as endogenous. The regressions have used 3 lags of the dependent variable as instruments, and 2 lags of endogenous variables as instruments.*

APPENDICES

Appendix 1: Definition and Source of variables

Variables	Definition	Sources
FINDEV	This is the financial development index, which summarizes how developed financial institutions and financial markets are in terms of their depth (size and liquidity), access (ability of individuals and companies to access financial services), and efficiency (ability of institutions to provide financial services at low costs and with sustainable revenues, and the level of activity of capital markets).	Data extracted from the International Monetary Fund (IMF) Financial Development Index Database (see online at: https://data.imf.org/?sk=F8032E80-B36C-43B1-AC26-493C5B1CD33B) - See also Sahay et al. (2015).
FINPOL	This is the measure of financial policy, i.e., de jure financial openness.	This index has been computed by Chinn and Ito (2006) and updated in July 2020. Its value ranges between 0 and 1. See: http://web.pdx.edu/~ito/Chinn-Ito_website.htm
POVHC	Poverty headcount ratio at $1.90 a day is the percentage of the population living on less than $1.90 a day at 2011 international prices.	Data on this indicator is collected from the Word Development Indicators (WDI) of the World Bank and POVCALNET of the World Bank (see http://iresearch.worldbank.org/PovcalNet/povOnDemand.aspx). Missing data has been completed using linear interpolation technique over 2 to 4 years (see also Santos-Paulino, 2017).
POVGAP	Poverty gap at $1.90 a day (2011 PPP) is the mean shortfall in income or consumption from the poverty line $1.90 a day (counting the nonpoor as having zero shortfall), expressed as a percentage of the poverty line. This measure reflects the depth of poverty as well as its incidence.	Data on this indicator is collected from the WDI and POVCALNET of the World Bank (see http://iresearch.worldbank.org/PovcalNet/povOnDemand.aspx). Missing data has been completed using linear interpolation technique over 2 to 4 years (see also Santos-Paulino, 2017).

GDPC	GDP per capita (constant 2010 US$)	WDI
EDUSUM	This is the sum of the gross primary school enrolment (%), gross secondary school enrolment (%), and gross tertiary school enrolment (%).	Author's calculation based on data collected from the World Development Indicators (WDI).
EDUPRIM	This is the gross primary school enrolment (%)	WDI
EDUSEC	This is the gross secondary school enrolment (%)	WDI
EDUTERT	This is the gross tertiary school enrolment (%)	WDI
TRJURE	This is the de Jure measure of trade openness, i.e., the De jure trade globalisation index (see Dreher, 2006 and Gygli et al. 2019). It is a composite index of trade regulations, trade taxes, tariffs, and trade agreements.	See the database and other information online at: https://www.kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html
OPEN	This is the first indicator of de facto trade openness. It is measured by the share of sum of exports and imports of goods and services in GDP.	WDI
OPENSW	This is the second measure of de facto trade openness suggested by Squalli and Wilson (2011). It is calculated as the measure of the share of sum of exports and imports of goods and services in GDP, adjusted by the proportion of a country's trade level relative to the average world trade (see Squalli and Wilson, 2011: p1758).	Authors' calculation based on data from the WDI.
ECI	This is the variable capturing overall export product concentration. It is calculated using the Theil Index and following the definitions and methods used in Cadot et al. (2011). The overall Theil index of export product concentration is the sum of the intensive and extensive components of the "ECI" variable. Indeed, export product diversification can occur either over product narrowly defined or trading partners. It can be broken down into the extensive and intensive margins of diversification. Extensive export diversification reflects an increase in the number of export products or trading partners, while intensive export diversification considers the shares of export volumes across active products or trading partners. The computation of the index has been based on a classification of products into "Traditional", "New", or "Non-Traded" products categories. A rise in the values of "ECI" index signifies an increase in the degree of overall export product concentration, while a decrease in the values of the index reflects a rise in the degree of overall export product concentration (that is, greater export product diversification).	Details on the calculation of this Index could be found online: International Monetary Fund's Diversification Toolkit – See data online at: https://data.imf.org/?sk=3567E911-4282-4427-98F9-2B8A6F83C3B6

POPDENS	This is the measure of the Population density (people per sq. km of land area)	WDI
POLITY2	This variable is an index extracted from Polity IV Database (Marshall et al., 2018). It represents the degree of democracy based on competitiveness of political participation, the openness and competitiveness of executive recruitment and constraints on the chief executive. Its values range between -10 and +10, with lower values reflecting autocratic regimes, and greater values indicating democratic regimes. Specifically, the value +10 for this index represents a strong democratic regime, while the value -10 stands for strong autocratic regime.	Polity IV Database (Marshall et al., 2018)

Appendix 2a: Descriptive statistics on unstandardized (non-transformed) variables used in the analysis

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
FINDEV	581	0.199	0.126	0.000	0.711
POVHC	581	27.234	26.838	0.000	94.402
POVGAP	581	11.705	13.996	0.000	64.518
EDUSUM	566	155.231	63.161	1.946	305.700
EDUPRIM	561	97.600	21.246	24.223	165.645
EDUSEC	511	57.865	30.649	3.961	118.670
EDUTERT	490	20.518	20.811	0.166	88.734
OPEN	545	72.586	36.483	15.566	229.638
OPENSW	545	0.001	0.003	0.000	0.025
TRJURE	577	41.739	20.757	7.440	93.603
GDPC	581	3733.477	4052.992	153.903	22000.030
ECI	517	3.691	1.126	1.317	6.269
FINPOL	581	-0.243	1.331	-1.917	2.347
POLITY2	581	2.784	5.817	-10.000	10.000
POPDENS	581	94.119	137.811	1.504	1213.535

Appendix 2b: Descriptive statistics on standardized variables used in the analysis

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
FINDEV	581	0.078	0.865	-2.059	2.092
POVHC	581	-0.029	0.904	-2.134	2.274
POVGAP	581	-0.038	0.900	-2.008	2.362
EDUSUM	566	0.101	0.891	-2.455	2.377
EDUPRIM	560	0.017	0.882	-1.848	2.108
EDUSEC	510	0.057	0.845	-1.825	1.840
EDUTERT	490	0.115	0.866	-1.580	2.186
OPEN	545	0.044	0.887	-2.222	1.987
OPENSW	545	-0.081	0.851	-1.735	2.055
TRJURE	577	0.098	0.868	-2.251	2.317
GDPC	581	-0.014	0.876	-1.810	2.089
ECI	517	-0.043	0.838	-1.865	2.011
FINPOL	581	0.045	0.912	-2.475	2.475
POLITY2	581	0.147	0.783	-2.280	1.891
POPDENS	581	0.088	0.777	-1.522	1.787

Appendix 3: List of countries contained in the full sample

Full sample		
Albania	Ethiopia	Niger
Algeria	Fiji	Nigeria
Angola	Gabon	North Macedonia
Argentina	Gambia, The	Pakistan
Armenia	Georgia	Papua New Guinea
Azerbaijan	Ghana	Paraguay
Bangladesh	Guatemala	Peru
Belarus	Guinea	Philippines
Benin	Guinea-Bissau	Poland
Bolivia	Guyana	Romania
Botswana	Haiti	Russian Federation
Brazil	Honduras	Rwanda
Bulgaria	Hungary	Senegal
Burkina Faso	Indonesia	Sierra Leone
Burundi	Iran, Islamic Rep.	Slovak Republic
Cabo Verde	Kenya	South Africa
Cambodia	Kiribati	Sri Lanka
Cameroon	Kyrgyz Republic	Suriname
Central African Republic	Lesotho	Tajikistan
Chad	Liberia	Tanzania
Chile	Madagascar	Thailand
Colombia	Malawi	Trinidad and Tobago
Congo, Dem. Rep.	Malaysia	Tunisia
Congo, Rep.	Mali	Turkey
Cote d'Ivoire	Mauritania	Turkmenistan
Croatia	Mauritius	Uganda
Czech Republic	Mexico	Ukraine
Dominican Republic	Moldova	Uruguay
Ecuador	Mongolia	Venezuela, RB
Egypt, Arab Rep.	Morocco	Yemen, Rep.
El Salvador	Mozambique	Zambia
Estonia	Nepal	
Eswatini	Nicaragua	