



DBN
Development
Bank of Nigeria

...Financing Sustainable Growth

WORKING PAPER SERIES

237, 2026



**Banking concentration and women's
economic empowerment in
developing countries**

Banking concentration and women's economic empowerment in developing countries

Forthcoming: International Trade Journal

Simplice A. Asongu

(Corresponding author)

African Governance and Development Institute,
Yaoundé, Cameroon E-mails: asongusimplice@yahoo.com, asongus@afridev.org

Emeride F. Kayo

Faculty of Economics and Management,
University of Yaoundé II-Soa, Cameroon

&

The Association for Promoting Women in Research and
Development in Africa (ASPROWORDA), P.O. Box 8413, Yaoundé, Cameroon
E-mail: flobertkayo5@gmail.com

Abstract

The present study examines how bank concentration affects female economic inclusion in a panel of 80 developing countries based on data for the period 2000 to 2020. The study employs fixed effects regressions and the generalized method of moments (GMM) estimation techniques as empirical strategies. Two proxies of bank concentration are employed, notably: (i) total assets that are possessed by the three largest banks and (ii) total assets that are owned by the five largest banks. From the findings, women's economic empowerment is diminished by bank concentration due potentially to reduced financial access. However, compared to bank concentration with regard to the total assets owned by the three largest banks, bank concentration in terms of the total assets held by the five largest banks is linked to a larger negative magnitude. Hence, more competition and banks are necessary in the banking sector to enhance financial access and women's economic empowerment. Policy implications are discussed in terms of increasing competition in the banking sector.

Keywords: Bank concentration; women empowerment; developing countries

1. Introduction

Three main foundational elements motivate the importance of this research on the nexus between banking concentration and female economic participation. The attendant motivational factors include: (i) the imperative for more studies on the consequences of banking concentration; (ii) the importance of gender economic participation in the realization of some of the United Nations (UN) sustainable development goals (SDGs) and (iii) gaps in the corresponding literature (Bara *et al.* 2017; Tchamyou *et al.* 2023; Zogo *et al.* 2025). The underlying three foundational factors are expanded in the same sequence as highlighted.

First, it is relevant to understand the consequences of banking concentration because it is a phenomenon that can motivate financial institutions to exercise their market power inappropriately and thus, limit financial access which is necessary in the achievement of many inclusive social and politico-economic outcomes (Asongu *et al.* 2024). According to the narrative, the phenomenon can be understood as the dominance of big and powerful financial institutions over financial access conditions. The extant studies on the subject have not focused on the problem statement being considered in this study, notably: how banking concentration affects female economic participation. In essence, the extant studies have been concerned with, *inter alia*, the nexus between bank concentration and economic growth (Chinoda & Mashamba 2021), financial inclusion (Avom *et al.* 2021; Marco & Perez-Saiz 2025), women's political empowerment (Asongu *et al.* 2024), credit availability (Ayalem & Xianzhi, 2019; Moyo & Sibindi, 2022), economic prosperity within the remits of income levels and financial development (Bara *et al.* 2017), peer effects and crises (Zeng & Lin 2024) and firm leverage (Cao-Alvira & Gomez-Gonzalez 2025).

Second, gender economic inclusion is particularly important in the achievement of some SDGs, not least, because women have been documented to be substantially excluded from the formal economic activities and if fully integrated, such could represent a substantial boost in global gross domestic product (GDP) (Asongu & Nting 2021). According to Asongu *et al.* (2024), the World Economic Forum (2020) estimated that in 2019, the global disparity between women's political empowerment and economic participation was 75.3% and 42.2%, respectively. The disparities were 3.9% for education and 4.3% for health. Moreover, consistent with Islam *et al.* (2014) and Tchamyou *et al.* (2023), women who have access to bank accounts, savings plans, and other financial services really have more control over their income and can pay for both personal and professional costs. Additionally, adolescents have more options for spending their time, whether it be working, playing, earning money, or going to school (Aker *et al.* 2016). When it comes to choosing a job, getting married, or using contraception, they could have more control over their life (Aker *et al.* 2016; Asongu & Odhiambo 2023a). They might be able to choose more wisely where and how to work, which would boost their income and

productivity and help them escape poverty (Asongu & Odhiambo 2018). It follows from the underlying that the concerns surrounding gender economic empowerment are fundamental in the achievement of inclusive development outcomes.

Third, the existing literature has mostly concentrated on how financial development affects certain macroeconomic outcomes, as demonstrated in Section 2.1, which highlights the gaps in the pertinent literature (Anton & Nucu 2020; El Bourainy *et al.* 2021; Dutta & Meierrieks 2021; Shahbaz *et al.* 2021; An *et al.* 2021; Mukhtarov *et al.* 2022; Ajide & Ojeyinka 2022; Gachoki 2023; Verma *et al.* 2023; Mallela *et al.* 2023; Chisadza & Biyase 2023; Asongu *et al.* 2024; Jukan *et al.* 2024). Asongu *et al.* (2024) is the study that is closest to the current research in the literature.

Asongu *et al.* (2024) have used data for the period 2004-2020 to assess how bank concentration affects political empowerment of females in 80 developing nations. Furthermore, the assets held by the three biggest commercial banks as a percentage of all commercial bank assets in a nation is used to proxy for banking concentration. The political empowerment index, which consists of three indices (i.e., women's political participation index, women's civil society index, and women's civil liberties index), is one of many indices used to quantify political empowerment. The Fixed Effects (FE) and Ordinary Least Squares (OLS) estimation approaches are employed as empirical strategies. The conclusion is that women's political influence is diminished by banking concentration.

By evaluating the impact of bank concentration on women's economic empowerment in emerging nations, the current study deviates from Asongu *et al.* (2024). Generalized method of moments (GMM) regressions with fixed effects provide the empirical support. From the findings, women's economic empowerment is diminished by bank concentration. However, compared to bank concentration with regard to the total assets owned by the three largest banks, bank concentration in terms of the total assets held by the five largest banks is linked to a larger negative magnitude. Therefore, our study differs from Asongu *et al.* (2024) in terms of its goals and conclusions.

This is how the rest of the study is structured. While Section 3 presents the data and methodology, Section 2 examines the empirical literature, intuition, theoretical foundations, and testable hypotheses. The empirical results are presented in Section 4. Section 5 wraps up the study with conclusions and suggestions for further research.

2. Theoretical underpinnings, empirical literature and testable hypothesis

2.1 Theoretical underpinnings

First, the fundamental theoretical basis for this inquiry is the grounding of financial inclusion beneficiaries. According to the public good idea of financial inclusion, financial services should be seen as a public good in this sense, and people's ability to access and utilize them should not be limited. The financial institution in question should therefore be able to pay for the expenses related to creating an account, saving, taking out cash, and making use of the infrastructure and financial services that are now in place (Ozili 2020). Regardless of age, gender, or ethnicity, the attendant services are free to use and accessible to all as a public utility (Nchofoung *et al.* 2014; Asongu *et al.* 2024).

First, families' access to loans may be restricted by banking concentration (Moyo & Sibindi 2022). Some people, especially those from poorer socioeconomic origins, may drop out of school due to limited access to financing, according to Lochner and Narange (2012) and by extension, have less formal employment prospects. This is accompanied by negative socio-economic externalities (Von dem *et al.* 2006), especially for women. They found that people's decisions about their economic participation were significantly influenced by their credit restrictions. Furthermore, stricter financial restrictions sometimes deter people from making educational investments. Additionally, according to Bound *et al.* (2010), those who have less access to funding are more likely to discontinue their education and by extension, have limited opportunities for formal economic participation.

Theoretically, the intensive and extensive margin theories can be used to consolidate the nexus between gender inclusive formal employment and banking concentration, based on the existing empirical literature and corresponding intuition. This is in line with the body of current literature that focuses on the relationship between financial inclusion and energy poverty (Asongu *et al.* 2024), productivity (Asongu 2020), and income inequality (Tchamyou *et al.*, 2019). The basic theoretical foundations of the intensive margin theory state that when current bank customers are given greater access to financing, this can be leveraged to enhance inclusive gender education possibilities. In a similar spirit, the extensive margin hypothesis is applicable when new bank customers who had no prior bank accounts are given access to funds, giving them the ability to finance formal economic participation projects. The theoretical underpinnings are consistent with contemporary literature on the importance of financial access for positive economic development outcomes (Song *et al.* 2025; Tchidi & Zhang 2025; Del Sarto & Ozili 2025).

2.2 Empirical literature and testable hypothesis

According to An *et al.* (2021), in low- and middle-income nations, financial development in terms of financial depth and intermediation slows the growth of per capita income. Nonetheless, it boosts growth in both high-income nations and the sample of SSA nations as a whole. According to Verma *et al.* (2023), financial development also speeds up growth. All three facets of financial development—the capital market, bond market, and banking sector; have been demonstrated to positively affect the use of renewable energy, according to Anton and Nucu (2020). Shahbaz *et al.* (2021) show in their study that changes in the financial markets lead to a rise in the demand for renewable energy sources by creating a greater need for eco-friendly energy sources.

The impact of financial development on macroeconomic outcomes has been the subject of numerous studies in the literature to date. The idea of financial development, also known as the evolution of the financial sector, has drawn the attention of numerous researchers who wish to explain, comprehend, and analyze the concept, even as a crucial element in a number of phenomena and activities. Financial development is said to have a positive effect on entrepreneurial activity by satisfying the needs of investors for effective and profitable risk and information management as well as entrepreneurs for easily accessible, reasonably priced, and extensive credit (Dutta & Meierrieks 2021). It is believed that financial development does not encourage entrepreneurship (Ajide & Ojeyinka 2022). Their results indicate that financial development raises the degree of entrepreneurship at a certain threshold. Financial development's propensity to raise the degree of entrepreneurship is associated with good institutional quality and advantageous business regulations up to a certain point.

In their research, Mukhtarov *et al.* (2022) also show that financial development positively and statistically significantly affect the use of renewable energy. Their findings indicate that the consumption of renewable energy rises by 0.21% for every 1% increase in financial development. Increasing financial inclusion is one way to lower inflation in emerging nations, as posited by El Bourainy *et al.* (2021). According to Gachoki (2023), financial development has no discernible influence on inflation in the near term but has a substantial negative long-term effect on inflation. According to Jukan *et al.* (2024), nations with more financial inclusion are more inflation-resistant. Therefore, low levels of inflation would necessitate a high degree of financial development.

Financial development has been demonstrated to lessen inequities in developing and least developed nations; however, the effect is not statistically significant in wealthy nations, according to Chisadza and Biyase (2023). Moreover, it is clear from breaking down the financial development index into its component parts—financial institutions and financial markets—that while the growth of the stock market within the framework of financial markets leads to a rise

in inequality in least developed nations, the growth of the banking sector under the purview of financial institutions has an impact on reducing income disparities in emerging and least developed nations. According to Mallela *et al.* (2023), income inequality is decreased when financial development is used in place of remittances.

Given the aforementioned theoretical underpinning and empirical literature, it is possible to argue that banking concentration, a sign of restricted financial access, has a detrimental impact on formal economic participation of women.

Hypothesis 1: bank concentration reduces women's economic inclusion

Therefore, it is hypothesized that bank concentration and gender-inclusive formal economic participation are negatively correlated. The underlying notion has been supported by a number of theoretical foundations and intuitive reasoning discussed in this section. The primary objective of the following part is to examine empirically if the attendant hypothesis can sustain empirical validity.

3. Data and empirical strategies

3.1 Description of the data

This study examines how bank concentration affects women's economic empowerment between 2000 and 2020. This study focuses on a panel of 80 developing nations, of which 12 are in the Middle East and North Africa, 15 are in Latin America and the Caribbean, 10 are in Europe and Central Asia, 15 are in East Asia and the Pacific, and 28 are in Sub-Saharan Africa. There are 25 low-income, 36 lower-middle-income, and 19 upper-middle-income countries among the 80 developing nations. An annual non-cylindrical panel chosen based on data availability makes up the dataset.

3.1. 1 Dependent variable

Our dependent variable is women's economic empowerment measured by women's participation in the labor market.

The economic empowerment of women, reflect the extent of progress and advancement of society in various fields, which gives women the right to participate in development so that they become partners of men in rights and duties. It also enables women to enjoy all their political, social and economic rights (Reshi & Sudha 2023). Clearly, as posited by Buvinić and Furst-Nichols (2016) in addition to being the proper thing to do since women have the same rights as men, women's economic empowerment is also crucial because it would improve the world and aid in human growth. These factors make it significant from both a principled and practical standpoint. Women's economic gains are achieved through their integration into economic activity, their strong participation in the labor market and their contribution to projects, whether large or small, which leads to providing a permanent source of income.

3.1.2 Independent variables

We use banking concentration as the main explanatory variable, captured by the total assets held by the three largest banks in a country (C3) and the total assets held by the five largest banks in a country (C5). Our data comes from the Global Financial Development Database (GFDD, 2020). Banking concentration refers to two distinct realities. A distinction is made between geographical concentration and concentration in terms of activity (Asongu & Odhiambo 2023b). The geographical concentration of banks refers to the presence of a large number of banking institutions concentrated in the same place. This concentration can be observed in specific cities or regions, and is often attributed to economic and social factors

such as the presence of businesses, developed infrastructure and a dense population. The work of Salop (1979) and Daspremont (1979) is part of the field of spatial economics and analyses the determinants and implications of this type of concentration. Concentration in terms of activity, also known as industrial concentration, refers to a situation where a small number of banks control a significant proportion of banking production and services. This concentration can be explained by economies of scale and learning, which enable large banks to reduce their costs and offer more competitive products and services. The work of Mason (1939) and Bain (1951) is based on industrial economics and analyses the causes and effects of this type of concentration.

Although both types of concentration are important, we choose to analyse concentration in terms of activity, for two main reasons. The first reason is theoretical and is based on the fact that, as far as we know, the theoretical debate on the impact of the geographical concentration of banks has not yet reached a clear consensus. On the other hand, concentration in terms of activity has been the subject of in-depth and constantly evolving theoretical discussions, as illustrated by the debate between the Harvard School and the Chicago School. The second justification for choosing concentration in terms of activity is empirical. Empirical studies generally find contradictory effects from banking concentration (e.g., Deidda 2005). Our challenge is therefore to provide new empirical evidence to fuel the debate on the effects of bank concentration in terms of activity.

3.1.3 Control variables

To substantiate the relationship between banking concentration and women's economics empowerment and to avoid variable omission bias, our baseline analysis controls for a subset of contemporary controls that have been shown to be important for women's economics empowerment (Kumari et al. 2019; Samy et al. 2023, 2017; Debnath 2023; Batool & Batool 2018; Dutta 2018).

Greater control over financial resources enables women to invest in their families' education and health, improving overall well-being and future potential (Kumari et al. 2019). Another control variable used in our model is the natural resource. Natural resources are measured by the benefits derived from natural resources in relation to GDP (Debnath 2023). Following this variable, the choice of trade openness is made (Samy et al. 2023). It is measured by the sum of exports and imports of goods and services and services relative to GDP. Increased levels of current corruption can unmistakably weaken women's empowerment by interacting with international trade and financial mobility. Additionally, the level of corruption is always important and has a negative impact on women's empowerment. The findings hold up well

against additional corruption metrics (Dutta 2018). With regard to the level of secondary education, it seems to be an important variable as it confronts the traditional role of women and enables women to meet challenges and improve their ability to join the labor market (Batool & Batool 2018).

3.2 Empirical strategy

The objective of this paper is to study the effect of bank concentration on women's economics empowerment. We therefore build on the work of Asongu et al. (2024) and begin by specifying a panel model below estimated by pooled ordinary least squares (OLS-FE) :

$$WEE_{it} = \alpha + \beta_0 BC_{it} + \beta_1 X_{it} + \mu_i + \nu_t + \varepsilon_{it} \quad (1)$$

Or WEE_{it} represents women's economics empowerment, BC_{it} is bank concentration, X_{it} is the vector of control variables, μ_i is the country fixed impacts, ν_t is the time of fixed impact and ε_{it} is the error term. Despite being pertinent to our research, this method is frequently criticized in the literature for being weak in the face of reverse causality issues. In line with extant literature (Ogbuabor et al. 2025; Emeka et al. 2025), a dynamic panel model is specified in order to get around this.

$$WEE_{it} = \alpha + WEE_{it-1} + \beta_0 BC_{it} + \beta_3 X_{it} + \mu_i + \nu_t + \varepsilon_{it} \quad (2)$$

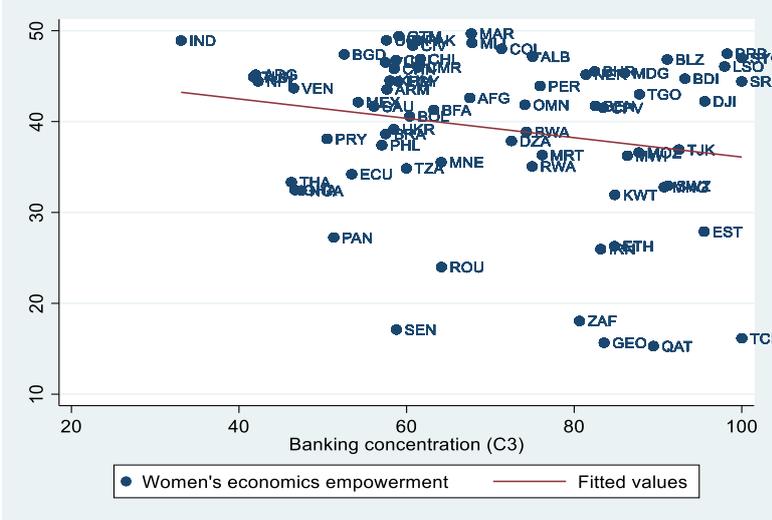
Since the lagged dependent variable in the model places our model within the framework of the dynamic panel model (see Nickell (1981)), using estimation equation (1) with OLS-FE may result in inefficient results. Moreover, the employment of standard estimators such as OLS and fixed impacts would engender biased results as they do not take into account endogeneity problems that arise from several sources such as reverse causality, measurement error and omission of variables (Tchamyou et al. 2019; Emeka et al. 2024).

4- Results and interpretation

4.1- Basics results

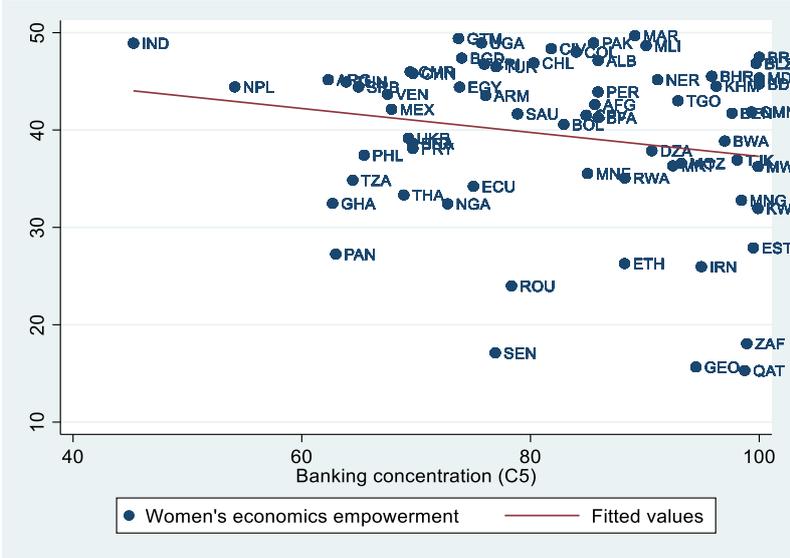
We first look at the graphical correlation between bank concentration (C3/C5) and women's economic empowerment (Figure 1 and Figure 2). The latter shows a negative correlation between bank concentration (C3/C5) and women's economic empowerment. This means that, on average, in developing countries, less women are economically-involved with increasing bank concentration.

Figure 1: Banking concentration (C3) and women's economic empowerment



Source: Authors' construction

Figure 2: Banking concentration (C5) and women's economic empowerment



Source: Authors' construction

The empirical results summarized in Tables 1 and 2 confirm these negative correlations. The tables give the results of the estimation of Equation 1 by the fixed-effects model. Table 1 presents the results of the bi-variate model estimating the effect of bank concentration on women's economic empowerment without control variables. In line with our general hypothesis, we find that the coefficients associated with bank concentration (C3/C5) are negative and statistically significant at the 1% level, suggesting that bank concentration reduces women's economic empowerment. In Table 2 when control variables are added, we find in general that the coefficient associated with women's economic empowerment is negative and statistically significant at the 1% level, suggesting that bank concentration reduces women's participation in the labour market.

With regard to the control variables retained, the results show that education has a positive impact on women's participation in the labor market in developing countries. Indeed, education enables them to acquire skills that are in demand on the job market, increasing their employability and their ability to negotiate better salaries. We also note the positive effect of financial development on women's empowerment. This finding can be elicited by the fact that women who have access to financial services generally have higher incomes than those who do not. Finally, we have the positive effect of natural resources. Rural women, who make up the majority of food producers in developing countries, can increase their incomes by gaining access to land, water, seeds and quality fertilizers. They can also engage in more lucrative agri-food activities, such as processing and marketing agricultural products.

Table 1 : Basic result without control variables

Variables	WEE	WEE
Bank Concentration 1 (C3)	-0.0378*** (0.0128)	
Bank Concentration 2 (C5)		-0.0425*** (0.0163)
Control variables	No	No
Constant	42.73*** (1.328)	41.85*** (0.903)
Observations	1264	1064
R-squared	0.723	0.765
Number of countries	79	77
Fisher	49.51***	47.81***

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. C3: The total assets held by the three largest banks in countries. C5: The total assets held by the five largest banks in countries. WEE: Women's Economic Empowerment.

Source: Authors

Table 2 : Banking concentration and women's economic empowerment (FE)

Variables	WEE	WEE
Bank Concentration 1 (C3)	-0.0375*** (0.0142)	
Bank Concentration 2 (C5)		-0.0696*** (0.0180)
Education	0.0456** (0.0198)	0.0269*** (0.0220)
Corruption	-0.0362*** (0.0104)	-0.0213* (0.0113)
Trade openness	-0.0332 (0.0236)	0.00132 (0.0309)
Financial development	0.0459*** (0.0158)	0.0357** (0.0177)
Natural resources	0.0648* (0.0365)	0.0833** (0.0415)
Constant	47.04*** (2.418)	46.52*** (2.742)
Observations	1225	1047
R-squared	0.350	0.309
Number of countries	78	75
Fisher	51.14***	48.74***

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. C3 :The total assets held by the three largest banks in countries. C5:The total assets held by the five largest banks in countries. WEE: Women's Economic Empowerment.

Source: Authors

4.2 Heterogeneity Analysis

We conducted a heterogeneity analysis as part of this study. The study verified the existence of geographical differences in the incidence of banking concentration on women's economic empowerment. In order to achieve this, the regression sets SSA nations apart from other emerging nations. The regression findings for SSA are displayed in Columns 1 and 2, while the regressions for other regions' countries are displayed in Columns 3 and 4. The regression coefficients presented in Table 3 indicate that bank concentration has negative and significant effects on women's economic empowerment and immunization in all regions, but with more persistent incidences in SSA countries. Moreover, in all specifications, the coefficients associated with the measure of women's economics empowerment are statistically significant.

Table 3 : Results with alternative sub-samples

	SSA		Other regions	
Variables	(1) WEE	(2) WEE	(3) WEE	(4) WEE
Bank Concentration 1 (C3)	-0.0983***		-0.0114**	
	(0.0249)		(0.0165)	
Bank Concentration 2 (C5)		-0.0109***		-0.156**
		(0.0193)		(0.0342)
Education	0.0306*	0.0656***	0.0284**	0.0438
	(0.0410)	(0.0207)	(0.0207)	(0.0556)
Corruption	-0.0973***	-0.000389	0.00552	-0.0860***
	(0.0201)	(0.0112)	(0.0108)	(0.0263)
Trade openness	-0.139***	0.101***	0.0619*	-0.0792
	(0.0338)	(0.0324)	(0.0326)	(0.0602)
Financial development	-0.0271	0.0556***	0.0465***	-0.0512
	(0.0352)	(0.0163)	(0.0160)	(0.0535)
Natural resources	0.107*	0.0255	0.0598	0.153*
	(0.0599)	(0.0427)	(0.0415)	(0.0870)
Constant	57.55***	40.74***	38.81***	61.68***
	(5.297)	(2.501)	(2.661)	(6.609)
Observations	720	703	842	750
R-squared	0.130	0.634	0.411	0.129
Number of countries	36	35	43	41
Fisher	39.35***	31.49***	63.76***	66.16***

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. C3:The total assets held by the three largest banks in countries. C5:The total assets held by the five largest banks in countries. WEE: Women's Economic Empowerment. Source: Authors

4.3 Robustness checks

We conducted sensitivity analyses along multiple dimensions to evaluate the robustness of our primary findings: (i) employing extra control variables; (ii) applying different metrics for important variables, namely women's economic empowerment and banking concentration; (iii) alternative estimation strategies. Overall, in all robustness checks we find specification results equivalent to those in Table 2.

4.3.1 Robustness to additional control variables

Thus far, we have demonstrated a statistically significant negative correlation between banking concentration and health. However, it is impossible to completely rule out the possibility that this

negative association is partly caused by unobserved national characteristics. We account for other factors, such as inflation and electricity, that can have an impact on women's economic empowerment in order to reduce this likelihood and guarantee the validity of our findings. The results of this exercise are reported in Table 4. By introducing these additional control variables into our model, we see that banking concentration (C3 and C5) has a negative and significant effect on women's economic empowerment. Thus, our findings withstand empirical scrutiny when more variables are involved in the conditioning information set.

Table 4 : Robustness of the results to the additional control variables

Variables	(1) WEE	(2) WEE
Bank Concentration 1 (C3)	-0.0427*** (0.0153)	
Bank Concentration 2 (C5)		-0.0767*** (0.0185)
Education	0.0454** (0.0199)	0.0281*** (0.0220)
Corruption	-0.0361*** (0.0105)	-0.0199* (0.0113)
Trade openness	0.0350 (0.0244)	0.00190 (0.0311)
Financial development	0.0471*** (0.0175)	0.0464** (0.0191)
Natural resources	0.0741** (0.0370)	0.0821* (0.0420)
Electricity	0.0220** (0.0241)	0.0446* (0.0271)
Inflation	-0.0413 (0.0280)	-8.49e-05 (0.0262)
Constant	49.13*** (3.088)	50.12*** (3.510)
Observations	1223	1047
R-squared	0.380	0.425
Number of countries	78	76
Fisher	48.61***	47.09***

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. C3: The total assets held by the three largest banks in countries. C5: The total assets held by the five largest banks in countries. WEE: Women's Economic Empowerment

Source : Authors

4.3.2 Robustness to alternative measures of banking concentration

In this section, the model is estimated employing an alternative measure of banking concentration. We use the Lerner index and Boone index as an alternative measure of banking

concentration. The results reported in Columns 1 and 2 of Table 5 show that bank concentration has a negative and significant effect on women's economics empowerment.

Table 5 : Estimations with alternatives measures of banking concentration

Variables	(1) WEE	(2) WEE
Lerner index	-0.231** (0.151)	
Boone index		-1.984*** (0.683)
Education	0.0294** (0.0127)	0.0642** (0.0318)
Corruption	-0.000227 (0.00713)	-0.00562 (0.0174)
Trade openness	0.0402** (0.0187)	0.198*** (0.0398)
Financial development	0.0251** (0.0101)	0.0292 (0.0190)
Natural resources	-0.0416* (0.0238)	0.0747** (0.0473)
Constant	42.87*** (1.468)	52.98*** (3.655)
Observations	957	950
R-squared	0.351	0.942
Number of countries	72	70
Fisher	131.25***	50.14***

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. C3 :The total assets held by the three largest banks in countries. C5:The total assets held by the five largest banks in countries. WEE: Women's Economic Empowerment.

Source : Authors

4.3.3 Robustness with measures of women's empowerment by level of education

In this sub- section, we check the robustness of the results with measures according to women's level of education, and the results of this exercise are summarized in Table 6. We use the labor market participation rate of women with basic and intermediate education. The results displayed in Columns (1) to (4) show that the coefficients associated with female empowerment remain negative and significant. This is consistent with previous results showing that bank concentration reduces women's participation in the labor market.

Table 6 : Results with level of women's education

Variables	(1) WEE : basic education	(2) WEE : basic education	(3) WEE : intermediate education	(4) WEE : intermediate education
Bank Concentration 1 (C3)	-0.129*** (0.0452)		-0.0717* (0.0385)	
Bank Concentration 2 (C5)		-0.156*** (0.0551)		-0.147*** (0.0441)
Education	0.101** (0.0484)	0.0516* (0.0413)	0.0296** (0.0549)	0.0429* (0.0439)
Corruption	-0.0214 (0.0279)	-0.0299 (0.0237)	-0.00821 (0.0303)	-0.0165 (0.0242)
Trade openness	-0.239*** (0.0649)	-0.0953* (0.0553)	-0.283*** (0.0819)	-0.0419* (0.0656)
Financial development	0.0362*** (0.0427)	0.0345*** (0.0364)	0.0106** (0.0507)	0.0153** (0.0405)
Natural resources	0.149 (0.120)	0.0771 (0.102)	0.0606 (0.156)	0.0550 (0.125)
Constant	66.67*** (6.426)	67.75*** (5.473)	65.34*** (7.002)	72.14*** (5.601)
Observations	974	874	924	912
R-squared	0.626	0.261	0.631	0.488
Number of countries	75	70	72	70
Fisher	17.88***	22.50***	17.32***	25.54***

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. C3: The total assets held by the three largest banks in countries. C5: The total assets held by the five largest banks in countries. WEE: Women's Economic Empowerment

Source : Authors

4.3.4 Robustness to alternative estimation strategies

It would be intriguing to evaluate the validity of these earlier findings using a different approach, even while the results support our prediction that bank concentration is generally linked to a lesser degree of women's economic empowerment. Therefore, we use the system generalized method of moments (GMM) developed by Blundell and Bond (1998) to enhance our robustness assessments. The choice of this method is justified by the fact that it resolves potential endogeneity problems. These problems may arise from omitted variables, reverse causality or measurement error. Accordingly, the GMM approach is tailored to address the following dimensions of endogeneity: (i) the unobserved heterogeneity is controlled using time fixed effects and (ii) the simultaneity or reverse causality dimension is controlled by using internal instruments (Tchamyou et al. 2019; Emeka et al. 2024).

It is also relevant to note that country-specific effects influence the GMM results and not the Fixed Effects (FE) results. This is essentially because, in FE regressions, country effects cannot influence the estimated parameter because these country specific effects are controlled in the estimation. Conversely, the GMM approach is influenced by country specific effects since the method does not control for country specific effects. Accordingly, country-specific effects are not controlled in the GMM approach because such country-specific effects correlate with the lagged dependent variable and such correlation represents a source of endogeneity (Ogbuabor et al. 2025; Emeka et al. 2025).

The GMM estimation results are summarised in Table 7 and provide evidence that bank concentration remains a robust, negative and significant determinant of women's economics empowerment. Consequently, our results are robust to the use of alternative estimation strategies.

Table 7: Banking concentration and women's economics empowerment (GMM estimations)

Variables	WEE	WEE
L.WEE	0.172***	0.253***
	(0.0152)	(0.0186)
Bank Concentration 1 (C3)	-0.0350*	
	(0.0206)	
Bank Concentration 2 (C5)		-0.0461**
		(0.0234)
Education	0.0202***	0.0205***
	(0.0195)	(0.0202)
Corruption	-1.113**	-1.138**
	(0.567)	(0.527)
Trade openness	-0.0185	-0.0114
	(0.0246)	(0.0198)
Financial development	0.0113	0.000860
	(0.0237)	(0.0137)
Natural resources	0.0826*	0.140***
	(0.0188)	(0.0531)
Constant	33.93***	31.54***
	(2.401)	(2.865)
Observations	1278	1050
Number of countries	78	76
Instruments	22	22
AR1	0.003	0.006
AR2	0.158	0.582
Sargan	0.000	0.000
Hansen	0.890	0.171
H excluding group	(0.430)	(0.117)
Dif(null, H=exogenous)	(0.425)	(0.544)

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. C3 :The total assets held by the three largest banks in countries. C5:The total assets held by the five largest banks in countries.

WEE: women's economics empowerment

Source : Authors

The results are consistent with the theoretical framework, particularly when it comes to the detrimental effects of market power on gender inclusion as represented by bank concentration. Accordingly, the findings align with the tenets of the concept of financial inclusion, particularly (Asongu et al. 2024). Moreover, the findings are also consistent with the extant literature supporting the negative effect of bank concentration, especially as it pertains, among others, the linkage between bank concentration and women's political empowerment (Asongu et al. 2024), economic growth (Chinoda & Mashamba 2021), financial inclusion (Avom et al. 2021), credit availability (Ayalem & Xianzhi 2019; Moyo & Sibindi 2022) and economic growth within the frameworks of development of the financial sector and the wealth of nations (Bara et al. 2017).

5. Conclusions

The present study has examined how bank concentration affects female economic inclusion in a panel of 80 developing countries based on data for the period 2000 to 2020. The study employs fixed effects regressions and the generalized method of moments (GMM) estimation techniques as empirical strategies. Two proxies of bank concentration are employed, notably: (i) total assets that are possessed by the three largest banks and (ii) total assets that are owned by the five largest banks. From the findings, women's economic empowerment is diminished by bank concentration. However, compared to bank concentration with regard to the total assets owned by the three largest banks, bank concentration in terms of the total assets held by the five largest banks is linked to a larger negative magnitude. Policy implications are discussed.

The policy implications are broadly consistent with the recommendation of Hakkarainen (2017) on how to increasing banking competition. Accordingly, three main implications are worth considering. First, expanding the cross-border delivery of banking services in the sampled countries can constitute a promising move in boosting banking competition and reducing the corresponding market power held by a few banks. In the long run, it would result in more options for customers, higher-quality services, and more competitive pricing since it would improve competition in each local market.

Second, it is also relevant to stress that crucial sound governance is crucial to fostering competition in the banking industry. Supervisors can trust banks to make more independent judgments about the direction of their business if they can show that they can effectively own and manage their risks. After that, they can come up with creative ways to provide clients services that are appealing. Moreover, supervisors should understand that this is the hallmark of a healthy market, and that good governance standards are necessary to make this a reality for the benefit of all parties.

Third, it is also pertinent for the public and private sectors to be divided in the banking industry. This essentially because the role of supervisors is to ensure that the market operates in society's best interests. This implies that supervisors must guarantee the removal of failing institutions from the market, be safe, and be equitable. The private sector is then responsible for the remaining tasks. With market discipline in place, banks need to figure out how to best and most economically satisfy their customers' needs. Such remaining tasks of increasing financial access for various socio-economic needs in society and industries can better be achieved when many banks are at play in order to enhance competition within the private sector. Further, government banks could also play a role in boosting competition by enhancing financial access to the previously unbanked population as well as to economic operators that private

banks are unwilling to fund because immediate gains are not apparent, though such projects could strategically benefit the country in the long term.

The findings in this research obviously provide ample space for further studies, especially in view of considering how the established interactions could influence the United Nations (UN) sustainable development goals (SDGs). Moreover, reconsidering the analyses within a country-specific empirical setting will avail room for more country-oriented policy implications. It is also worthwhile if future research is endeavored to assess if the established linkages withstand empirical scrutiny in more technically-advanced countries.

Appendices

Table A1: List of countries in the study

South Africa	Cameroon	Mauritania	Romania
Albania	Benin	Mexico	Rwanda
Argentina	Burundi	Mongolia	Senegal
Armenia	Cambodia	Mongolia	Seychelles
Belize	Colombia	Montenegro	Tajikistan
Botswana	Ivory Coast	Mozambique	Tanzania
Brazil	Djibouti	Nepal	Chad
Burina Faso	Tunisia	Jamaica	Nicaragua
Cape Verde	Estonia	Oman	Tunisia
Chile	Ecuador	Nigeria	Togo
China	Egypt	Niger	
Ethiopia	Eswatini	Uganda	
Georgia	Iran	Pakistan	
Ghana	Iraq	Paraguay	
Guatemala	Kuwait	Peru	
India	Lesotho	Philippines	
Indonesia	Madagascar	Qatar	
Morocco	Afghanistan	Costa Rica	
Kenya	Mongolia	Guatemala	
Moldova	Bangladesh	Kazakhstan	

Table A2 : Definitions of variables

Variables	Definitions	Data sources
Bank concentration 1 (C3)	the total assets held by a country's three largest banks.	GFDD (2020)
Bank concentration 2 (C5)	the total assets held by a country's five largest banks.	GFDD (2020)
Women's economic empowerment	<ul style="list-style-type: none"> - women's participation in the job market - participation of women with basic education in the labor market - participation of women with intermediate education in the labor market 	WDI (2021)
Natural Ressources	"Measured by the benefits derived from natural resources in relation to GDP ».	WDI (2021)

Democracy	Measured by the democracy index. It provides an indication of the constraints on the executive.	Polity IV (2020)
Electricity	Measured by access to electricity for a given population	WDI (2021)
Corruption	Measured by the level of corruption.	ICRG (2020)
Trade openness	« Measured by the sum of exports and imports of goods and services relative to GDP».	WDI (2021)
Financial development	Captured by the ratio of credit granted to the private sector to GDP.	WDI (2021)
Education	Measured by scolarisation rate.	WDI (2021)
Credit supply	Measured by the credit to the economy	COBAC report (2020)
Inflation	“Measured by the level of inflation in an economy”.	WDI (2021)
Lerner index	“Measured by the difference between output prices and marginal costs (relative to prices) and is equal to the inverse of the elasticity of demand for the case of a perfect monopoly and equal to zero for a perfect competitive market”.	OECD (2020)
Boone index	“It reflects the effect of efficiency on profits, calculated as the elasticity of profits to marginal costs”.	OECD (2020)

Table A3: Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
Bank Concentration 1 (C3)	1369	68.634	20.484	17.047	100
Bank Concentration 1 (C5)	1119	79.829	16.608	31.855	100
Lener index	954	-.721	1.172	-1.92	2.334
Boone index	990	-.975	.526	-2.352	.35
WEE	1350	39.237	10.183	10.948	53.877
WEE: basic education	936	65.006	10.224	27.939	100
WEE: intermediary Education	935	63.13	17.805	21.975	100
Education	1271	103.296	17.803	20.883	149.957
Financial dev	1411	33.673	24.998	2.215	165.39
Electricity	1460	71.216	33.351	1.252	100
Natural resources	1453	8.362	10.803	0	58.92
Trade openness	1382	39.67	20.461	10.273	191.458
Inflation	1436	6.996	8.605	-25.958	86.826
Corruption	1455	-.436	.671	-1.672	1.718

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. C3: The total assets held by the three largest banks in countries. C5: The total assets held by the five largest banks in countries. WEE: Women's Economic Empowerment

Source: Authors

Table A4: Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) Bank Concentration 1 (C3)	1.000													
(2) Bank Concentration 1 (C5)	0.700	1.000												
(3) Lerner index	0.171	-	1.000											
(4) Boone index	0.123	-	0.477	1.000										
(5) WEE	-	-	0.137	-	1.000									
(6) WEE: basic education	0.183	0.132	-	0.159	-	1.000								
(7) WEE: intermediary Education	-	-	-	-	-	0.222	1.000							
(8) Education	0.112	0.176	0.107	0.087	0.302	-	-	0.019	1.000					
(9) Financial dev	0.191	0.258	0.146	0.040	0.022	0.061	-	0.172	1.000					
(10) Electricity	0.005	-	-	0.185	-	-	0.097	0.144	0.222	0.376	1.000			
(11) Natural resources	0.225	0.332	0.094	-	0.201	0.060	-	-	0.165	0.353	0.223	1.000		
(12) Trade openness	0.361	0.392	0.170	0.026	-	0.013	0.183	-	0.062	0.541	0.176	0.293	1.000	
(13) Inflation	0.057	0.064	-	-	-	0.011	0.025	-	-	-	0.101	-	1.000	
(14) Corruption	0.358	0.165	0.133	0.203	-	-	0.160	0.182	0.206	0.020	-	0.093	0.174	0.026
					0.172	0.174		0.042			0.048			

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. C3: The total assets held by the three largest banks in countries. C5: The total assets held by the five largest banks in countries. WEE: Women's Economic Empowerment.

Source: Authors

References

- Aker, Jenny C., Rachid Boumnijel, Amanda McClelland, and Niall Tierney. "Payment mechanisms and antipoverty programs: Evidence from a mobile money cash transfer experiment in Niger." *Economic Development and Cultural Change* 65, no. 1 (2016): 1-37.
- Ajide, Folorunsho M., and Titus Ayobami Ojeyinka. "Financial development and entrepreneurship: insights from Africa." *Journal of Financial Regulation and Compliance* 30, no. 5 (2022): 596-617.
- An, Hui, Qianmiao Zou, and Mohamed Kargbo. "Impact of financial development on economic growth: Evidence from Sub-Saharan Africa." *Australian Economic Papers* 60, no. 2 (2021): 226-260.
- Anton, Sorin Gabriel, and Anca Elena Afloarei Nucu. "The effect of financial development on renewable energy consumption. A panel data approach." *Renewable Energy* 147 (2020): 330-338.
- Asongu, Simplice A. "Financial access and productivity dynamics in sub-Saharan Africa." *International Journal of Public Administration* 43, no. 12 (2020): 1029-1041.
- Asongu, Simplice, Emeride F. Kayo, Vanessa Tchamyou, and Therese E. Zogo. "Banking concentration, information sharing and women's political empowerment in developing countries." *International journal of social economics* 52, no. 4 (2025): 515-532.
- Asongu, Simplice, and Rexon Nting. "The comparative economics of financial access in gender economic inclusion." *African Journal of Economic and Management Studies* 12, no. 2 (2021): 193-207.
- Asongu, Simplice A., and Nicholas M. Odhiambo. "ICT, financial access and gender inclusion in the formal economic sector: evidence from Africa." *African Finance Journal* 20, no. 2 (2018): 45-65.
- Asongu, Simplice A., and Nicholas M. Odhiambo. "Economic sectors and globalization channels to gender economic inclusion in Sub-Saharan Africa." In *Women's Studies International Forum*, vol. 98, p. 102729. Pergamon, 2023a.
- Asongu, Simplice A., and Nicholas M. Odhiambo. "Bank accounts, bank concentration and mobile money innovations." *International Journal of technology management & sustainable development* 22, no. 2 (2023b): 185-204.
- Avom, Désiré, Chrysost Bangake, and Hermann Ndoya. "Does bank concentration stem from financial inclusion in Africa?." *Applied Economics* 54, no. 28 (2022): 3261-3278.
- Ayalew, Misraku Molla, and Zhang Xianzhi. "Bank competition and access to finance: evidence from African countries." *Journal of Industry, Competition and Trade* 19, no. 1 (2019): 155-184.
- Bain, Joe S. "Relation of profit rate to industry concentration: American manufacturing, 1936-1940." *The Quarterly Journal of Economics* 65, no. 3 (1951): 293-324.
- Bara, Alex, G. I. F. T. Mugano, and P. Le Roux. "Bank concentration, country income and financial development in SADC." *Southern African Business Review* 21, no. 1 (2017): 150-176.
- Batool, Syeda Azra, and Syeda Shahida Batool. "Impact of Education on Women's Empowerment: Mediation Role of Income and Self-Esteem." *Journal of Research & Reflections in Education (JRRE)* 12, no. 1 (2018).

Blundell, Richard, and Stephen Bond. "Initial conditions and moment restrictions in dynamic panel data models." *Journal of econometrics* 87, no. 1 (1998): 115-143.

Bound, John, Todd Stinebrickner, and Timothy Waidmann. "Health, economic resources and the work decisions of older men." *Journal of econometrics* 156, no. 1 (2010): 106-129.

Buvinić, Mayra, and Rebecca Furst-Nichols. "Promoting women's economic empowerment: what works?." *The World Bank Research Observer* 31, no. 1 (2016): 59-101.

Cao-Alvira, José J., and Jose E. Gomez-Gonzalez. "On Regional Bank Concentration and Firm Leverage: The Case of Colombia." *Emerging Markets Finance and Trade* 61, no. 1 (2025): 80-93.

Chinoda, Tough, and Tafirei Mashamba. "Financial inclusion, bank competition and economic growth in Africa." *Journal of Economic and Financial Sciences* 14, no. 1 (2021): 9.

Chisadza, Carolyn, and Mduduzi Biyase. "Financial development and income inequality: Evidence from advanced, emerging and developing economies." *Annals of Financial Economics* 18, no. 01 (2023): 2241002.

Debnath, Debashis. "Tribal women empowerment in natural resource management." *Anthropological Research in India: Retrospect and Prospects* (2023): 195.

Deidda, Luca, and Bassam Fattouh. "Concentration in the banking industry and economic growth." *Macroeconomic Dynamics* 9, no. 2 (2005): 198-219.

Del Sarto, Nicola, and Peterson K. Ozili. "FinTech and financial inclusion in emerging markets: a bibliometric analysis and future research agenda." *International Journal of Emerging Markets* 20, no. 13 (2025): 270-290.

Dutta, Meghna. "Globalisation, corruption and women empowerment." *Economic Papers: A journal of applied economics and policy* 37, no. 3 (2018): 327-343.

Dutta, Nabamita, and Daniel Meierrieks. "Financial development and entrepreneurship." *International Review of Economics & Finance* 73 (2021): 114-126.

El Bourainy, Mehry, Ashraf Salah, and Marwa El Sherif. "Assessing the impact of financial inclusion on inflation rate in developing countries." *Open Journal of Social Sciences* 9, no. 01 (2021): 397.

Emeka, Ekene ThankGod, and Simplice A. Asongu. "Research Productivity and Africa's Productive Capacity: The Moderating Role of Government Education Expenditure." *Higher Education Quarterly* 79, no. 3 (2025): e70039.

Emeka, Ekene ThankGod, Jonathan E. Ogbuabor, and Davidmac O. Ekeocha. "Terrorism and economic complexity in Africa: The unconditional impact of military expenditure." *African Development Review* 36, no. 1 (2024): 139-152.

Gachoki, Emilio Munene. "The impact of financial development on inflation: Empirical evidence from Kenya using the ARDL approach." <https://doi.org/10.20944/preprints202309.1882.v1> (2023).

Hakkarainen, Pentti. "Enhancing the environment for banking competition", Keynote address by Pentti Hakkarainen, Member of the Supervisory Board of the ECB, at the FIBI International Banking Conference 2017, Dublin, 22 June 2017(2017) <https://www.bankingsupervision.europa.eu/press/speeches/date/2017/html/ssm.sp170622.en.html> (Accessed: 07/12/2024).

Islam, Md Rezwanul, Sadita Ahmed, Subrata Kumar Das, and Tanveer Md Faisal Alam. "Microcontroller based power pilferage detection system." PhD diss., BRAC University, 2014.

Jukan, Meldina Kokorovic, Emira Kozarevic, and Vesna Zukic. "Financial inclusion and inflation in Southeast European countries." *Strategic Management-International Journal of Strategic Management and Decision Support Systems in Strategic Management* 29, no. 4 (2024).

Kumari, D. A. T., A. S. M. Ferdous, and S. Klalidah. "The impact of financial literacy on women's economic empowerment in developing countries: A study among the rural poor women in Sri Lanka." *Asian Social Science* 16, no. 2 (2020): 31-44.

Lochner, Lance, and Alexander Monge-Naranjo. "Credit constraints in education." *Annu. Rev. Econ.* 4, no. 1 (2012): 225-256.

Mallela, Keerti, Sunny Kumar Singh, and Archana Srivastava. "Remittances, financial development, and income inequality: A panel quantile regression approach." *International Economics* 175 (2023): 171-186.

Marco, Rocio, and Hector Perez-Saiz. "Formal financial inclusion and digital mobile money adoption in sub-Saharan Africa: do bank concentration and competition matter?" *Applied Economics* (2025): 1-21.

Mason, Edward S. "Price and production policies of large-scale enterprise." *The American economic review* 29, no. 1 (1939): 61-74.

Moyo, Busani, and Athenia Bongani Sibindi. "Does bank competition affect credit access in sub-Saharan Africa? Evidence from World Bank informal firms surveys." *Journal of African Business* 23, no. 1 (2022): 180-198.

Mukhtarov, Shahriyar, Serhat Yüksel, and Hasan Dinçer. "The impact of financial development on renewable energy consumption: Evidence from Turkey." *Renewable Energy* 187 (2022): 169-176.

Nchofoung, Tii N., Simplicie A. Asongu, and Vanessa S. Tchamyou. "Gender political inclusion and inclusive finance in Africa." *Economic Systems* 48, no. 2 (2024): 101187.

Nickell, Stephen. "Biases in dynamic models with fixed effects." *Econometrica: Journal of the econometric society* (1981): 1417-1426.

Ogbuabor, Jonathan E., Ekene ThankGod Emeka, and Chukwunweike A. Ogbuabor. "Effects of entrepreneurship and governance quality on global and regional economic performance: A pathway to sustainable development." *Sustainable Development* 33, no. 2 (2025): 2842-2863.

Ozili, P. K. *Theories of Financial Inclusion. Uncertainty and Challenges in Contemporary Economic Behaviour*, 89–115. 2020. Emerald Publishing Limited.

Reshi, Irshad Ahmad, and Thambidurai Sudha. "Economic empowerment of women: A review of current research." *International Journal of Educational Review, Law And Social Sciences (IJERLAS)* 3, no. 2 (2023): 601-605.

Salop, Steven C. "Monopolistic competition with outside goods." *The Bell Journal of Economics* (1979): 141-156.

Samy, Yiagadeesen, Adeniran Adedeji, Augustine Iraoya, Madhurjya Kumar Dutta, Jasmine Lal Fakmawii, and Wen Hao. *Trade and Women's Economic Empowerment: Evidence from Small and Medium-Sized Enterprises*. Springer Nature, 2023.

Shahbaz, Muhammad, Betül Altay Topcu, Sevgi Sümerli Sarigül, and Xuan Vinh Vo. "The effect of financial development on renewable energy demand: The case of developing countries." *Renewable Energy* 178 (2021): 1370-1380.

Song, Xiaoling, Xuan Qin, Wanmeng Wang, and Rita Yi Man Li. "Financial inclusion, technologies, and worldwide economic development: A spatial Durbin model approach." *The Journal of Finance and Data Science* 11 (2025): 100155.

Tchamyou, Vanessa S., Samba Diop, Simplice A. Asongu, and Joseph Nnanna. "African women vulnerability index: focus on rural women." In *Forum for Social Economics*, vol. 53, no. 3, pp. 262-280. Routledge, 2024.

Tchamyou, Vanessa S., Guido Erreygers, and Danny Cassimon. "Inequality, ICT and financial access in Africa." *Technological Forecasting and Social Change* 139 (2019): 169-184.

Tchidi, Guillaume Edou, and Wei Zhang. "Mediating effect of financial inclusion on FinTech innovations and economic development in West Africa: Evidence from the Benin Republic." *International Journal of Finance & Economics* 30, no. 2 (2025): 1032-1048.

Verma, Anushka, Prajakta Sandeep Dandgawhal, and Arun Kumar Giri. "Impact of ICT diffusion and financial development on economic growth in developing countries." *Journal of Economics, Finance and Administrative Science* 28, no. 55 (2023): 27-43.

Von dem Knesebeck, Olaf, Pablo E. Verde, and Nico Dragano. "Education and health in 22 European countries." *Social science & medicine* 63, no. 5 (2006): 1344-1351.

World Economic Forum. *Global Gender Gap Report 2020*, World Economic Forum (2020), available at: <https://www.weforum.org/publications/gender-gap-2020-report-100-years-pay-equality/> (accessed 7 June 2024).

Zeng, Jih-Hong, and Sin-Jin Lin. "Peer effect, bank concentration, and crises: Evidence from the United States." *Managerial and Decision Economics* 45, no. 2 (2024): 1090-1103.

Zogo, Therese E., Emeride F. Kayo, and Simplice A. Asongu. "Banking Concentration and Women's Entrepreneurship in Developing Countries." *The Journal of Entrepreneurship* (2025): 09713557251349251.