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Gender political inclusion and inclusive finance in Africa

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A G D I Working Paper

WP/22/063

Gender political inclusion and inclusive finance in Africa

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Gender political inclusion and inclusive finance in Africa**Tii N. Nchofoung, Simplicie A. Asongu & Vanessa S. Tchamyou****Abstract**

At the 2010 G20 Summit, the use of formal financial services was recognized as one of the main pillars of the global development agenda. At the same time, the fifth goal of the Sustainable development agenda outlined the importance of gender inclusion for sustainable development. Empirical research on the effect of gender inclusion on inclusive finance has however been limited to micro level studies. This study aims to verify the effect of gender political inclusion on financial inclusion on a sample of 37 African countries from 2004-2020. The empirical methodology involves the Ordinary Least Squares (OLS), the Tobit regression and the System Generalized Method of Moments (GMM) methodologies. The results from these methods show that gender political inclusion is enhancing on financial inclusion in Africa, and this finding is robust across alternative specifications of gender inclusion and inclusive finance. Besides, governance exhibits a positive synergy effect with gender political inclusion on inclusive finance. Policy implications are discussed.

Keywords: Gender; political inclusion; inclusive finance; Africa

JEL Classification: G20; I32; O55; P16; P43

1. Introduction

One of the areas of finance that is still very much a call for concern in developing economies is financial inclusion. At the 2010 G20 Summit, the use of formal financial services was recognized as one of the main pillars of the global development agenda. Financial inclusion plays an important role in building a strong foundation of a country's infrastructures (i.e. including financial infrastructure), which in turn will facilitate the country's economic growth and development (Asongu and Minkoua, 2018; Singh and Stakic, 2021). Improvement in infrastructures both in the educational and financial sectors enhances financial literacy in the long-run, as infrastructure and literacy are substitutes (Grohmann et al., 2018). Financial inclusion equally serves as a medium for households to save for the future, through increase in wealth accumulation and contribution to financial stability (Han and Melecky, 2013; Célerier and Matray, 2019; Allen et al., 2021). Financial inclusion is also a critical factor in moving out of poverty through its ability to increase economic productivity, human capital investment, business growth and employment (Banerjee and Newman 1993; Aghion and Bolton 1997; Burgess and Pand, 2005; Stein and Yannelis, 2020). Besides, financial inclusion is associated with stronger legal rights and more politically stable environments (Allen et al., 2016)

Despite this demonstrated importance of financial inclusion, it still remains a global problem. According to the Global Findex Statistics, as of 2014, about two billion adults lacked access to formal accounts globally, the World Bank group in response to this, set an ambitious target, which was to attain the Universal Financial Access (UFA) by 2020, with the aim to give adults the possibility of having access to formal accounts. Following insights from the 2021 Integrated Financial Statistics, the number of commercial bank branches per 100 000 adults evolved from 9.79 in 2004 to 14.15 in 2020. In sub-Saharan Africa (SSA), it moved from 1.49 to 4.45 per 100 000 adults within the same period. These statistics are far below the world average and equally below that of developed regions like Europe and Central Asia which registered scores of 14.06 and 24.59 for 2004 and 2020, respectively. These developed regions also dominate in the trend of the number of automated teller machine (ATM) per 100 000 people, with scores of 10.4 in 2004 and 64.15 in 2020 in Europe and Central Asia while developing economies like SSA moved from less than 1 in 2004 to only slightly above 6 in 2020. This is evident that the UFA initiative is still far from achieving its goals especially in developing countries in general and Africa in particular. There is thus further need on coordinated policies on inclusive financial development.

Gender inclusion is one of the areas that could just be the answer to this policy annoyance. The place of women in politics is increasingly gaining debate as a way towards

achieving sustainable development, especially its goal number 5 on gender equity and empowering all women and girls. This empowerment could take the form of economic, social or political aspects, with each dimension of gender inclusion likely to have specific effects on economic outcomes. One of the areas of gender inclusiveness that has been neglected in empirical studies is political inclusion and even when considered, has mostly been limited to onedimension. However, Sundström et al. (2017) define the political empowerment of women in three dimensions, (i) civil liberties, (ii) participation in business and society and (iii) the political representativeness of women in decision-making bodies. Women political leadership is likely to promote policies that are conducive for female economic empowerment, leading to more adoption of financial inclusion tools. This is specifically true given that gender roles in several economies submerge women to be limited to household maintenance (Pereira, 2012).

The political inclusion of women has been established as efficient when good governance is apparent in an economy (Goetz, 2007; Sung, 2012; Barnes and Beaulieu, 2019; Esarey and Schwindt-Bayer, 2019; Nchofoung et al., 2022). Improvement in the governance system in place is efficient for optimal tax revenue collection which can be used to finance development projects (Mallick, 2021). Financial institutions with huge capital raise their long-term non-depository debt following tax increases and thus benefit from an enlarged tax protection. Worse-capitalized financial institutions on their part rather reduce their lending because a higher tax rate increases the tax-adjusted cost of funding, which renders the marginal loan unprofitable (Schandlbauer, 2017). Women political empowerment equally leads to efficient welfare policy decisions through higher distribution of resources to sectors in which women are unreasonably active (De Siano and Chiariello, 2022). It equally upsurges economic development through its ability to facilitate technological innovation and heightening entrepreneurship (Duflo, 2012; Goltz et al., 2015; Dahlum et al., 2022). Increase in entrepreneurship and technological innovations, as a result of women empowerment consequently leads to more inclusive finance (Nguyen and Ha, 2021; Lachebeb et al., 2021; Kouladoum et al., 2022), through the development of a legal framework for digital business models such as online banking and e-commerce and as a result, mitigate tax evasion and increase revenue available for public investments (Uyar et al., 2021)

However, Africa has a poor track record of gender equality especially in the political sphere, with only about 25% of women in national parliaments (Nchofoung et al., 2021a, 2022). Though there are few exceptions like Rwanda with representations of 61.3% and 38.5% of women in the lower and upper house of parliament respectively in 2020, some are still very wanting. These include Nigeria which happens to be one of the biggest economies

in the continent with parliamentary female representation of 3.6% and 7.3% respectively for the lower and upper house of parliament as of 1st of October 2020 (Inter-Parliamentary Union, 2020). At this same time, efforts are being made in the continent to overturn the situation. For instance, more than half have ratified the African Union's Protocol on the Rights of Women in Africa, with gender inclusion equally integrated as part of African Union's agenda of 2063 (Nchofoung et al., 2021a). This study therefore seeks to answer the following questions: What is the effect of women political empowerment on inclusive finance in Africa?

The study therefore contributes to the literature on financial inclusion as being the very first empirical attempt to the best of our knowledge, to examine the effect of women political inclusion on inclusive finance on a macroeconomic level. The closest studies to the present positioning are those of: (i) Ghosh and Vinod (2017) who examine the constraints to financial inclusion of women on a micro level in India and argue that political factors act as a hindrance and (ii) Ghosh (2022) who shows that women political empowerment enhances financial inclusion for India using survey data. This study is very different because it engages the financial inclusion debate using macro level data unlike the highlighted studies that are based on microeconomic level data. Besides, the political inclusion variable is that of V-DEM database which no study has used in the financial inclusion debate. Secondly, a composite indicator of financial inclusion is constructed from the G20 financial inclusion indicators through the Integrated Financial Statistics data. This is particularly important given that the financial inclusion dynamic is disaggregated by the type of financial service provider and the type of financial service. Thirdly, the present study engages the debate in the African context, a continent that is sulked in poverty and in dire need of policies that can move the continent out of the deplorable state of poverty. One of the areas which policy has identified is that of inclusive development. Unfortunately, studies on the determinants of inclusive finance on the continent are still wanting and no study has actually examined the political inclusion-financial inclusion nexus on the continent. Last but not the least, this study verifies governance as a mediating mechanism for the nexus and to the best of knowledge is the very first study to approach the subject through a perspective of transmission channels.

The rest of the paper is structured around a literature review (section 2), methods used (section 3), results and discussions (section 4) and finally a conclusion with policy implications (section 5).

2. Review of related literature

2.1.Theoretical underpinning

The theoretical underpinning that guides this study is derived from the theory of financial inclusion beneficiary. In this respect, the public goods theory of financial inclusion highlights that financial services should be treated as a public good, where individuals are not restricted in terms of access and/or usage. As such, opening an account or being able to save or withdraw money or using the ATM machine should be cost-free and the financial institution in question should be able to bear the cost (Ozili, 2020). This theory therefore has several implications including the fact that as a public good, everyone, regardless of age, gender or race, has access to and can use the attendant services freely. Secondly, achieving financial inclusion would require public funding instead of private funding, as a result, the private sector is not recognized as an agent in promoting financial inclusion. The government in this case would therefore take total responsibility in providing these financial services for the benefit of all. If this were the case, women's involvement in political life would greatly affect public decision making including the provision of public services to the population. On the other hand, the theory of financial inclusion delivery argues that several groups can deliver financial services to the population. Some groups argue that private enterprises such as banks and fintechs (i.e. financial technologies) can deliver financial services to the population efficiently than the public sector (Gabor and Brooks, 2017; Ozili, 2020).

Others argue that it should be the sole responsibility of the public sector and that the private sector would mostly be capitalist thereby, increasing the cost of financial services which would exclude the poor and the vulnerable groups (Aggarwal and Klapper, 2013; Staschen and Nelson, 2013). Lastly, financial inclusion should be a collaboration between the public and the private sector (Arun and Kamath, 2015; Pearce, 2011). Whichever case, if the public sector is involved in the provision of financial services either through direct public spending or putting in place of appropriate regulations, then there is necessity for good governance in the public sector for this to be effective. Financial inclusion can be achieved and sustained through financial institutions, profitable branching and service strategies that also serve the needs of underserved regions, and groups; consequently, financial inclusion can be associated with a sacrifice of profitability in financial institutions (Allen et al., 2021).

2.2.Empirical literature

The empirical literature on the determinants of financial inclusion is still highly underdeveloped especially in Africa. In this line of research, Zins and Weill (2016)

established that financial inclusion is greatly explained in Africa by the level of wealth, gender, age and education. These findings were corroborated by Asuming et al. (2019). Sanderson et al. (2018) further posit that in addition to the highlighted determinants, financial literacy and internet connectivity are positively related to financial inclusion. Besides, financial inclusion can be influenced by both the demand side and the supply side of the economy. For the demand side, income and literacy levels can affect financial inclusion while for the supply side, interest rate and bank innovation can affect financial inclusion, while remittances have no effect (Oyelami et al., 2020). Besides, unemployment is detrimental to financial inclusion, while population density and inflation have no significant impact (Alber, 2019). Conversely, banking concentration has negative effects on financial inclusion in Africa though the effect is non-linear (Avom et al., 2022). Furthermore, financial inclusion is driven by population density in Africa than elsewhere and recent innovations in financial services such as mobile banking have helped to overcome infrastructural problems and improve financial access (Allen et al., 2014). It is in this respect that Kouladoum et al. (2022) recently stress that digital technologies enhance financial inclusion in Africa. The authors further argue on the importance of globalization through trade and foreign direct investment inflows, as stimuli for inclusive finance in Africa. Also, financial aid enhances financial inclusion with the impact stronger in countries receiving high aid flows and in countries with low economic risks and uncertainty (Lee et al., 2022).

Away from the economic factors, institutional quality and governance have been found to explain financial inclusion. In this line thus, institutional quality and governance enhance financial inclusion (Zulkuhribri and Ghazal, 2017; Kwenda and Chinoda, 2019; Ben Khelifa, 2021). This group of authors posit that the governments through governance will influence financial inclusion through the implementation of legislation that favours or discourages inclusion, fights corruption, and creates a conducive environment for financial investments and literacy. Recently, Nkoa and Song (2020) argue that good institutions enhance financial access, penetration and financial services in Africa and further stress on the need to enhance institutional governance in these economies as a way out of the poverty trap.

Nchofoung et al. (2022) however argue that to enhance governance in Africa, there is need for policies that boost women political inclusion in the continent. They have suggested the necessity of imposing gender quotas to public positions through putting in place of national laws in that respect. Similarly, women political leadership is likely to promote policies that are conducive for female economic empowerment, leading to more adoption of financial inclusion tools. This is specifically true given that gender roles in several economies

submerge women to be limited to household maintenance (Pereira, 2012). In this regard, Goltz et al. (2015) argue that both women political empowerment and rule of law are associated with increase in entrepreneurship in the economy. Women's participation in politics is a policy tool to increase both the supply of and the demand for labour market opportunities for women, potentially helping to increase the economic participation rate of women (Ghani et al., 2013).

However, studies on the effect of such women political inclusion on financial inclusion are almost non-existent. The closest studies on the subject in literature include that of Ghosh (2022) who shows that women political empowerment enhances financial inclusion in India using survey data. The study however is limited to India and involves principally household survey data. Ghosh and Vinod (2017) also examine the constraints to financial inclusion of women on a micro level in India and argue that political factors act as a hindrance. Just like the former, this latter set of authors limits their study to India and on household data. Chundakkadan and Sasidharan (2022) stress that economic, educational, and political gender equalities are vital to improving women enterprises' access to external finance. The study is however based on firm level data and financial inclusion is limited to female financial inclusion. The highlighted literature clearly demonstrates that there is no macroeconomic study on the effect of gender political inclusion on financial inclusion. Besides, institutional quality has been extensively demonstrated to be a determining factor of financial inclusion while women's political inclusion has been argued to be an engine for good governance. However, no study has investigated the modulating incidence of governance on the effect of women political empowerment on financial inclusion. This study intends to fill the highlighted research gaps based on a macroeconomic panel of African countries.

3. Methods

3.1. Data and preliminary statistics

Data for this study come from the Variety of democracy (V-DEM) database for the gender inclusion variables, those for financial inclusion come from the Integrated Financial Statistics (IFS), that of governance comes from the Worldwide Governance Indicators of the World Bank and finally the rest of other control variables are from the World Development Indicators of the World Bank. The data spans from 2004-2020 for 37¹ African countries, with

¹Angola, Benin, Botswana, Burkina-Faso, Burundi, Cameroon, Central African Republic, Chad, Comoros, Equatorial Guinea, Gabon, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger,

this choice of study period and sampled countries based on the availability of relevant data. In essence, the data on financial inclusion variables from the IFS are regular for African countries from 2004 and those on governance have 2020 as the most recent year.

Dependent variable

The dependent variable is the financial inclusion index (FII) constructed through the principal component analysis from the following financial inclusion indicators and in accordance with attendant literature (Avom et al., 2022; Kouladoum et al., 2022): Institutions of commercial banks, Number of commercial bank branches per 100,000 adults, Number of ATMs per 100,000 adults, outstanding deposits with commercial banks (% of GDP), and Outstanding loans from commercial banks (% of GDP). Each of these variables is at first placed normalised through the Min-Max procedure in accordance with recent literature on composite indicators construction as in equation (1) (Ngouhouo and Nchofoung, 2022).

$$I_{ij}^{RS} = \frac{Y_{ij}^t - \text{Min}(Y_{ij})}{\text{Max}(Y_{ij}) - \text{Min}(Y_{ij})} \quad (1)$$

Where, I_{ij}^{RS} is the rescaled variable, Y_j for country, i and, t is the period considered, $\text{min}(Y_{ij})$ is the minimum value of each variable and $\text{max}(Y_{ij})$ is the corresponding maximum value. The rescaled indicator therefore takes values between 0 and 1, with 1 representing the highest score that was apparent in the initial unscaled component and 0 the corresponding lowest score. The PCA is then applied to the rescaled indicators to obtain the FII. The advantage of using the PCA instead of other aggregation methods like simple arithmetic mean is the fact that it considers the distribution of each indicator and attributes weights to the sub-indexes based on their importance in the aggregated index. Similar indicators have been used by Kouladoum et al. (2022) to study the effect of digital technologies on financial inclusion, Avom et al. (2022) to examine the effect of banking concentration on financial inclusion as well as in the knowledge economy literature (Tchamyou, 2017; Asongu and Tchamyou, 2019; 2020)

Independent variable of interest

The women's political empowerment indicator used for the case of this study entails the following dimensions: women's political participation, women civil liberty, and women civil

Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, South Africa, Tanzania, Togo, Uganda, Zambia, Zimbabwe

society participation, in accordance with the definition of Sundström et al. (2017) who approached the political empowerment of women as a process of increasing capacity for women through greater choice, agency and participation in societal decision-making. This index has been used in recent empirical studies including the works of Dahlum et al. (2022) and Nchofoung et al. (2022). The indicators, together with its sub-indexes are scaled between 0-1, with 1 representing the ideal situation of political empowerment. Ghosh (2022) for the Indian economy through survey data shows that women political empowerment enhances financial inclusion in India. This variable is therefore expected to produce a positive effect for the case of this study. Figure 1 shows the perceived relationship through a fitted scattered plot.

Figure 1. Fitted scattered plot

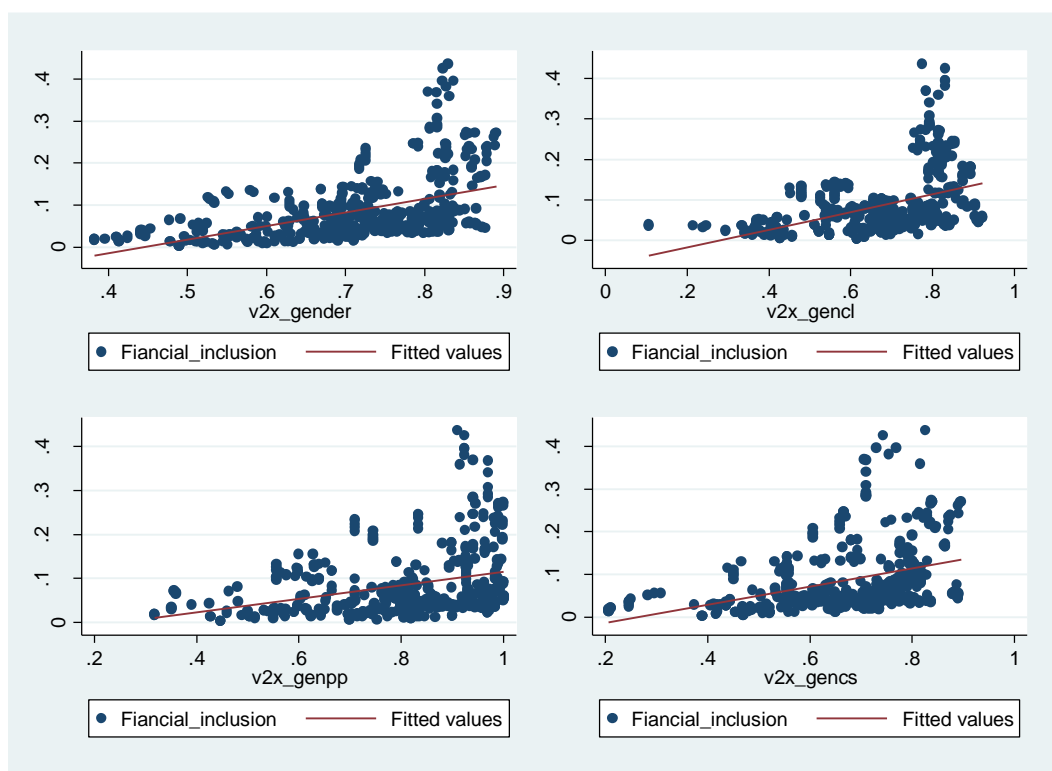


Figure 1 shows that there is at first view, a positive effect of gender political inclusion on financial development across different specifications of gender political inclusion. The actual effect can however only be appreciated if the control variables are taken into account.

Control variables

The first control variable used is governance and used as first place as the average of the six governance indicators of Kaufmann et al. (2010) in accordance with the study of Ngouhouo

et al. (2021). These sub-indexes are control of corruption, government effectiveness, rule of law, voice and accountability, political stability/absence of violence and regulatory quality. This indicator is expected to produce a positive sign in accordance with Nkoa and Song (2020) who argue that good institutions enhance financial access, penetration and financial services in Africa. The next control variable is trade openness (trade % GDP) which is used in accordance with Kouladoum et al. (2022) and is expected to produce a positive effect. The authors further argue that foreign direct investment inflows (% GDP) enhance financial inclusion in Africa. This indicator is further introduced as a control variable in our model. Also, economic growth proxied by the logarithm of GDP per capita (constant 2015 USD) is used as a control variable and is expected to produce a positive sign in accordance with the study of Zins and Weill (2016). Last but not the least, net official development assistance received (%GNI) is used as another control variable. Financial aid enhances financial inclusion with the impact stronger in countries receiving high aid flows and in countries with low economic risks and uncertainty (Lee et al., 2022). This variable is therefore expected to produce a positive sign. Table 1 presents the descriptive statistics for these variables while the corresponding correlation matrix is presented in the Appendix.

Table 1. Descriptive Statistics

| Variables | Obs | Mean | Std. Dev. | Min | Max |
|-------------------------------|-----|-------|-----------|---------|---------|
| Gender political empowerment | 592 | .703 | .12 | .382 | .891 |
| Women civil liberty | 592 | .666 | .163 | .083 | .922 |
| Women political participation | 592 | .799 | .166 | .31 | 1 |
| Women civil society | 592 | .662 | .143 | .207 | .896 |
| Foreign aid | 581 | 9.002 | 8.737 | -.251 | 71.785 |
| Foreign direct investment | 583 | 3.725 | 9.841 | -11.199 | 161.824 |
| Economic growth | 583 | 7.067 | 1.013 | 5.466 | 9.74 |
| Trade openness | 532 | 65.76 | 31.714 | 20.723 | 210.234 |
| institutions of banks | 566 | .145 | .109 | 0 | 1 |
| Commercial banks branches | 556 | .109 | .161 | 0 | 1 |
| ATM | 490 | .128 | .188 | 0 | 1 |
| deposits in banks | 547 | .013 | .063 | 0 | 1 |
| loans from banks | 541 | .013 | .065 | 0 | 1 |
| Financial inclusion index | 477 | .085 | .077 | .003 | .437 |
| Control of corruption | 592 | -.607 | .62 | -1.816 | 1.16 |
| government effectiveness | 592 | -.685 | .626 | -1.885 | 1.057 |
| political stability | 592 | -.429 | .833 | -2.699 | 1.282 |
| regulatory quality | 592 | -.593 | .579 | -2.236 | 1.127 |
| Rule of law | 592 | -.638 | .634 | -2.009 | 1.077 |
| Voice and accountability | 591 | -.452 | .67 | -2 | 1.007 |
| Governance | 591 | -.568 | .583 | -1.808 | .854 |

3.2. Model specification and regression methodology

Our empirical analysis aims at analysing the effect of women's political inclusion on financial inclusion in Africa. In this regard, the empirical model is based on the literature on the determinants of financial inclusion. Theoretically, Zeller (1995) argue that the demand of financial services depends on the income of the individual. Empirically, Zins and Weill (2016) established that financial inclusion is greatly explained by the level of wealth, gender, age and education. Other empirical works argue that good institutional quality and governance boost financial inclusion (Zulkhibri and Ghazal, 2017; Kwenda and Chinoda, 2019; Ben Khelifa, 2021). In summary, these studies highlight the importance of gender inclusion, economic development, globalisation and governance in explaining financial inclusion. Based on these articulated findings, our first regression method is the Ordinary Least Squares (OLS) method of estimation which is specified with financial inclusion as dependent variable of interest, as presented in equation (2).

$$FII_{it} = \beta_0 + \beta_1 GENDER_{it} + \nabla X_{it} + \mu_i + \gamma_t + \varepsilon_{it} \quad (2)$$

where, FII is the financial inclusion index, at time, t, for country, i, *Gender* is the gender political inclusion variable, X is the vector of control variables, β is the coefficient associated to the variable of interest, β_0 is the constant while ∇ is the coefficient of control variables. μ and γ are the individual and time fixed effects respectively and ε is the error term.

However, given that our dependent variable has a limited range (values can only range between 0 and 1), we further implemented a double-censored Tobit regression methodology. Besides, a double-censored Tobit model is akin to estimating by a linear regression model because the two likelihood functions coincide (Asongu et al., 2021; Nchofoung et al., 2021 b; Kouladoum et al., 2022). The specification of the simple Tobit model is as in equation (3):

$$FII^*_{it} = \alpha_0 + \beta X_{it} + \varepsilon_{it} \quad (3)$$

Where FII^* is the latent response variable, α_0 is a constant, and the rest of the variables are as defined above. The observation of the latent response variable is based on the value of a stochastic constant γ , such that:

$$FII_{it} = \begin{cases} FII^*_{it} & \text{if } FII^*_{it} > \gamma \\ 0 & \text{if } FII^*_{it} \leq \gamma \end{cases} \quad (4)$$

The value of the latent variable thus only exists when it is greater than γ . The Tobit regression however cannot take care of possible sources of endogeneity in our model resulting from either double causality between the financial inclusion variable and other

explanatory variables like economic growth and trade. In essence, the literature has equally argued that financial inclusion explains economic growth (Van et al., 2021) and globalization (Andiansyah, 2021). There is therefore the need to implement a methodology that corrects this econometric bias. There are several methods that can possibly be adopted including the instrumental variables techniques and the Generalized Method of Moments (GMM).

We used the system GMM for the case of this study because of several reasons. (i) The correlation coefficient between FFI and its first period lag yields a value of 0.99, showing the importance of taking into account the initial economic conditions in our regression method (Nchofoung et al., 2022). In this case, the lagged dependent variable is included as one of the explanatory variables of the model. (ii) The cross-sectional dimension of our data (37) is greater than the time dimension (16) which satisfied the initial condition of Roodman (2009) for the implementation of the GMM methodology. The model can be specified in level and in difference thus:

$$FII_{it} = \beta_0 + \beta_1 FII_{i(t-\tau)} + \beta_2 GENDER_{it} + \sum_{h=1}^k \delta_h X_{h,i(t-\tau)} + v_t + \gamma_i + \varepsilon_{it} \quad (5)$$

$$FII_{it} - FII_{i(t-\tau)} = \beta_1 (FII_{i(t-\tau)} - FII_{i(t-2\tau)}) + \beta_2 (Gender_{it} - gender_{i(t-\tau)}) + \sum_{h=1}^k \delta_h (X_{h,i(t-\tau)} - W_{h,i(t-2\tau)}) (\gamma_t - \gamma_{t-\tau}) + \varepsilon_{i(t-\tau)} \quad (6)$$

The main problems associated with the GMM technique are those of identification, simultaneity and restrictions. To solve these problems, all explanatory variables are suspected of endogeneity in accordance with current literature on GMM estimation (Nchofoung et al., 2022; Nchofoung and Asongu, 2022; Tchamyu, 2021). Accordingly, the period dummies are used as instruments in the regression. These instruments have been argued by the highlighted literature to be strictly exogenous. We further used the forward orthogonal deviation to limit instruments proliferation, in line with Roodman (2009). Besides, we used the *two-step* instead of the *one-step* procedure because the *one-step* procedure is consistent with homoscedasticity.

4. Results and Discussion

The results begin with the baseline regression followed by the Tobit model estimation, the dynamic model regression and finally the indirect effect regression model.

4.1. Baseline estimation (OLS)

Table 2 presents the baseline estimation with the OLS regression technique. The results show that gender political inclusion enhances financial inclusion in Africa and that this result holds in the presence and absence of control variables. Also, governance, foreign aid, and economic growth improve financial inclusion.

Table 2. Baseline regressions (OLS)

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) |
|---------------------------|---|------------------------|---------------------------|---------------------------|--------------------------|--------------------------|
| | Dependent variable: Financial Inclusion | | | | | |
| Gender inclusion | 0.324*** (0.0257) | 0.129*** (0.0272) | 0.147*** (0.0269) | 0.152*** (0.0276) | 0.214*** (0.0278) | 0.161*** (0.0232) |
| Governance | | 0.0629*** (0.00616) | 0.0516*** (0.00540) | 0.0509*** (0.00539) | 0.0159*** (0.00561) | 0.0232*** (0.00554) |
| Foreign aid | | | -0.00187*** (0.000363) | -0.00191*** (0.000366) | 0.00172*** (0.000412) | 0.000635** (0.000301) |
| Foreign direct investment | | | | 0.000455 (0.000277) | 6.34e-05 (0.000163) | 0.000392 (0.000622) |
| Economic growth | | | | | 0.0469*** (0.00454) | 0.0381*** (0.00459) |
| Trade openness | | | | | | 0.000161 (0.000127) |
| Constant | -0.144*** (0.0162) | 0.0291 (0.0208) | 0.0240 (0.0209) | 0.0187 (0.0214) | -0.406*** (0.0467) | -0.307*** (0.0412) |
| Individual FE | Yes | yes | Yes | Yes | yes | yes |
| Time FE | Yes | yes | Yes | Yes | yes | yes |
| Observations | 477 | 476 | 474 | 474 | 474 | 436 |
| R-squared | 0.243 | 0.394 | 0.428 | 0.431 | 0.607 | 0.662 |
| Fisher | 159.4*** | 142.6*** | 109.7*** | 82.31*** | 107.0*** | 96.85*** |
| Rank | 2 | 3 | 4 | 5 | 6 | 7 |

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Given that the OLS suffers from several econometric setbacks, an economic interpretation is not therefore provided for this result. The Tobit regression is thus implemented to account for the limited range of the dependent variable.

4.2. Robustness Results

The robustness results begin with the Tobit regression (Tables 3 and 4), then the system GMM regression (Table 5). Table 3 shows that gender political inclusion just like in the baseline results positively affects financial inclusion, with the result robust across alternative specifications of gender political inclusion and financial inclusion. Also, the results stood across alternative specifications of governance (Table 4). Besides, when the system GMM estimation method is used (Table 5), the positive result persists.

Table 3. Robustness across alternative specifications of gender inclusion and dependent variable (Tobit regression)

| VARIABLES | (1) | (2) | (3) | (4) | Dependent variable | | | | |
|-------------------------------|---------------------------|------------------------|------------------------|---------------------------|---------------------------|----------------------------|------------------------|-------------------------------|----------------------------|
| | Financial inclusion index | | | | Banking institutions | Number of commercial banks | Number of ATMs | Outstanding deposits in banks | Outstanding loans in banks |
| Governance | 0.0230*** (0.00502) | 0.0440*** (0.00542) | 0.0403*** (0.00401) | 0.0163*** (0.00536) | -0.00197 (0.0109) | 0.0223** (0.0110) | 0.0832*** (0.0129) | 0.00809*** (0.000974) | 0.00457*** (0.00100) |
| foreign aid | 0.000633 (0.000389) | 0.000497 (0.000428) | 4.71e-05 (0.000394) | 0.000654* (0.000384) | -0.00378*** (0.000757) | 0.00252*** (0.000719) | 0.00254** (0.00101) | 1.90e-06 (6.38e-05) | -6.39e-05 (6.40e-05) |
| Foreign direct investment | 0.000392 (0.000560) | 0.000715 (0.000590) | 0.000330 (0.000563) | 0.000432 (0.000553) | 0.00200 (0.00130) | 0.00155 (0.00130) | -0.000853 (0.00145) | 0.000127 (0.000117) | 0.000164 (0.000118) |
| Economic growth | 0.0381*** (0.00349) | 0.0342*** (0.00372) | 0.0331*** (0.00346) | 0.0414*** (0.00354) | 0.0153** (0.00750) | 0.0621*** (0.00738) | 0.105*** (0.00900) | 0.000834 (0.000657) | 0.00153** (0.000658) |
| Trade openness | 0.000167** (8.43e-05) | 0.000126 (8.89e-05) | 0.000111 (8.44e-05) | 0.000247*** (8.46e-05) | -0.00140*** (0.000195) | 0.00177*** (0.000194) | 0.000327 (0.000218) | 5.24e-05*** (1.75e-05) | 3.42e-06 (1.76e-05) |
| Gender inclusion | 0.162*** (0.0226) | | | | 0.259*** (0.0474) | 0.186*** (0.0484) | 0.327*** (0.0589) | -0.0178*** (0.00426) | -0.00127 (0.00449) |
| Women civil liberty | | 0.00781 (0.0194) | | | | | | | |
| Women political participation | | | 0.0859*** (0.0125) | | | | | | |
| Women civil society | | | | 0.153*** (0.0194) | | | | | |
| Constant | -0.308*** (0.0342) | -0.156*** (0.0347) | -0.209*** (0.0274) | -0.329*** (0.0343) | -0.0217 (0.0710) | -0.597*** (0.0705) | -0.842*** (0.0885) | 0.0156** (0.00625) | 0.000645 (0.00637) |
| Observations | 436 | 436 | 436 | 436 | 505 | 501 | 440 | 499 | 493 |
| Fisher | 41.2*** | 32.9*** | 37.5*** | 41.0*** | 38.3*** | 41.6*** | 39.9*** | 40.3*** | 36.83*** |

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4. Alternative specifications of governance

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) |
|---------------------------|---|---------------------------|---------------------------|---------------------------|--------------------------|--------------------------|
| | Dependent variable: financial inclusion index | | | | | |
| Gender inclusion | 0.174*** (0.0213) | 0.105*** (0.0217) | 0.243*** (0.0192) | 0.183*** (0.0212) | 0.167*** (0.0225) | 0.154*** (0.0214) |
| Foreign aid | 0.000553 (0.000392) | 0.000415 (0.000368) | 0.000938** (0.000395) | 0.000810** (0.000389) | 0.000629 (0.000390) | 0.000786** (0.000381) |
| Foreign direct investment | 0.000466 (0.000561) | 0.000347 (0.000528) | 0.000453 (0.000570) | 0.000295 (0.000565) | 0.000437 (0.000561) | 0.000410 (0.000551) |
| Economic growth | 0.0400*** (0.00336) | 0.0314*** (0.00336) | 0.0480*** (0.00350) | 0.0409*** (0.00336) | 0.0388*** (0.00347) | 0.0401*** (0.00323) |
| Trade openness | 0.000151* (8.47e-05) | 0.000248*** (7.96e-05) | 0.000252*** (8.89e-05) | 0.000230*** (8.53e-05) | 0.000167** (8.45e-05) | 0.000199** (8.28e-05) |
| Control of corruption | 0.0186*** (0.00417) | | | | | |
| Government effectiveness | | 0.0385*** (0.00437) | | | | |
| Political stability | | | -0.00851 (0.00341) | | | |
| Regulatory quality | | | | 0.0167*** (0.00432) | | |
| Rule of law | | | | | 0.0197*** (0.00454) | |
| Voice and accountability | | | | | | 0.0223*** (0.00377) |
| Constant | -0.331*** (0.0314) | -0.211*** (0.0329) | -0.462*** (0.0306) | -0.352*** (0.0300) | -0.318*** (0.0337) | -0.323*** (0.0290) |
| Period FE | Yes | yes | Yes | Yes | yes | yes |
| Observations | 436 | 436 | 436 | 436 | 436 | 436 |
| Fisher | 70.1*** | 52.1*** | 56.8*** | 65.3*** | 69.1*** | 48.1*** |

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

The positive effect of gender political inclusion corroborates the results of Ghosh (2022) for the Indian economy who showed that women' political empowerment enhances financial inclusion. This result can be explained through several fronts, namely, the ability of gender political inclusion to enhance economic growth (Dahlumet al., 2022) and improve on the governance setup of the economy (Nchofoung et al., 2022). Besides, the political implication of women expands the country's political talent pool and consequently increases the variance in the experience of individuals in public decision making (Clayton et al., 2019). These diversities provide an environment for the exchange of diverse ideas and the best ones selected for public policies. These policies could touch every economic sector including the financial sector. This yields fruits especially if the governance system is something to ride home about, including efficient government effectiveness, allowing the rule of law to prevail and freedom of speech to prevail which, inter alia, allows these female politicians to freely express their views on public affairs.

Table 5. Dynamic model regression (System GMM)

| VARIABLES | (1) | (2) | (3) | (4) | Dependent variable: | | | | (9) |
|-------------------------------|----------------------------|----------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|--------------------------|----------------------------|
| | | Financial inclusion index | | | Banks institutions | Commercial bank | ATM | Deposits in banks | loans in banks |
| Financial inclusion (-1) | 0.952*** (0.0126) | 0.982*** (0.0252) | 0.799*** (0.0122) | 0.758*** (0.0153) | | | | | |
| Gender inclusion | 0.0125*** (0.00437) | | | | 0.144*** (0.0161) | 0.0583*** (0.0118) | 0.0525** (0.0232) | 0.00885*** (0.00210) | 0.0118*** (0.00165) |
| Governance | 0.00841*** (0.00102) | 0.000768 (0.00171) | 0.0100*** (0.00231) | 0.0110*** (0.00254) | 0.0276*** (0.00580) | 0.0314*** (0.00386) | 0.0142 (0.0101) | 0.00135* (0.000723) | -0.00335*** (0.000583) |
| Foreign aid | -9.50e-05 (6.82e-05) | -5.04e-05 (8.49e-05) | 0.000265** (0.000110) | 8.81e-05 (6.76e-05) | 0.000508*** (0.000174) | 0.000398*** (0.000116) | 0.000722*** (0.000259) | 8.06e-06 (1.27e-05) | -1.14e-05 (1.46e-05) |
| Foreign direct investment | -0.000245*** (5.45e-05) | -0.000383*** (8.18e-05) | 3.07e-05 (8.33e-05) | 0.000101 (6.83e-05) | 0.000108 (0.000106) | 8.62e-05 (7.32e-05) | 0.000220 (0.000152) | -2.29e-05 (2.34e-05) | -6.71e-05*** (2.20e-05) |
| Economic growth | -0.00102 (0.000994) | -0.00201 (0.00215) | 0.00691** (0.00271) | 3.95e-06 (0.00304) | 0.0614*** (0.00649) | -0.00108 (0.00355) | 0.0270*** (0.00930) | 0.00289*** (0.000888) | 0.00258*** (0.000650) |
| Trade openness | 0.000113*** (3.21e-05) | 0.000124*** (4.21e-05) | 6.81e-05*** (2.39e-05) | 9.60e-05*** (2.37e-05) | 0.000184*** (5.11e-05) | 9.30e-05*** (3.40e-05) | -9.01e-05 (5.70e-05) | -3.25e-06 (6.68e-06) | 6.05e-07 (6.51e-06) |
| Women civil liberty | | 0.0683*** (0.0105) | | | | | | | |
| Women political participation | | | 0.0111*** (0.00207) | | | | | | |
| Women civil society | | | | 0.0497*** (0.00630) | | | | | |
| Bank institutions (-1) | | | | | 0.139*** (0.0211) | | | | |
| Commercial banks (-1) | | | | | | 0.722*** (0.0179) | | | |
| ATM (-1) | | | | | | | 0.747*** (0.0124) | | |
| Deposit in Banks (-1) | | | | | | | | 0.515*** (0.0415) | |
| Loan in banks (-1) | | | | | | | | | 0.430*** (0.0346) |
| Constant | 0.00418 (0.00708) | -0.0334** (0.0136) | -0.0535*** (0.0184) | -0.0257 (0.0220) | -0.449*** (0.0576) | -0.0337 (0.0238) | -0.208** (0.0784) | -0.0224*** (0.00596) | -0.0236*** (0.00452) |
| Period FE | yes | yes | Yes | Yes | yes | yes | yes | yes | yes |
| Observations | 404 | 404 | 404 | 404 | 473 | 469 | 409 | 468 | 462 |
| Number of countries | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| Prop>AR1 | 0.00884 | 0.00675 | 0.00805 | 0.00740 | 0.0327 | 0.0566 | 0.0866 | 0.208 | 0.148 |
| Prop>AR2 | 0.592 | 0.722 | 0.498 | 0.291 | 0.967 | 0.190 | 0.158 | 0.272 | 0.692 |
| Instruments | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 |
| Prop>Hansen | 0.155 | 0.399 | 0.278 | 0.143 | 0.119 | 0.365 | 0.761 | 0.727 | 0.162 |
| Fisher | 10500*** | 4748*** | 5095*** | 1279*** | 50.28*** | 930.3*** | 5061*** | 710.0*** | 213.3*** |

Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Looking at control variables, governance enhances financial inclusion and such is in accordance with the study of Nkoa and Song (2020). Good governance demonstrates the interest and willingness to work for the good and interest of the economy and for efficient policy elaboration. A good governance system creates an enabling milieu for economic, political, social, and cultural developments, improving of the quality of education, therefore, augmenting the human capital quality necessary for innovations. These innovations could take the form of digital innovations which have been extensively shown to be an engine for financial inclusion (Kouladoum et al., 2022). Besides, good institutional governance inculcates trust on the economy, leading to an increase in investments from both nationals and foreign investors. Increase in investments will lead to the booming of economic activities through trade and consequently demand for financial services for trading transactions. Africa has one of the least inclusive financial systems around the globe and it is not a coincidence that this continent has one of the worst governance systems in the world characterised by, *inter alia*, persistent corruption, insecurity threats and human rights abuses (Ngouhouo et al., 2021). There is therefore an urgent need for the enhancement of institutional governance in this continent as one of the gateways towards inclusive finance.

The lagged financial inclusion value is positive and significant, demonstrating the importance of initial economic conditions for inclusive finance (kouladoum et al., 2022). In this regard, there is necessity for increased investments in financial institutions and services at every moment in the economy to ensure an inclusive finance. This is particularly true for Africa given that the population is constantly increasing and is expected to even double in the next decades (Nchofoung, 2022). There is therefore the need for continues investments in financial services such that this increasing population will in the future be able to have continued access and proximity to financial services.

Trade openness robustly foster financial inclusion in this study, a result that corroborates those obtained by Kouladoum et al. (2022) for sub-Saharan Africa countries. In essence, increase in trade openness exposes the economy to foreign competition, leading to increase in economic activities and correspondingly, a boost in the demand for financial services. Besides, increase in trade openness enhances innovation and when a trade policy shock increases in the demand for local inputs by foreign markets, local suppliers improve their product quality and product variety, which in turn increases the product scope of the domestic firms (Shu and Steinwender, 2019). In the African context, increase in trade openness has led to the foreign investors implanting branches of their domestic banks in African companies; a

process that is facilitated by the multiplication of telecommunication companies around the continent, which in some countries have partnerships with banks for the implementation mobile banking services which are worthwhile for rapid commercial transactions. Examples include the MTN and Orange telecommunications networks in Cameroon that have partnered with some banks for similar services. For instance, the Afriland First Bank with headquarters in Cameroon and branches in some other African countries and beyond, has a mobile service application called SARA that permits banking transactions directly from an individual bank account as well as mobile accounts corresponding to other mobile telecommunications networks(i.e. Orange and MTN, *inter alia*).

Also, economic growth has a positive effect on inclusive finance though the relationship is not robust across all the regressions, with insignificant results noticed across alternative specifications of gender inclusion for the GMM results. This positive effect is in accordance with the results of Zins and Weill (2016) and can be explained by the fact that an increase in economic growth enhances the income available for investments in other economic sectors including investments in the financial sector of the economy. Continuous investments increase economic activities leading to demand for financial services in financial institutions for economic operations. These could be deposits in banks, demand for loans, or other innovative banking services like ATM machines for easy transactions or multiplication of banking branches or even the birth of new banking or other financial institution. Kadjie et al. (2022) argue that an outstanding trend of inclusive finance in Africa in recent years especially mobile banking sector; this tendency is a evidence that during the next decade, Africa could be a global leader in the use of mobile banking for both household and corporate operations, especially from the previously unbanked population.

4.3.Indirect effect

Tables 6 and 7 present the results of the indirect effect through governance. While Table 6 outlines the results through the different governance specifications, Table 7 does it through the alternative specifications of gender inclusion.

Table 6. Transmission channels through governance

| VARIABLES | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|----------------------------|---|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | Dependent variable: Financial inclusion | | | | | | |
| Financial inclusion (-1) | 0.787*** (0.0172) | 0.791*** (0.0165) | 0.776*** (0.0102) | 0.797*** (0.0166) | 0.776*** (0.0147) | 0.798*** (0.0143) | 0.767*** (0.0138) |
| Gender inclusion (A) | 0.0733*** (0.00798) | 0.0679*** (0.00893) | 0.0561*** (0.00565) | 0.0557*** (0.00865) | 0.0868*** (0.0139) | 0.0412*** (0.0103) | 0.0900*** (0.0120) |
| Foreign aid | 3.20e-05 (8.02e-05) | 0.000117* (6.54e-05) | 0.000147*** (4.78e-05) | 0.000353*** (8.89e-05) | 0.000110* (6.14e-05) | 0.000355*** (9.62e-05) | 0.000153** (5.84e-05) |
| Foreign direct investment | 1.86e-05 (5.51e-05) | 3.51e-05 (5.77e-05) | 8.14e-05* (4.75e-05) | 1.49e-05 (6.59e-05) | -1.58e-05 (5.98e-05) | -1.78e-05 (7.38e-05) | 3.35e-05 (5.75e-05) |
| Economic growth | -0.000933 (0.00237) | -0.00390 (0.00255) | -0.00130 (0.00200) | 0.00663*** (0.00223) | -0.00229 (0.00216) | 0.00727*** (0.00248) | -0.00129 (0.00289) |
| Trade openness | 0.000114*** (2.01e-05) | 8.36e-05*** (2.31e-05) | 1.00e-04*** (2.02e-05) | 7.42e-05*** (2.16e-05) | 0.000117*** (2.00e-05) | 6.26e-05*** (2.21e-05) | 8.95e-05*** (2.30e-05) |
| Control of corruption | -0.0381*** (0.00519) | | | | | | |
| Control of corruption×A | 0.0436*** (0.00716) | | | | | | |
| Government effectiveness | | -0.0296*** (0.00516) | | | | | |
| Government effectiveness×A | | 0.0362*** (0.00745) | | | | | |
| Political stability | | | -0.0197*** (0.00318) | | | | |
| Political stability×A | | | 0.0241*** (0.00436) | | | | |
| Regulatory quality | | | | -0.0356*** (0.00437) | | | |
| Regulatory quality×A | | | | 0.0472*** (0.00589) | | | |
| Rule of law | | | | | -0.0405*** (0.00671) | | |
| Rule of law×A | | | | | 0.0516*** (0.00879) | | |
| Voice and accountability | | | | | | -0.0181*** (0.00559) | |
| Voice and accountability×A | | | | | | 0.0145 (0.00865) | |
| Governance | | | | | | | -0.0536*** (0.00629) |
| Governance×A | | | | | | | 0.0641*** (0.00859) |
| Constant | -0.0407** (0.0160) | -0.0132 (0.0203) | -0.0199 (0.0151) | -0.0791*** (0.0157) | -0.0380* (0.0194) | -0.0745*** (0.0182) | -0.0483** (0.0233) |
| Period FE | yes | yes | Yes | Yes | yes | yes | yes |
| Observations | 404 | 404 | 404 | 404 | 404 | 404 | 404 |
| Number of countries | 37 | 37 | 37 | 37 | 37 | 37 | 37 |
| Prop>AR1 | 0.00750 | 0.00786 | 0.00715 | 0.00650 | 0.00713 | 0.00636 | 0.00707 |
| Prop>AR2 | 0.265 | 0.261 | 0.382 | 0.341 | 0.295 | 0.449 | 0.244 |
| Fisher | 2663*** | 2601*** | 1660*** | 4378*** | 1361*** | 2109*** | 1435*** |
| Prop>hansen | 0.141 | 0.179 | 0.177 | 0.194 | 0.168 | 0.273 | 0.171 |
| instruments | 31 | 31 | 31 | 31 | 31 | 31 | 31 |

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table7. Transmission mechanisms across alternative financial inclusion variables

| VARIABLES | (1) | (2) | (3) |
|---------------------------------|---|---------------------------|---------------------------|
| | Dependent variable: Financial inclusion | | |
| Financial inclusion(-1) | 0.812*** (0.0173) | 0.813*** (0.0122) | 0.634*** (0.0291) |
| Women civil liberty | 0.0498*** (0.0133) | | |
| Governance (B) | -0.0364*** (0.00823) | -0.0200*** (0.00377) | -0.0849*** (0.0150) |
| Foreign aid | 4.71e-05 (4.17e-05) | 0.000145*** (4.68e-05) | 0.000349** (0.000161) |
| Foreign direct investment | 4.70e-05 (6.41e-05) | 8.50e-05 (5.53e-05) | -0.000119 (7.29e-05) |
| Economic growth | 0.00307 (0.00229) | -0.000152 (0.00238) | 0.0124*** (0.00281) |
| Trade openness | 5.18e-05** (2.15e-05) | 7.15e-05*** (2.32e-05) | 0.000122*** (2.29e-05) |
| Women civil liberty*B | 0.0428*** (0.0129) | | |
| Women Political participation | | 0.0232*** (0.00452) | |
| Women Political participation*B | | 0.0133*** (0.00409) | |
| Women civil society | | | 0.172*** (0.0307) |
| Women civil society*B | | | 0.112*** (0.0214) |
| Constant | -0.0493*** (0.0169) | -0.0130 (0.0166) | -0.192*** (0.0337) |
| Period FE | Yes | Yes | Yes |
| Observations | 404 | 404 | 404 |
| Number of countries | 37 | 37 | 37 |
| Prop>AR1 | 0.00792 | 0.00775 | 0.00239 |
| Prop>AR2 | 0.258 | 0.371 | 0.498 |
| Instruments | 31 | 31 | 29 |
| Prop>Hansen | 0.206 | 0.161 | 0.162 |
| Fisher | 2530*** | 5096*** | 1365*** |

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

In all these specifications, gender political inclusion interacts with governance producing positive synergy effects. This corroborates extant literature on the subject. For instance, Nchofoung et al. (2022) argue that gender political inclusion is necessary for effective governance in Africa, while at the same time, Nkoa and Song (2020) posit on the importance of effective governance for financial inclusion in Africa. This is a clear indication that there is necessity for effective governance within the economy. For instance, female politicians are

less likely to use public positions illegally for private gains compared to their male counterparts (Barnes and Beaulieu, 2019). The reduction of corruption leads to efficient allocations of State resources for investments in both the financial and other economic sectors required for effective inclusive finance. Also, good institutional governance indoctrinates trust on the economy, leading to an increase in investments by both nationals and foreign investors. Investments foster economic activities through trade and consequently, demand for financial services for trading transactions.

5. Concluding implications and future research directions

At the 2010 G20 Summit, the use of formal financial services was recognized as one of the main pillars of the global development agenda. At the same time, the fifth goal of the United Nations (UN) sustainable development goals (SDGs) outlined the importance of gender inclusion for sustainable development by 2030. Empirical studies on the effect of gender inclusion on inclusive finance has however been limited to micro level studies. This study aims at verifying the effect of gender political inclusion on financial inclusion in a sample of 37 African countries from 2004-2020. The empirical methodology involves the OLS, Tobit and System GMM methodologies. The results from these methods show that gender political inclusion was enhancing on financial inclusion in Africa, a result that was robust across alternative specifications of gender inclusion and inclusive finance. Besides, the positive relationship stood with different governance specifications. When the indirect regression was considered, governance exhibited a positive synergy effect with gender political inclusion on inclusive finance.

On the bases of these results, policymakers in Africa should consider enhancing the representation of women in political positions as one of the policies towards attaining the desired inclusive finance. This is especially feasible if women are given the opportunity into political positions that are directly link with public policies that have an effect on the financial sector or other sectors that directly affect the financial sector. In this effort, governments are encouraged to trust more ministerial positions in the domain of innovations and finance in the hand of women. Nchofoung et al. (2022) earlier proposed the putting in place of gender quotas by each government for political positions. Also, there is need for the improvement of institutional governance, whose poor outcome has been a cankerworm to African development. This is through the intensification of the fight against terrorism and corruption and promotion of freedom of speech and expression.

Subsequent studies on the subject could consider other modulating mechanisms and country-specific studies. The underlying caveat is motivated by the fact that some considered estimation approaches such as the GMM technique is theoretically and practically tailored to eliminate country fixed-effects which are correlated with the lagged outcome variable and hence, a potential cause of endogeneity. Besides, the effect of financial regulations could be tested in the model to see its combined outcome with women political empowerment. The suggested future research direction can also be considered within the remit of interactive regressions.

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Appendix

A1. Pairwise correlations

| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) |
|-------------------------------|--------|--------|--------|-------|--------|--------|--------|-------|--------|--------|-------|-------|--------|--------|-------|-------|-------|-------|------|-------|------|
| (1) Financial inclusion | 1.000 | | | | | | | | | | | | | | | | | | | | |
| (2) v2x_gender | 0.493 | 1.000 | | | | | | | | | | | | | | | | | | | |
| (3) v2x_gencl | 0.433 | 0.802 | 1.000 | | | | | | | | | | | | | | | | | | |
| (4) v2x_genpp | 0.329 | 0.739 | 0.307 | 1.000 | | | | | | | | | | | | | | | | | |
| (5) v2x_gencc | 0.395 | 0.805 | 0.591 | 0.373 | 1.000 | | | | | | | | | | | | | | | | |
| (6) foreign aid | -0.316 | -0.078 | -0.226 | 0.052 | 0.004 | 1.000 | | | | | | | | | | | | | | | |
| (7) FDI | 0.047 | 0.015 | 0.013 | 0.060 | -0.052 | 0.105 | 1.000 | | | | | | | | | | | | | | |
| (8) Economic growth | 0.653 | 0.155 | 0.275 | 0.074 | -0.004 | -0.606 | 0.049 | 1.000 | | | | | | | | | | | | | |
| (9) trade openness | 0.535 | 0.128 | 0.204 | 0.115 | -0.043 | -0.358 | 0.379 | 0.629 | 1.000 | | | | | | | | | | | | |
| (10) bank institutions | 0.328 | 0.270 | 0.131 | 0.168 | 0.367 | -0.258 | -0.094 | 0.121 | -0.167 | 1.000 | | | | | | | | | | | |
| (11) commercial banks | 0.803 | 0.323 | 0.331 | 0.253 | 0.163 | -0.183 | 0.096 | 0.612 | 0.672 | -0.013 | 1.000 | | | | | | | | | | |
| (12) ATM | 0.864 | 0.434 | 0.412 | 0.265 | 0.345 | -0.397 | 0.003 | 0.715 | 0.522 | 0.142 | 0.737 | 1.000 | | | | | | | | | |
| (13) deposits in banks | 0.375 | 0.111 | 0.093 | 0.071 | 0.103 | 0.084 | 0.021 | 0.017 | 0.370 | -0.022 | 0.039 | 0.030 | 1.000 | | | | | | | | |
| (14) loans in banks | 0.362 | 0.124 | 0.090 | 0.094 | 0.110 | 0.085 | 0.017 | 0.006 | 0.244 | -0.010 | 0.016 | 0.021 | 0.997 | 1.000 | | | | | | | |
| (15) control of corruption | 0.555 | 0.538 | 0.584 | 0.176 | 0.531 | -0.165 | 0.006 | 0.388 | 0.351 | 0.029 | 0.487 | 0.647 | 0.029 | 0.020 | 1.000 | | | | | | |
| (16) government effectiveness | 0.619 | 0.542 | 0.568 | 0.203 | 0.524 | -0.284 | -0.035 | 0.473 | 0.302 | 0.316 | 0.460 | 0.668 | -0.016 | -0.030 | 0.842 | 1.000 | | | | | |
| (17) political stability | 0.472 | 0.386 | 0.562 | 0.092 | 0.263 | -0.247 | 0.088 | 0.521 | 0.503 | -0.094 | 0.474 | 0.530 | 0.066 | 0.043 | 0.631 | 0.582 | 1.000 | | | | |
| (18) regulatory quality | 0.467 | 0.515 | 0.540 | 0.161 | 0.538 | -0.244 | -0.074 | 0.338 | 0.184 | 0.323 | 0.251 | 0.528 | 0.006 | -0.003 | 0.761 | 0.868 | 0.538 | 1.000 | | | |
| (19) rule of law | 0.562 | 0.584 | 0.635 | 0.219 | 0.541 | -0.269 | -0.021 | 0.434 | 0.351 | 0.171 | 0.450 | 0.617 | 0.024 | 0.005 | 0.872 | 0.877 | 0.724 | 0.8 | 1.0 | | |
| (20) voice and account | 0.563 | 0.625 | 0.633 | 0.202 | 0.674 | -0.128 | -0.015 | 0.298 | 0.224 | 0.195 | 0.385 | 0.584 | 0.099 | 0.092 | 0.772 | 0.725 | 0.609 | 0.7 | 0.8 | 1.000 | |
| (21) governance | 0.608 | 0.596 | 0.665 | 0.195 | 0.567 | -0.253 | -0.003 | 0.471 | 0.371 | 0.163 | 0.479 | 0.670 | 0.043 | 0.027 | 0.911 | 0.909 | 0.791 | 0.8 | 0.9 | 0.871 | 1.0 |