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THE IMPACT OF FOREIGN CAPITAL INFLOWS AND PROPERTY RIGHTS ON FINANCIAL DEVELOPMENT IN SSA: PANEL DYNAMIC MODEL

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ABSTRACT

Purpose: The paper examined impact of foreign capital inflows and property rights on financial development in SSA for the period 2000 to 2020 using dynamic panel data analysis. **Design/methodology/approach:** The System Generalized Method of Moments estimator (SGMM) was employed to determine the long-run and short-run dynamics of the link between the variables of interest. To create a single aggregate index for financial development and foreign capital inflow, the study performed Principal Component Analysis (PCA). **Findings:** The SGMM results revealed that there is a short run and long run relationship between financial development and property right index but not with foreign capital inflows. The results highlight that lag of financial development, property right and political stability exerts a positive and substantial effect on financial development of SSA in short run and long run. On the contrary, the result shows that inflation, gross domestic product per capita and gross domestic saving has negative and significant influence on financial development of SSA in short run and long run. **Practical implications:** Policymakers should formulate policies that aims to engineer more financial development. The policies should strike a balance between strengthening the private property rights, abate high inflation in financial markets, abolish political instability and enhancing past year level of financial growth in order to enliven financial development in SSA.

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INTRODUCTION

According to the literature on economic development, financial development is a fundamental driver of economic growth in various countries and also helps to reduce income disparity (Levine, 1997). As a result, economic policymakers frequently address financial development. Financial development is defined as a condition in which the quality, quantity, and efficiency of financial intermediation services improve (Choong and Chan, 2011), and all persons benefit from financial institutions' comprehensive services. Financial development appears to play a significant impact in economic development, according to a considerable body of evidence (World Bank, 2016). By boosting the savings rate, mobilizing and pooling funds, producing investment information, facilitating and encouraging foreign capital inflows, and optimizing capital allocation, it fosters economic growth through capital accumulation and technical progress. By lowering information asymmetry, transaction costs, and financial constraints, financial institutions and financial markets play an essential role in the process of allocating funds and savings from individuals to production (Khan, 2002).

Financial institutions can potentially influence wellbeing by minimizing macroeconomic shocks, according to Kim et al. (2010). Because the optimal performance of any economic system is dependent on both the efficient real and financial parts working together, identifying factors affecting financial development in any country is critical. The main purpose of this paper is to examine the impact of foreign capital inflows and property rights on financial development in SSA by using panel data spanning from 2000 to 2020. Foreign capital augments domestic resources in many ways, such as by improving capital stock, technology, managerial skills, entrepreneurial ability, brands, and access to markets (Thirwall 2000). Thus, increasing foreign capital inflows should enhance the financial development of country. Notwithstanding the rising trend in inflows, their effect on financial development is not well understood, especially in the context of SSA (Acheampong, 2019). According to Stern, Porter, and Furman (2000), a country's good property rights have positive impact on its level of financial growth. Even when bank loans are available, Johnson, McMillan, and Woodruff (2002) found that countries with weaker property rights discourage reinvestment of firm earnings, implying that secure property rights are both a necessary and sufficient condition for entrepreneurial investment that can lead to higher financial development.

More generally, the stronger the set of property rights, the stronger the incentive to work, save, and invest, and the more effective the operation of the economy. According to studies, property rights protection has an impact on the relationship between the financial sector and growth. As a result, in less developed countries, the connection between property rights and financial development is a critical issue (Besley, 1995). The direct effect of property rights on financial development, on the other hand, is given less weight than the consequences on growth. Businesses will not invest if they fear they will not be able to keep the results of their investment if property rights are a decisive factor. According to studies, less secure property rights are consistently connected to lower aggregate investment, slower economic growth, and financial development at the country level (Stephen Knack and Philip Keefer, 1995). Although the evidence on the microeconomic level is limited, Timothy Besley (1995) found a clear link between property rights and financial development in Ghana. Asli,Demirgu c-Kunt and Vojislav Maksimovic (1998) find that firms invest more from external funds in countries with secure property rights, while Rafael La Porta et al. (1997) show that a stronger legal system in general and more effective investor protection in particular allows for more financial development. Property rights are thought to promote financial development and investment (Besley 1995), entrepreneurship (Murphy et al 1991), and invention (Besley 1995; Knack and Keefer 1995; Johnson et al 2002).

Every research project begins with a well-defined and structured research problem. This work makes a four-fold contribution to the literature. First, the fundamental flaw in previous studies is the way researchers used several types of financial proxy indicators to determine the country's financial depth situation. In their studies, most researchers employed stock market capitalization, M2, and private sector credit to GDP to estimate financial development positions of nations, which is not an efficient measure to capture the country's total financial depth.So far, no specific way for evaluating the financial depth position has been discovered. In this paper, I propose using Principal Component Analysis to calculate a single index based on various financial indicators for measuring financial depth in SSA. Second, I believe this is the first study to look into the impact of foreign capital inflows and property rights on financial development in Sub-Saharan Africa. Third, the empirical method entails regressing financial development on foreign capital inflows and property rights, as well as interactions between these two variables and other literature-recommended financial development determinants. Foreign capital inflows and property rights, on the other hand, are likely to be endogenous, possibly as a result of financial development's impact on foreign capital inflows and property rights. To deal with endogeneity and simultaneity bias, this study used the generalized method of moments (GMM) estimation approach. Finally, in terms of policy implications, the findings of this study will assist policymakers in developing policies that will ensure the effectiveness of foreign capital inflows and property rights while also boosting the degree of financial development. Following section 1, the literature review is presented in section 2, and the methodology is outlined in section 3. The empirical results are presented in section 4, and the conclusion and policy recommendations are presented in section 5.

Literature review: Various techniques were used in a variety of studies that looked at the relationship between financial development and foreign capital inflows and property rights. There are two types of foreign capital inflows, namely, foreign direct investment (FDI) and foreign portfolio investment (FPI). Myriad studies have used foreign direct investment inflow as a proxy for foreign capital inflows, even when looking at the relationship between foreign capital inflow and financial development. Certain studies (e.g., Alfaro et al., 2004) focus at the interplay between the impact of foreign capital inflow and property rights on financial development in the context of economic growth; nonetheless, the influence of foreign capital inflow and property rights on financial development has received little attention. Furthermore, Jonathan Munemo (2016) demonstrates that foreign direct investment inflows promote corporate entrepreneurship and financial development.

According to Kose et al. (2009), depending on the local conditions, financial opening and the resulting FDI inflows could contribute to an increase in total factors of production via knowledge spillovers, technological transfers, and the development of connections with domestic enterprises. Economic progress, according to Joan Robinson (1952), produces demand for specific forms of financial arrangements, and the financial system automatically responds to these demands. Hnin et al. (2017) used a sample of 93 countries to look at the relationship between foreign direct investment (FDI) and financial development (FD), covering high-income, upper middle-income, and low-income nations. The estimation findings for the entire sample show that FDI is a useful tool for increasing FD speed. The empirical findings for high-income countries show that FDI promotes just the lending sector and has no major impact on private sector domestic credit. The empirical findings for higher middle-income nations demonstrate that FDI can help these countries accelerate their FD. Finally, the findings for low-income countries show that the effects of FDI on both domestic credit and domestic credit for the private financial sector of FD are ambiguous and inconsistent.

Acheampong (2019) analyzed the foreign capital inflows and financial development interact to affect economic welfare in Sub-Saharan Africa (SSA). Several conclusions are drawn from estimates based on the system-GMM estimator and panel data from 23 SSA nations from 2000 to 2013. For starters, the connection between foreign capital inflows and financial development benefits SSA's economy. After a year, however, this effect was negative. Second, the partial indirect impacts of foreign capital inflows on economic wellbeing are favorable, however they are conditional on the level of financial development. After a year, they become negative. Third, foreign capital inflows have a net beneficial influence on economic welfare. After a year, the effect becomes negative, despite the fact that domestic credit is the primary source of financial development. The consistency of these findings demonstrates the relevance of financial development in facilitating the transfer of foreign capital for the improvement of economic welfare. To explore the impact of FDI inflows on financial sector development, single-country and cross-country studies have been done. According to Nasser and Gomez (2009), there is a favorable association between FDI inflows and financial development. Foreign Direct Investment inflows improve the financial development of D-8 countries, as per Abzari et al. (2011). According to Nasser and Gomez (2009), there is a favorable association between FDI inflows and financial development. Furthermore,Sghaier (2016) claims that domestic and foreign investments help Tunisia's financial markets thrive. Sbia and Alrousan (2016) looked at the link between financial development, economic growth, and foreign direct investment (FDI) as proxies for foreign capital inflows in the United Arab Emirates between 1975 and 2012. (UAE). The findings revealed a positive relationship between financial development and economic expansion, with FDI found to improve financial development, prompting the recommendation that authorities implement policies to attract more foreign investment in order to strengthen long-term economic growth in the UAE. According to Law and Demetriades (2006), financial development is aided when a country's borders are open to both foreign capital inflow and trade openness at the same time. In a similar line, Baltagi et al. (2009) demonstrated that both trade and financial openness are statistically important predictors of banking sector development, and that opening up one without the other can nevertheless result in financial progress. Besley (1995) examined household survey data in Ghana to evaluate the link between property rights, investment, and financial development using the conditional logit model. The findings revealed that having a secure property right benefits significantly to financial development by increasing investment. According to the advice, Ghanaian authorities should develop policies that promote improved property rights in order to encourage financial growth. Johnson et al. (2016) applied the ordered probit technique and cross-sectional data from five east European nations to investigate the link between property rights and financial development. The findings revealed a favorable relationship between financial advancement and property rights, whereas poor property rights, even when bank loans are available, inhibit financial development. Firms reinvest profits and boost volume financial development in areas where property rights are relatively strong. Strong property rights have been found to boost financial development, leading to the recommendation that governments implement measures to protect property rights in order to boost long-term financial sector growth in those countries. StijnClaessens and Luc Laeven (2002) investigated whether financial development fosters growth and whether a country's financial development is related to its institutional characteristics, such as its legal framework and secured property rights, using the RZ model for 33 countries from 1980 to 1989. They also look at how property rights influence how firms allocate their available resources among different types of assets. They look at whether enterprises in situations with more secure intellectual rights allocate available resources more towards intangible assets and, as a result, expand quicker in financial development. Finally, they discovered that better asset allocation as a result of stronger property rights has an effect on growth in sectors value added equal to improved access to financing as a result of greater financial development. According to the law and finance literature, countries with strong legal frameworks and robust property rights have more developed financial markets. The law and finance literature started by La Porta et al. is also relevant (1997). Financial sector development is higher in nations with better legal systems and stronger creditor rights, according to law and finance literature, because such conditions allow lenders to collateralize their loans and finance enterprises. More definite legal protection of property, according to Levine (1997), leads to more financial development and growth. Rapidly developing economies, on the other hand, may need higher property rights since more output is produced from more property-rights-intensive production (Claessens and Laeven, 2003).

Bosea et al. (2006) used data from 91 countries from 1980 to 2005 to evaluate the relationship between property rights and growth. This is a complicated relationship. Strong property rights are generally favorable for growth in countries with mature financial restrictions. However, in countries with a poor financial architecture, the link can be nonlinear; stricter regulation can boost growth, but only to a certain extent. They use a model of financial intermediation and growth to provide a simple theoretical underpinning for these findings, in which borrowers are divided into two categories and informational asymmetries dilute the quality of financial contracts offered to good borrowers. Stronger property rights have two contradictory consequences in this scenario. On the one hand, it boosts capital formation and expansion. On the other hand, by reducing predation, it limits outside chances for bad borrowers. This second consequence encourages riskier borrowing and dilutes financial contracts in general. As a result, there is a degree of property rights that maximizes growth. However, as financial markets mature, lenders' capacity to identify different sorts of borrowers increases, and the negative consequences of stronger property rights fade. As a result, the optimal degree of property rights will differ depending on the strength of a country's financial infrastructure. A high level of property rights is consistent with maximum growth objectives in countries with strong financial systems, where monitoring is less expensive. Optimal growth is associated with fewer property rights in nations with poor financial infrastructures.

Principal Component Analysis: PCA is a statistical process that converts a set of observations of possibly correlated variables into a set of values of linearly uncorrelated variables called principle components using an orthogonal transformation. The number of original variables is less than or equal to the number of primary components. The first principal component has the highest possible variance (that is, it accounts for as much variability in the data as feasible), and each subsequent component has the highest variance possible under the restriction that it is orthogonal to (i.e., uncorrelated with) the preceding components. If the data set is jointly normally distributed, the principal components are assured to be independent. The relative scaling of the original variables affects PCA. Because there is no one aggregate indicator, this article creates a financial development index that gauges the financial sector's overall progress.In this study, I suggest using Principal Component Analysis to compute a single index based on multiple financial variables and foreign capital inflows for gauging financial development in SSA [Chakraborty (2010), Hussain and Chakraborty (2012), Gounder (2012), Adu.et.al. (2013)]. To create a single index for both financial development and foreign capital inflow, the study uses the principal component technique. Financial indicators and foreign capital inflows components are independent, even if the technique for generating a single index for both variables is the same.The first is a measure of overall financial development called the Financial Development Index. This study creates an aggregate financial development index that assesses the financial system's overall development. The study used the principal component method to aggregate the six financial development variables into a single index. Central bank assets to GDP (percent), deposit money bank assets to GDP (percent), financial system deposits to GDP (percent), liquid liabilities to GDP (percent), private credit by deposit money banks and other financial institutions to GDP (percent), and remittance inflows to GDP are some of the components used to create the aggregate financial development index (percent).Because each country uses a different capital inflow, there is no single aggregate index that can be used to measure foreign capital inflow. For each chosen nation, a single index for foreign capital inflow can be produced using the principal component method from External debt stocks, Foreign direct investment net inflows, and Portfolio equity net inflows. The study used the principal component approach to aggregate the six selected financial development indicators into a single index, as well as the three selected foreign capital inflow measures into a single index.According to this procedure the jth factor F_j canbe expressed as:

$$F_j = WJ_1X_1 + WJ_2X_2 + WJ_3X_3 + \cdots + WJ_PX_P \qquad (1)$$

Where: Fj = estimate of j th factor
Wj = weight on factor score coefficient
P = number of variables

Methodology

Data description: The study used panel data from 2000 to 2020 obtained from the online sources: Financial development index data was collected from World Bank's Global Financial Development database. Trade Openness, foreign capital inflow, Gross domestic savings (% of GDP) and INF is an Inflation, consumer prices (annual %) was collected from World Bank's WDI database. Data of property right index is obtained from Heritage foundation for economic freedom data. Financial openness data was collected from Kaopen database.Political stability index data was collected from World Bank's Worldwide Governance Indicators database. The study inspired to improve empirical knowledge of the link between financial development and Foreign Capital Inflows and Property Rights through time, as well as further research the Impact of Foreign Capital Inflows and Property Rights on Financial Development in SSA.

Empirical model: The goal of our empirical study is to see how foreign capital inflows and property rights affect financial development in Sub-Saharan Africa. In order to achieve this, we use a specification that is broadly comparable to others (e.g., Gries et al., 2009; Herwartz and Walle, 2014). We consider the following model:

$$Y_{it} = f(PRI_{it} + FCI_{it} + FO_{it} + GDPC_{it} + GDS_{it} + INF_{it} + TO_{it} + PS_{it} + \alpha_i + u_{it}) ----- \qquad 2$$

Where Y_{it} is composite index for financial development (FDI), PRI_{it} represents property right index, FCI_{it} denotes composite foreign capital inflow index, FO_{it}represents financial openness (degree of capital account openness), $GDPC_{it}$ is a gross domestic product per capita growth (annual %), $GDS_{it}$is a gross domestic savings (% of GDP), INF_{it} denotes inflation, consumer prices (annual %), TO_{it} is a trade openness (total of imports and exports in relation to GDP), $PS_{it}$is a political stability (political stability and absence of violence estimate), α_i is denotes individual effect and $t's$ represents time periods at which parameters were estimated. Expressed in lag of dependent variable as regressor in order to eliminate unobserved effect in the model, the empirical model specified is as follows:

$$Y_{it} = \beta_o + \beta_1 FDI_{it-1} + \beta_2 PRI_{it} + \beta_3 FCI_{it} + \beta_4 FO_{it} + \beta_5 GDPC_{it} + \beta_6 GDS_{it} + \beta_7 INF_{it} + \beta_8 TO_{it} + \beta_9 PS_{it} + \varepsilon_{it} \quad [3]$$

Where FDI_{it-1}, is the lag of dependent variable specifically lag of composite financial development index that used as regressor. However, the property rights index and foreign capital inflow are likely to be endogenous, possibly because of feedback from financial development to property rights index and foreign capital inflow and β's represents parameters to be estimated whilst ε shows the error term.

Definition of terms and a priori expectation

FDI is denotes financial development index: Financial development is a critical and inextricable part of economic development. Financial Development index report ranks of countries according to the strength of their financial markets, and the depth and breadth of access to capital and financial services. This wide-ranging index takes into account the quality of each country's financial laws and regulations, its business environment, and the likelihood of a financial crisis, among other things. Financial development also has a direct impact on macroeconomic stability in financially open economies. Financial development index is the first is a measure of overall financial development. This paper constructs an aggregate index offinancial development which measures the overall development in the financial system. The study uses principal component method to combine the six selected measures of financial development in to single index. Selected components in order to create aggregate financial development index are Central bank assets to GDP (%), Deposit money banks' assets to GDP (%), Financial system deposits to GDP (%), Liquid liabilities to GDP (%), Private credit by deposit money banks and other financial institutions to GDP (%) and Remittance inflows to GDP (%). Each components data was collected from World Bank's Global Financial Development *database.*

TO represents Trade Openness: Trade openness (TO) is the sum of exports and imports of goods and services measured as a share of gross domestic product. Trade openness (OT) is the trade intensity of the economy (Iyke, 2017). Removal of barriers to trade through liberalisation creates export–import opportunities. Whilst the export sector gains advantages to export causing foreign currency inflows and improvement in national current balances, this also creates import opportunities, which attracts foreign investment into the economy (Kiprop et al., 2015). Trade openness thus produces a trade-off effect and its outcome is ambiguous on a priori expectation. Therefore, the possible impact of trade openness on the finance-growth link is not clear at the outset. Rather, it seems to depend on how well an economy performs in international trade, i.e., the finance-growth relationship is likely to be stronger in economies which perform better in terms of international trade. This variable was collected from World Bank's WDI database.

GDPC denotes GDP per capital: GDP per capital is an important barometer for country financial development performance. Annual percentage growth rate of GDP per capita based on constant local currency. GDP per capita is gross domestic product divided by midyear population. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.The study's findings indicate that there is a positive relationship between financial development and Gross domestic product per capital (Jagadish P, 2018). It was collected from World Bank's WDI database.

GDS is a Gross domestic savings (% of GDP): Gross Domestic Saving consists of savings of household sector, private corporate sector and public sector. It is expressed as a percentage of GDP. Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption).A rise in aggregate savings would yield larger investments associated with higher GDP growth. As a result, the high rates of savings increase the amount of capital and lead to higher economic growth in the country (Ribaj and Mexhuani, 2021). This data collected from World Bank's WDI database.

INF is an Inflation, consumer prices (annual %)**:** Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The size of a nation's financial sector is strongly affected by its inflation rate (Khaled B, et.al, 2021). On a priori expectation, higher inflation is expected to impact negatively on financial development thus was associated with lower economic growth.Here, it collected fromWorld Bank's WDI database.

PRI represents property right index: Property rights index has range from 0 as lowest value to 100 as highest value. The property rights index measures the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. It also assesses the likelihood that private property will be expropriated and analyzes the independence of the judiciary, the existence of corruption within the judiciary, and the ability of individuals and businesses to enforce contracts. Higher index values denote more certain legal protection of property.Property rights define the theoretical and legal ownership of resources and how they can be used (KENTON, 2019). Improved asset allocation due to better property rights has an effect on growth in sectoral value added equal to improved access to financing arising from greater financial development. Source: The Heritage foundation for economic freedom data.

FCI is denotes foreign capital inflow**:** Foreign capital inflow is very important measure of financial development for every country. foreign capital inflows refer to the inflow of capital from one country to the other. Capital inflows refer to the movement of money for the purpose of investment, trade, or business operations (CHEN, 2021). Since there is no single aggregate index that used as measure of foreign capital inflow due to each country use different capital inflow. By using principal component method single index for foreign capital inflow can be generated from External debt stocks, Foreign direct investment net inflows and Portfolio equity net inflows for each sampled country. Increases in foreign capital inflow imply financial development. Each component of foreign capital inflow was collected from World Bank's WDI database.

FO is a financial openness: Financial openness is similar to, but not identical to, the notion of financial development. As a financial system matures and grows more sophisticated, it often becomes more exposed to foreign money and more integrated with other financial systems. Financial development can occur in a country despite keeping a largely restricted financial system. Financial openness can have both positive and bad effects on financial development, with positive effects (foreign institutional investors can help underdeveloped bond markets) and negative ones (foreign institutional investors can harm underdeveloped bond markets) (instability arising from reversal of volatile short-term capital flows can set back financial development). Higher rates of economic growth and financial development are frequently related with financial openness (Geert B, et.al, 2011). As a result, the potential influence of financial openness on financial development is unclear at this time. This variable was collected from Kaopen database.

PS represents political stability index: Findings in adjacent disciplines suggest that political instability strongly affects overall economic development (Mark and Jordan, 2011). That instability, which is often rooted in severe economic inequality, could affect financial development as well and could do so independently of its effect on overall economic development. An inverse relationship is expected between political instability and financial development. Increases in political instability index suppress development negating the chances for positive financial development and economic growth. Conversely, declining political instability index means more resources will be directed to financial development. This variable was collected from World Bank's Worldwide Governance Indicators database.

Estimation technique: The study carried out a correlation test to establish the extent to which the variables utilized are correlated. Advance panel dynamic model unit root test using the Fisher unit-root test were performed to determine stationarity. The study also performed one step system GMM test to establish the possibility of a relationship between the variables in short run and long run. In econometrics, the system GMM estimator is a generalized method of moments estimator used to estimate dynamic models of panel data. Though most studies applied the static panel data models such as fixed effects estimatorsBaltagi (2008) and Gardiner et al. (2009) random effects estimators in analysis of panel data, this study followed contemporary empirical literature, which uses a generalized method of moments estimator to estimate dynamic models of panel data popularized by Arellano and Bover (1995) and Blundell and Bond (1998). Unlike static panel data models, dynamic panel data models include lagged levels of the dependent variable as regressors. Including a lagged dependent variable as a regressor violates strict exogeneity, because the lagged dependent variable is likely to be correlated with the random effects and/or the general errors (Bhargava and Sargan, 1983). The Bhargava-Sargan article developed optimal linear combinations of predetermined variables from different time periods, provided sufficient conditions for identification of model parameters using restrictions across time periods, and developed tests for exogeneity for a subset of the variables. When the exogeneity assumptions are violated and correlation pattern between time varying variables and errors may be complicated, commonly used static panel data techniques such as fixed effects estimators are likely to produce inconsistent estimators because they require certain strict exogeneity assumptions.

Anderson and Hsiao (1981) first proposed a solution by utilizing instrumental variables (IV) estimation. However, the Anderson–Hsiao estimator is asymptotically inefficient, as its asymptotic variance is higher than the Arellano–Bond estimator, which uses a similar set of instruments, but uses generalized method of moments estimation rather than instrumental variables estimation. In the Arellano–Bond method, first difference of the regression equation is taken to eliminate the individual effects. Then, deeper lags of the dependent variable are used as instruments for differenced lags of the dependent variable (which are endogenous). When the variance of the individual effect term across individual observations is high, or when the stochastic process lags of the dependent variable is close to being a random walk, then the Arellano–Bond estimator may perform very poorly in finite samples. This is because the lagged dependent variables will be weak instruments in these circumstances. Blundell and Bond (1998) derived a condition under which it is possible to use an additional set of moment conditions. These additional moment conditions can be used to improve the small sample performance of the Arellano–Bond estimator. This method is known as system GMM. The system GMM estimator, proposed by Arellano and Bover (1995) and Blundell and Bond (1998), has become a popular method for estimating panel data models. In traditional panel data techniques, adding deeper lags of the dependent variable reduces the number of observations available. For example, if observations are available at T time periods, then after first differencing, only T-1 lags are usable. Then, if K lags of the dependent variable are used as instruments, only T-K-1 observations are usable in the regression. This creates a trade-off: adding more lags provides more instruments, but reduces the sample size. The system GMM method circumvents this problem.Two rule of thumbs exist in order to decide between difference GMM and System GMM. First, Blundell-Bond (1998) rule of thumb which states if the dependent variable in a GMM equation was persistent and close to being a random walk or approaches to one, the application of the difference GMM estimator yields both a biased and inefficient estimate in finite samples, and this is particularly acute when T is short. Blundell-Bond (1998) attribute the poor performance of the difference GMM estimator in such cases to the use of poor instruments, to address this, they propose use of a system GMM estimator. Second, Bond, et al (2001) rule of thumb which state if the difference GMM estimate obtained is close to or below the fixed effects estimate, this suggests that the former estimate is downward biased because of weak instrumentation and a system GMM estimator should be preferred instead. this paper based on Bond, et al (2001) rule of thumb to decide which GMM model is preferred for panel data analysis. To undertake this rule of thumb there at least three procedures that encountered. First, the autoregressive model should be initially estimated by pooled OLS and fixed effects approach. Then the pooled OLS estimate should be considered an upper-bond estimate, while the corresponding fixed effects estimate should be considered a lower-bound estimate. Finally, if the difference GMM estimate lies below or close to FE estimate, it is biased downwards. The using system GMM estimator is greatly advisable. Estimation from Pooled OLS, FE, Difference GMM and System GMM is attached under appendix section. Estimate from the partial adjustment equation (4) by Pooled OLS is equal to 0.8743 which show upward bias of the lagged financial development index and should be taken as the 'upper bound limit'. Estimation from the partial adjustment equation (4) using the fixed effects estimator is equal to 0.7217 denotes downward bias of the lagged financial development index this is the 'lower bound limit'. Estimate equation (4) using the one step difference GMM and two step difference GMM estimator result 0.6955 and 0.7021 respectively, both values well below and close to the biased lower bound limit of 0.7217. Estimate equation (4) using the one system GMM and two step system GMM is 0.8220 and 0.8267 respectively, their value closer to the upper bound of 0.8743. The fact that estimate using difference GMM for the lagged dependent variables is 0.6955 and 0.7021 are well below the biased lower bound suggests that there may be great benefit to use the system GMM estimator in this paper.The system GMM Estimation technique has econometric advantages and important statistical features over the other techniques. First, the system GMM technique test allow us to estimate the coefficients of time-invariant regressors. Second, system GMM estimator is designed for datasets with many panels and few periods, and it requires that there be no autocorrelation in the idiosyncratic errors. Third, system GMM method solve the problem of time-varying omitted variables. Summing-up, the system GMM estimator exploits time patterns in panel data to estimate the economic response to a change in a policy or other variable, while controlling for permanent unobserved confounding variation. Based on these features, the study used system GMM technique. The test specified is as follows:

$$\Delta Y_{it} = \beta_o + \beta_1 \Delta FDI_{it-1} + \beta_2 \Delta PRI_{it} + \beta_3 \Delta FCI_{it} + \beta_4 \Delta FO_{it} + \beta_5 \Delta GDPC_{it} + \beta_6 \Delta GDS_{it} + \beta_7 \Delta INF_{it} + \beta_8 \Delta TO_{it} + \beta_9 \Delta PS_{it} + \varepsilon_{it} \quad [4]$$

where Δ is the difference operator which eliminate the unobserved effect in the specified model. The rest of the variables are as defined in equation (3). The model F-test used in order to test overall model goodness of fit. The null hypothesis is that all the coefficients are zero was specified as $H_o = \beta_1 = \beta_2 = \cdots = \beta_{10} = 0$. This was tested against the alternative hypothesis of a specified model stated as $H_1 = \beta_1 \neq \beta_2 \neq \cdots \neq \beta_{10} \neq 0$. If the probability of F-statistic is less than usual threshold of 0.05, the null hypothesis of all coefficients are zero would be rejected and alternative hypothesis accepted indicating existence of non-zero relationship between dependent variable and each regressors when other things remain constant. Performing the unit root test first addresses prior the problem of a possibility of inconclusive results (falling probability of model chi-square value greater than usual threshold). Lastly, diagnostic test was conducted for serial correlation, heteroscedasticity and model specification parameter stability to verify the model's stochastic properties and validate its parameter estimation outcomes. The null hypothesis was rejected if the p-value of observed one step system GMM of chi-squared test is less than 0.05 significance level. This decision rule applied for the over identifying restrictions and serial correlation. Robust standard error is used in order to remove problem heteroscedasticity in the model. The test of autocorrelation of order and the Hansen J statistic of over identifying restrictions is used for checking model misspecification.I employ the system-GMM estimator (Arellano and Bover, 1995; Blundell and Bond, 1998), which is particularly well adapted to dealing with endogeneity when variables have a high degree of persistence, which is a characteristic frequently observed in macro panels. Because the standard errors in the two-step estimator tend to be downward biased in finite samples, I describe findings using the one-step form.

Table 1. Difference or System GMM

Estimators	Coefficients
Pooled OLS	0.8743
Fixed Effects	0.7217
One-step Difference GMM	0.6955
Two-step Difference GMM	0.7021
One-step System GMM	0.8220
Two-step System GMM	0.8267

Empirical results

Correlation test: The correlation test results, illustrated in Table 2, reveal that the independent variables do not have a strong association amongst each other except for PS and PRI which exhibit a moderate relationship. However, the strength of this relationship at 0.5424 is weak as it does not exceed the threshold (0.7) which indicates high multicollinearity.

Formal unit root test: Fisher unit-root test used to check stationarity of variables in panel data set of this study. The data series was almost stationary at levels except lag of financial development index. Stationarity lag of financial development index was achieved at first differencing. Outcomes of the Fisher unit-root test as illustrated in Tables 3, show that FDI, L.FDI, PRI and FO were not stationary at levels whilst FCI, FF, INF, GDPC, GDS, TO and PS were stationary at levels.

Short run and long run one step system GMM Estimation results: Table 4 depicts the short- and long-term effects. When all other factors stay equal, the results demonstrate that a unit increase in the lag of the financial development index corresponds to a 4.619-unit increase in financial development in the long run. In the long run, the first lag of the financial development index has a favorable effect on the financial development of Sub-Saharan African countries. At 1%, it is also statistically significant. To quickly uncover convergence effects, the authors regress the initial difference of a measure of financial development on past levels of financial development.The findings are consistent with what was expected a priori and Chin and Ito's findings (2006) A positive coefficient indicates that more financially developed countries are projected to show higher growth in financial development measures, while a negative coefficient indicates that less financially developed countries are expected to show lower growth in financial development measures. On average, ceteris paribus, a unit increase in past level of financial development triggers 0.822 units increase in financial development in the Short-run at the 1% significant level. In the near term, the past level of the financial development index indicated a positive and significant link to current financial development.Even if the magnitude of historical level of financial development is bigger in the long run than in the short run, this outcome is consistent with the a priori expectation in both the short and long run. In fact, the one-step System GMM estimation coefficient is positive and statistically significant, demonstrating that changes in financial development are favorably associated to previous levels of financial development in the short and long run. In the long run, a unit increase in the consumer price index causes a -0.02-unit decline in financial development, on average ceteris paribus, at the 5% significant level. In this study, the consumer price index is used as a proxy for inflation. As a result, inflation and financial progress have a long-term negative relationship. This result is in line with the a priori prediction. Huybens and Smith (1999) study the impact of inflation on financial development theoretically, and Boyd et al. (2001) empirically, and conclude that nations with higher inflation rates are more likely to have smaller, less active, and less efficient banks and equity markets. In the short run, a unit increase in the consumer price index causes a -0.0032-unit loss in financial development, ceteris paribus.This result is in line with the a priori prediction. Though inflation is good and significant in both periods, the long-term impact of inflation on financial development is larger. Inflation raises the risk of investing and causes uncertainty in the financial markets. Mahyar (2017) agrees with this conclusion, emphasizing that inflation has a negative impact on financial development. At a 10% level of significance, a unit rise in the property right index causes 0.0454-unit increase in financial development in the long run, ceteris paribus. This result is in line with the a priori prediction. StijnClaessens and Luc Laeven (2002) agree, stating that better property rights boost access to financing as a result of increased financial development. Financial sector development is higher in countries with better legal systems and stronger creditor rights, according to law and finance literature, because such conditions increase lenders' ability to collateralize their loans and fund enterprises, as well as boost financial development.When all other parameters stay constant, the results demonstrate that a unit increase in the property right index corresponds to a 0.008-unit increase in financial development in the short run. The results are in line with what was predicted a priori and are comparable to long-term outcomes. More broadly, the greater the protection of property rights, the greater the motivation to work, save, and invest, and the more efficient the financial growth process. The more efficiently an economy runs, the more financial system growth it generates for any given set of resources.

GDP per capita has a negative and statistically significant impact on financial development in both the short and long run. According to the estimations, a unit rise in GDP per capita is equivalent to -0.0849 and -0.0151 decreases in financial development in the long and short run, respectively, when all other factors are held constant.It's also worth noting that the amount of the short-run negative effect is smaller than the long-run negative effect of GDP per capita on SSA nations' financial development. i.e., the GDP per capita short-run coefficient (/0.0151/) and long-run coefficient (/0.0849/). This conclusion contradicts the financial growth theory, which predicts a positive relationship between GDP per capita income and financial development because demand for financial instruments is higher in richer and more complicated economies. Richer economies would also allow for greater economies of scale in the provision of financial services, thereby promoting supply-side financial development (Allen and others, 2012).The fact that GDP growth was barely adequate to offset population increases may explain the negative GDP per capita and financial development. The track record of financial progress, on the other hand, has been sporadic. In the 1980s and early 1990s, GDP growth was significantly lower than population growth. Due to the low population per capita, GDP growth began to slow significantly, falling short of financial development. One-half of Africa's population lives in poverty, posing a threat to the continent's financial progress. Per capita GDP in Sub-Saharan Africa is presently smaller than it was in 1974, having fallen by more than 11%. Gross domestic saving has a detrimental impact on financial growth, according to long-run estimates. If all other factors remain constant, a unit increase in gross domestic saving reduces financial development by -0.0318 and -0.0057 in the long and short runs, respectively. This defies the endogenous growth hypothesis, which claims that saving is important for financial growth.The findings are congruent with those of Jagadish and Nar (2018), who found an inverse link between gross domestic saving and economic growth, despite the a priori expectation. The disparity between gross domestic saving and financial development is partly due to the unbanked population and the growth of the informal financial sector. Domestic savings in Africa remain low when compared to other developing regions, owing to a large unbanked population, while there is potential if the informal sector's resources are accessed and the sector is given incentives to use formal banking services (Tonderayi, 2015).

Table 2. Correlation test results

	FDI	FCI	PRI	INF	GDPC	GDS	TO	FO	PS
FDI	1.0000	0.214	0.3411	-0.0577	0.0122	0.0102	0.2741	0.1394	0.2957
FCI	0.214	1.0000	0.1385	0.016	0.0184	0.1275	-0.1254	-0.0601	-0.0688
PRI	0.3411	0.1385	1.0000	-0.0603	0.0462	0.0699	0.2646	0.3957	0.5424
INF	-0.0577	0.016	-0.0603	1.0000	-0.1205	0.0298	-0.0096	-0.0035	-0.1428
GDPC	0.0122	0.0184	0.0462	-0.1205	1.0000	0.0058	0.0716	0.055	0.0551
GDS	0.0102	0.1275	0.0699	0.0298	0.0058	1.0000	0.2152	0.0677	0.1138
TO	0.2741	-0.1254	0.2646	-0.0096	0.0716	0.2152	1.0000	0.1178	0.4305
FO	0.1394	-0.0601	0.3957	-0.0035	0.055	0.0677	0.1178	1.0000	0.2966
PS	0.2957	-0.0688	0.5424	-0.1428	0.0551	0.1138	0.4305	0.2966	1.0000

Sources(s): Author's computation

Table 3. Fisher-type unit-root testfor Stationarity

Variables	Levels				First Differences			
	P	Z	L*	Pm	P	Z	L*	Pm
FDI	52.96	4.15***	4.52***	-2.64	689.54***	-17.49***	-27.47***	45.34**
L.FDI	61.66	3.39	3.49	-1.98	842.92***	-22.92***	-35.05***	56.90***
FCI	195.86***	-4.78***	-5.59***	8.13***	--	--	--	--
PRI	123.90***	0.17	-0.63	2.70***	727.06***	-20.97***	-30.47***	48.17***
FF	325.08***	-9.40***	-14.63***	17.87***	--	--	--	--
INF	561.26***	-16.32***	-22.82***	35.67***	--	--	--	--
GDPC	474.84***	-13.86***	-18.85***	29.15***	--	--	--	--
GDS	134.49***	-2.48***	-2.74***	3.89***	--	--	--	--
FO	81.37	-1.82**	-2.99***	-0.49	262.92***	-12.92***	-17.63***	13.18***
TO	114.04**	-1.80**	-1.87**	2.31***	--	--	--	--
PS	225.09***	-6.09***	-7.13***	10.33***	--	--	--	--

P denotes Inverse chi-squared statistics L* represents Inverse logit statistics
Z indicates Inverse normal statistics Pm means Modified inv. chi-squared statistics
Note(s): ***Denotes stationary variable at 1% significance level and **Indicates stationary variable at 5% significance level
Sources(s): Author's computation

Table 4. One step system GMM estimation results (Dep. Var: FDI)

Variables	SGMM Short Run estimation	SGMM Long Run estimation
L.FDI	.8221(72.97)***	4.6198(12.99)***
FCI	.0024(0.04)	
PRI.	0080(1.81)*	.0454(1.82)*
INF	-.0032(-2.53)**	-.0182(-2.55)**
GDPC	-.0151(-1.79)*	-.0849(-1.81)*
GDS	-.0057(-1.93)*	-.0318(-1.94)**
TO	.0001(0.13)	
FO	.0064(0.20)	
PS	.0938(3.02)***	.5273(2.99)***

Number of obs 648
Number of instruments 26
Number of groups 42
F(9, 42) = 1125.71Prob> chi2 =0.0000
Hansen test of overid. restrictions: chi2(17) = 20.60Prob> chi2 = 0.245
Arellano-Bond test for AR(2) in first differences: z = 0.91 Pr> z = 0.360

Table 5. Diagnostic test

Test	chi-squared value	p-value
Arellano-Bond test for AR(1) in first differences	-1.03	0.301
Arellano-Bond test for AR(2) in first differences	0.91	0.360
Hansen test of overid. Restrictions	20.60	0.245
Hansen test excluding group for GMM instruments at levels	19.33	0.252
Difference (null H = exogenous) for GMM instruments at levels	1.27	0.260
Hansen test excluding group for GMM instruments at difference	14.29	0.160
Difference (null H = exogenous) for GMM instruments at difference	6.31	0.504

Sources(s): Author's computation

Table 6. Robust standard error

FDI	*Coef.*	*Robust Std. Err.*	*t*	*P>t*	*[95% Conf. Interval]*	
L1. FDI	*0.822058*	*0.011265*	*72.97*	*0*	*0.799324*	*0.844792*
FCI	*0.002368*	*0.057585*	*0.04*	*0.967*	*-0.11384*	*0.118578*
PRI	*0.008083*	*0.004477*	*1.81*	*0.078*	*-0.00095*	*0.017118*
INF	*-0.00323*	*0.001279*	*-2.53*	*0.015*	*-0.00582*	*-0.00065*
GDPC	*-0.0151*	*0.00843*	*-1.79*	*0.081*	*-0.03211*	*0.001915*
GDS	*-0.00566*	*0.002925*	*-1.93*	*0.06*	*-0.01156*	*0.000245*
TO	*0.000136*	*0.00107*	*0.13*	*0.899*	*-0.00202*	*0.002295*
FO	*0.006394*	*0.031216*	*0.2*	*0.839*	*-0.0566*	*0.069391*
PS	*0.093842*	*0.031047*	*3.02*	*0.004*	*0.031188*	*0.156497*

Sources(s): Author's computation

Between 2005 and 2010, Africa's savings-to-GDP ratio was at 22%, compared to 46% in East Asia and the Pacific and 30% in middle-income countries. Long run system GMM estimation shows that political stability has exerted a positive and significant impact on financial development of SSA at 1 percent level of significance.While all the other values remain unchanged, there is anexistence of political stability causes about 0.527 financial developmentin the long run.This outcome is consistent with the a priori expectation. It further indicates that the absence of violence and terrorism, the higher the financial development in the long run.This finding is consistent with the findings ofRoe& Siegel (2011)which revealed that as political instability and weak democracy are fundamental roadblocks for international organizations like the World Bank that seek to promote financial development.Likewise, the result shows that political stability too has a positive and significant impact on financial development in SSA for the short run period.The result shows that in the short run, keeping other things constant, absence of political instability will lead to a corresponding increase financial development by 0.0938. This corroborates the long-run results and those of Hasan, et al (2019) whichhighlights as there is a strong effect from political risk and economic deterioration towards financial stability.

Diagnostic test

***Serial correlation**:* The Arellano – Bond test for serial correlation results is shown in Table 5. The differenced residuals are subjected to the Arellano – Bond test for autocorrelation, which has a null hypothesis of no autocorrelation. The first differences test for AR (2) is more essential since it detects autocorrelation in levels. As a result, the greater the Arellano – Bond statistic's p-value, the better. The p-value of the Probability Arellano-Bond test for AR (2) in initial differences of 0.360 is greater than the 0.05 significance level, according to the findings. As a result, the null hypothesis cannot be rejected because the residuals show no association.

Over identifying restrictions: The results of the GMM test for over identifying restrictions are shown in Table 5. The over identifying restrictions in GMM can be checked using the commonly used Sargan test and Hansen's J statistic (1982). Stata uses the Hansen J statistic instead of the Sargan with the null hypothesis that "the instruments as a group are exogenous" in robust estimation. As a result, the higher the Hansen J statistic's p-value, the better. The p-value of the Probability Hansen test of overid. restrictions of 0.2346 is greater than the 10% significance level, according to the results. This verifies that the model definition and orthogonality constraints are correct. That is, the

Heteroscedasticity: The results of the Robust standard error tests for heteroscedasticity are shown in Table 6. In order to estimate this specific model, a robust standard error was used. Under heteroscedasticity, "robust" standard error is a strategy for obtaining unbiased standard errors of dynamic panel model coefficients. In GMM estimation, robust means that the obtained standard errors are consistent with panel-specific autocorrelation and heteroscedasticity.
The results of the model show that all variances are equal across all data sets. As a result, the residuals show no evidence of heteroscedasticity.

Conclusion and recommendation

This study examined the impact of foreign capital Inflows and property rights on financial development using panel data from 2000 to 2020 in SSA. Furthermore, study analyze the relationship between policy variables that are expected to affect financial growth such as financial openness, gross domestic product per capita growth, gross domestic savings, inflation, trade openness and political stability. The literature confirmed a relationship between financial development and growth affected factors in most countries. To create a single index for both financial development and foreign capital inflow, the study uses the principal component technique. The study also performed one step system GMM test to establish the possibility of a relationship between the variables in short run and long run. The results highlight that foreign capital inflows, trade and financial openness are statistically insignificant and has no impact on financial development of SSA in the short run and long run. The estimates for property right index, inflation, gross domestic product per capital and gross domestic saving has small impact on financial development of SSA even if statistically significant but economically are not plausible in the short run. In the long run for property right index, inflation, gross domestic product per capital and gross domestic saving has relatively higher impact on financial development of SSA than short run as obtained from system GMM estimation results. The magnitude of estimates for the impact of past level of financial development on financial development is high in economic terms ranging from 0.82 to 4.62 respectively in the short run and long run in SSA, respectively. Absence of political instability was lead to a corresponding increase financial development of SSA in the short run and long run. Overall, the results show that lag of financial development, for property right index and political stability exerts a positive and substantial effect on financial development of SSA in short run and long run. On the other hand, the result shows that for inflation, gross domestic product per capital and gross domestic saving has negative impact on financial growth of SSA in short run and long run.

Following the empirical outcomes, the study recommends that policymakers should consider formulating policies that aims to engineer more past level of financial development, higher protection of private property rights and increases in political stability index which in turn will foster financial development in SSA. Whilst responding positively to financial development, better property rights boost access to financing as a result of increased financial development and higher inflation creates uncertainty in financial markets and increases the risk associated with investment then positive coefficient of past year level of financial development would indicate that more financially developed countries are expected to present higher growth in financial development sectors finally political instability and weak democracy are fundamental roadblocks for international organizations like the World Bank that seek to promote financial development hence it is important for the policies to strike a balance between strengthening the private property rights, abate high inflation in financial markets, abolish political instability and enhancing past year level of financial growth in order to enliven financial development in SSA.

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Appendix: This section demonstrates various STATA output.

Summary description of data set

Variable	*Obs*	*Mean*	*Std. Dev.*	*Min*	*Max*
Time	*924*	*2010*	*6.05858*	*2000*	*2020*
FDI	*924*	*-1.58e-08*	*2.000418*	*-1.917747*	*16.0211*
FCI	*924*	*-6.06e-09*	*1.316138*	*-2.081456*	*10.96256*
PRI	*859*	*35.91234*	*14.88659*	*5*	*76.5*
FF	*859*	*42.74738*	*14.17984*	*10*	*70*
INF	*874*	*9.591645*	*32.96022*	*-9.616154*	*557.2018*
GDPC	*922*	*1.598223*	*5.056676*	*-36.55692*	*56.78894*
GDS	*837*	*15.33178*	*16.59923*	*-40.81475*	*83.28704*
FO	*874*	*-.654029*	*1.253544*	*-1.923948*	*2.321955*
TO	*857*	*69.60575*	*35.05326*	*.7846308*	*225.0231*
PS	*880*	*-.4898972*	*.8820731*	*-2.699193*	*1.28206*
cccode	*924*	*22.97727*	*13.14015*	*1*	*45*

A. Pooled OLS regression						
Number of obs			*648*			
F(9, 638)			*1155.27*			
Prob> F			*0.0000*			
R-squared			*0.8194*			
Root MSE			*.90967*			
Variables	*Coef.*	*Robust Std. Err.*	*t*	*P>t*	*[95% Conf.*	*Interval]*
L.FDI	*.8743376*	*.0799756*	*10.93*	*0.000*	*.7172903*	*1.031385*
FCI	*.0462759*	*.0270153*	*1.71*	*0.087*	*-.0067737*	*.0993254*
PRI	*.0032061*	*.0031129*	*1.03*	*0.303*	*-.0029067*	*.0093188*
INF	*-.0017454*	*.0016497*	*-1.06*	*0.290*	*-.004985*	*.0014941*
GDPC	*-.005099*	*.0066288*	*-0.77*	*0.442*	*-.0181158*	*.0079179*
GDS	*-.0037922*	*.0021249*	*-1.78*	*0.075*	*-.0079648*	*.0003804*
TO	*.0016853*	*.0008909*	*1.89*	*0.059*	*-.0000642*	*.0034349*
FO	*.0000748*	*.018143*	*0.00*	*0.997*	*-.0355524*	*.035702*
PS	*.0790488*	*.0508668*	*1.55*	*0.121*	*-.0208378*	*.1789353*
_cons	*-.0503902*	*.1064194*	*-0.47*	*0.636*	*-.2593649*	*.1585844*

B. Fixed effects regression						
Fixed-effects (within) regression				*Number of obs = 648*		
Group variable: cccode				*Number of groups = 42*		
R-sq:				*Obs per group:*		
within = 0.5410				*min = 3*		
between = 0.9846				*avg = 15.4*		
overall = 0.8151				*max = 18*		
				F(9,41) = 2352.62		
corr(u_i, Xb) = 0.7353				*Prob> F = 0.0000*		
(Std. Err. adjusted for 42 clusters in cccode)						
Variable	*Coef.*	*Robust Std. Err.*	*t*	*P>t*	*[95% Conf. Interval]*	
L.FDI	*.7217248*	*.0065469*	*110.24*	*0.000*	*.7085031*	*.7349465*
FCI	*.0540453*	*.0098487*	*5.49*	*0.000*	*.0341554*	*.0739352*
PRI	*.0017598*	*.0024623*	*0.71*	*0.479*	*-.0032129*	*.0067324*
INF	*-.0016112*	*.0023711*	*-0.68*	*0.501*	*-.0063998*	*.0031773*
GDPC	*-.003789*	*.003473*	*-1.09*	*0.282*	*-.0108029*	*.0032249*
GDS	*-.008995*	*.0077808*	*-1.16*	*0.254*	*-.0247087*	*.0067187*
TO	*.0021349*	*.0025087*	*0.85*	*0.400*	*-.0029316*	*.0072014*
FO	*.0175726*	*.0286865*	*0.61*	*0.544*	*-.040361*	*.0755062*
PS	*-.0083888*	*.0429565*	*-0.20*	*0.846*	*-.0951412*	*.0783637*
_cons	*.0361212*	*.1602074*	*0.23*	*0.823*	*-.2874242*	*.3596667*
sigma_u	*.45215483*					
sigma_e	*.89516251*					
rho	*.20327315 (fraction of variance due to u_i)*					

C. Fixed effects regression						
Fixed-effects (within) regression					Number of obs = 648	
Group variable: cccode					Number of groups = 42	
R-sq:					Obs per group:	
within = 0.5410					min = 3	
between = 0.9846					avg = 15.4	
overall = 0.8151					max = 18	
					F(9,41) = 2352.62	
corr(u_i, Xb) = 0.7353					Prob> F = 0.0000	
(Std. Err. adjusted for 42 clusters in cccode)						
Variable	Coef.	Robust Std. Err.	t	P>t	[95% Conf. Interval]	
L.FDI	.7217248	.0065469	110.24	0.000	.7085031	.7349465
FCI	.0540453	.0098487	5.49	0.000	.0341554	.0739352
PRI	.0017598	.0024623	0.71	0.479	-.0032129	.0067324
INF	-.0016112	.0023711	-0.68	0.501	-.0063998	.0031773
GDPC	-.003789	.003473	-1.09	0.282	-.0108029	.0032249
GDS	-.008995	.0077808	-1.16	0.254	-.0247087	.0067187
TO	.0021349	.0025087	0.85	0.400	-.0029316	.0072014
FO	.0175726	.0286865	0.61	0.544	-.040361	.0755062
PS	-.0083888	.0429565	-0.20	0.846	-.0951412	.0783637
_cons	.0361212	.1602074	0.23	0.823	-.2874242	.3596667
sigma_u	.45215483					
sigma_e	.89516251					
rho	.20327315 (fraction of variance due to u_i)					

D. Dynamic panel-data estimation, one-step difference GMM						
Group variable: cccode					Number of obs = 605	
Time variable : Time					Number of groups = 42	
Number of instruments = 25					Obs per group: min = 2	
F(0, 42) = 144.26					avg = 14.40	
Prob> F = 0.0000					max = 17	
FDI	Coef.	Robust Std. Err.	t	P>t	[95% Conf.	Interval]
L.FDI	.6955806	.0343496	20.25	0.000	.6262603	.7649009
FCI	-.3796932	.5888212	-0.64	0.523	-1.567983	.8085961
PRI	-.0647756	.0768118	-0.84	0.404	-.2197882	.0902369
INF	-.0025775	.0019246	-1.34	0.188	-.0064615	.0013066
GDPC	-.0190798	.0121876	-1.57	0.125	-.0436754	.0055158
GDS	-.0136497	.0102399	-1.33	0.190	-.0343148	.0070153
TO	.0078827	.0088976	0.89	0.381	-.0100734	.0258387
FO	-.3380867	.4758386	-0.71	0.481	-1.298368	.6221945
PS	-.1759738	.161865	-1.09	0.283	-.5026305	.1506829
Instruments for first differences equation						
Standard D.(FF GDPC INF FO GDS TO PS) GMM-type (missing=0, separate instruments for each period unless collapsed) L(1/20).L.FDI collapsed						
Arellano-Bond test for AR(1) in first differences: z = -1.04 Pr> z = 0.297 Arellano-Bond test for AR(2) in first differences: z = 0.98 Pr> z = 0.326						
Sargan test of overid. restrictions: chi2(16) = 141.96 Prob> chi2 = 0.000 (Not robust, but not weakened by many instruments.) Hansen test of overid. restrictions: chi2(16) = 21.18 Prob> chi2 = 0.172 (Robust, but weakened by many instruments.) Difference-in-Hansen tests of exogeneity of instrument subsets: iv(FF GDPC INF FO GDS TO PS) Hansen test excluding group: chi2(9) = 5.07 Prob> chi2 = 0.828 Difference (null H = exogenous): chi2(7) = 16.11 Prob> chi2 = 0.024						

E. Dynamic panel-data estimation, two-step difference GMM						
Group variable: cccode					Number of obs = 605	
Time variable : Time					Number of groups = 42	
Number of instruments = 25					Obs per group: min = 2	
F(0, 42) = 75.91					avg = 14.40	
Prob> F = 0.0000					max = 17	
FDI	**Coef.**	**Corrected Std. Err.**	**t**	**P>t**	**[95% Conf.**	**Interval]**
L.FDI	.7021803	.0375492	18.70	0.000	.626403	.7779576
FCI	-.3003723	.4800719	-0.63	0.535	-1.269197	.6684519
PRI	-.0488409	.0463543	-1.05	0.298	-.1423877	.0447058
INF	-.0016499	.0018959	-0.87	0.389	-.005476	.0021763
GDPC	-.0142259	.0065545	-2.17	0.036	-.0274535	-.0009983
GDS	-.0099428	.0063768	-1.56	0.126	-.0228116	.0029261
TO	.0029704	.0032139	0.92	0.361	-.0035155	.0094564
FO	-.0772532	.2509513	-0.31	0.760	-.5836935	.429187
PS	-.129871	.1468114	-0.88	0.381	-.4261484	.1664065
Instruments for first differences equation						
Standard D.(FF GDPC INF FO GDS TO PS) GMM-type (missing=0, separate instruments for each period unless collapsed) L(1/20).L.FDI collapsed						
Arellano-Bond test for AR(1) in first differences: z = -1.06 Pr> z = 0.290 Arellano-Bond test for AR(2) in first differences: z = 0.76 Pr> z = 0.445						
Sargan test of overid. restrictions: chi2(16) = 141.96 Prob> chi2 = 0.000 (Not robust, but not weakened by many instruments.) Hansen test of overid. restrictions: chi2(16) = 21.18Prob> chi2 = 0.172 (Robust, but weakened by many instruments.)						
Difference-in-Hansen tests of exogeneity of instrument subsets: iv(FF GDPC INF FO GDS TO PS) Hansen test excluding group: chi2(9) = 5.07 Prob> chi2 = 0.828 Difference (null H = exogenous): chi2(7) = 16.11 Prob> chi2 = 0.024						

G. Dynamic panel-data estimation, two-step system GMM						
Group variable: cccode Time variable : Time Number of instruments = 26 F(0, 42) = 892.19 Prob> F = 0.0000		Number of obs = 648 Number of groups = 42 Obs per group: min = 3 avg = 15.43 max = 18				
FDI	Coef.	Corrected Std. Err.	t	P>t	[95% Conf.	Interval]
L.FDI	.8267184	.011703	70.64	0.000	.8031009	.850336
FCI	-.0034723	.0618546	-0.06	0.955	-.1282998	.1213553
PRI	.0053536	.0040295	1.33	0.191	-.0027782	.0134854
INF	-.0023065	.0008265	-2.79	0.008	-.0039744	-.0006387
GDPC	-.011586	.00719	-1.61	0.115	-.0260961	.0029241
GDS	-.0036422	.0025683	-1.42	0.164	-.0088253	.0015409
TO	.0001188	.0011595	0.10	0.919	-.0022211	.0024587
FO	.0203224	.0283513	0.72	0.477	-.0368929	.0775377
PS	.0711612	.0373706	1.90	0.064	-.0042558	.1465781
Instruments for first differences equation						
Standard D.(FF GDPC INF FO GDS TO PS) GMM-type (missing=0, separate instruments for each period unless collapsed) L(1/20).L.FDI collapsed						
Instruments for levels equation						
Standard FF GDPC INF FO GDS TO PS GMM-type (missing=0, separate instruments for each period unless collapsed) D.L.FDI collapsed						
Arellano-Bond test for AR(1) in first differences: z = -1.03 Pr> z = 0.303 Arellano-Bond test for AR(2) in first differences: z = 0.89 Pr> z = 0.373						
Sargan test of overid. restrictions: chi2(17) = 148.93 Prob> chi2 = 0.000 (Not robust, but not weakened by many instruments.) Hansen test of overid. restrictions: chi2(17) = 20.60Prob> chi2 = 0.245 (Robust, but weakened by many instruments.) Difference-in-Hansen tests of exogeneity of instrument subsets: GMM instruments for levels Hansen test excluding group: chi2(16) = 19.33Prob> chi2 = 0.252 Difference (null H = exogenous): chi2(1) = 1.27 Prob> chi2 = 0.260 iv(FF GDPC INF FO GDS TO PS) Hansen test excluding group: chi2(10) = 14.29Prob> chi2 = 0.160 Difference (null H = exogenous): chi2(7) = 6.31 Prob> chi2 = 0.504						

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