Research Article

Influence of current and capital account liberalization on economic growth: Evidence from heavily indebted SSA economies

Fentaw Leykun[1]

Abstract

Capital and current account restrictions were widely used in the past but were largely released during the liberalization movement of the 1990s, as interventionist policies got widespread support that paves the way to the renewed conception of government as an impartial referee. Such a restriction has come back on the agenda with the surge in public debt in the course of the Global Financial Crisis. By distorting market signals and incentives, financial repression causes losses from inefficiency and rent-seeking. This paper seeks to investigate the impact of current and capital account liberalization on growth, covering 26 heavily indebted Sub-Saharan African countries over 2000-2020. The results suggest that capital account liberalization escalates growth, it also brought about distributional efficiency in conformity with the neoclassical growth model.

Key words: Capital account, current account, economic growth, financial repression, financial liberalization

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[1]Corresponding author, Assistant Professor of Accounting and Finance, College of Business and Economics, Bahir Dar University, Ethiopia. Email: w.fentahun@gmail.com

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1. Introduction

With the rise in public debt in the aftermath of the Global Financial Crisis, financial repression, resulting from legal restrictions on interest rates, credit allocation, capital movements, and other financial operations, has resurfaced on the agenda, and some jurisdictions have reintroduced administrative ceilings on interest rates. Financial repression had been frequently utilized in the past, but it was largely abandoned during the 1990s liberalization wave, as widespread support for interventionist measures gave way to a revived view of government as an unbiased arbitrator. Financial repression causes losses from inefficiency and rent-seeking which are difficult to quantify by distorting market incentives and signals (Jafarov et al., 2019). An empirical analysis by the same author, focused on interest rate regulations over a 45-year period in 90 countries, evaluated the economic costs of financial repression and concluded that financial repression is a considerable drag on GDP, ranging between 0.4 and 0.7 percentage points.

The financial systems of African least developed countries vary according to their economic structures. In some countries, the financial sector is dominated by branches or subsidiaries of foreign commercial banks, and government intervention is widespread; in others, the financial system is solely owned by the government. For the former, Lesotho and Botswana are prominent examples, while the latter includes Cape Verde, Guinea, Guinea-Bissau, Ethiopia, and the United Republic of Tanzania (Abebe, 1990). Despite the fact that these countries have their own frameworks for managing their monetary and foreign exchange policies, the majority of them rely on standard financial repression (FR) instruments such as government central bank financing, a state-dominated banking sector, mandatory financing of priority projects and directed credit, administered interest rates, a captive domestic market for government debt, high liquidity and capital requirements, and strict capital controls (Kasekende and Brownbridge, 2010). Monetary repression is deeply entrenched in African economies, characterized by using the absence of a set of robust assumptions together with best competition and entire statistics; more able to cope with troubles of market failure under FR (Stieglitz, 1994). On the pinnacle of that, those economies are properly identified in terms of little and underdeveloped economic markets and (or) never, managed capital debts and dominance of industrial banking, restrictions on pass-border borrowing, and outward direct investment.

Except for some international reports and studies, Sub-Saharan Africa (SSA) is severely lacking in key FR literature on a national and regional scale. Most of these studies focus on interest rate restrictions and other legal measures, rather than facts, and the historical evolution of financial and economic reforms; a study by Chinn and Ito (2007) emphasizes that the implementation of capital control policies is often unclear Policy objectives to control the amount and/or type of capital flows. In view of the universality of financial repression in African countries, previous studies were mainly conducted in OECD member countries (Zarra-Nezhad et al., 2012) and other advanced economies (Huang and Wang, 2011; Prabha and Savard, 2013), which gives little attention has been paid to the

capital account restriction policy and its impact on developing economies, where FR in general and capital account control in particular tightened.

Few studies have examined the relationship between capital control and economic growth based only on legal capital control measures, and policy debates have increasingly focused on the difference in influence between inflow and outflow control, especially the differences related to institutional development (Versteeg, 2011); Honing, 2008; Rehman and Hayat, 2017; Boyce, 2010; Butkiewicz and Yanikkaya, 2008; Versteeg, 2011). Despite its advantages, the use of capital control involves costs: due to the non-competitive nature of capital control, capital control increases the cost of capital by creating financial self-sufficiency; restricts the ability of domestic and foreign investors to diversify their investment portfolios; and helps the inefficient financial institutions survive (Chauffour and Gobezie, 2019). Correctly resolving the on-going disputes surrounding this topic requires careful, high-quality theoretical and empirical research (Fernandez, Klein, Rebecca, Schindler, and Uribe, 2015).

This study aims to fill this gap by using a panel of heavily indebted African economies to analyse the impact of capital account restrictions on economic growth. It is hoped that through a better understanding of the relationship between capital account contraction and economic growth, governments and other decision-making bodies in their respective African countries will benefit. In other words, the results of the study may help confirm that the challenges faced by small economies with a distorted financial system may be different from large economies with relatively developed financial systems. Studying the state of capital accounts in these areas may also be crucial for designing financial policies based on industrial policy priorities.

2. Literature review

Over time, the view of financial repression has undergone major changes, reflecting a revolution in economic thinking (Jafarov et al., 2019). The theoretical debate on the economic uses of financial repression (FR) usually refers to market failures in specific economies (Stieglitz, 1981, 1989, 2000) and information friction (Espinosa-Vega and Smith, 2001). The FR problem can be traced back to the 1960s. Since then, the Keynesian view on the role of government has been combined with the interference legacy of wartime restrictions, and there has been a preliminary consensus in support of government intervention. At present, this has turned into a view that the government is a “fair referee” and advocates maintaining a balanced distribution function of the market to ensure the smooth operation of the market (Jafarov, Maino, and Pani, 2020). The authors found that the FR has a variety of public finances, including public financing by Seigniorage, subsidies to specific sectors or industries, and maintaining medium-term financial stability by building a predictable credit environment protected from competition. It has been suggested that it will be used to achieve quasi-financial and financial stability goals.

In the 1960s and 1970s, FR was a common practice, especially in developing economies (Arestis and Demetriades, 1999). FR has been in use for approximately 50 years. However, there seems to be some divergence in the literature on how to define FR. McKinnon (1973) and Shaw (1973) refer to the phrase "FR", which refers to government intervention in the financial system, including setting interest rates, imposing high reserve requirements, and restricting the amount of credit allocation through other means. According to the definition (Prabha and Savard, 2013), financial repression is government intervention in free market activities and the pricing of financial market instruments. According to the author, FR involves interest rate restrictions; controlling bank credit allocation; and restricting the scope of market activities and competition by implementing controls on the securities market and capital account transactions. New businesses in the banking industry and barriers to entry of state-owned ownership are common forms of FR. In addition, the government's market intervention supports certain sectors or investor groups to help them obtain funds on preferential terms, see FR (Prabha and Savard, 2013). In addition, Murat (2017) proposed two definitions: narrow and broad: the narrow definition only refers to the upper limit of deposit and/or loan interest rates. On the other hand, the broad definition refers to the government's use of various other tools to intervene in the price formation of the financial market. For example, in the latter broader definition, the government can choose to prevent the development of certain financial institutions to support other financial institutions, such as banks instead of stock exchanges, or implement selective credit schemes.

Since the 1980s, economic views have gradually changed and reforms aimed at removing existing regulations and liberalizing financial markets have become widespread. Financial reforms aimed at freeing capital markets, usually to create a world of growth potential. As resource allocation becomes more efficient, growth and savings should increase, leaving room for more free monetary policy. The only difficulty expected was the transition to such a situation if it suffered from structural reform difficulties. Otherwise, the only condition for reform to be feasible is to have a zero-budget deficit and a very basic state of fiscal order low inflation (McKinnon, 1973).

More recently, the 2008-09 global financial crises has re-awakened the debate over the role of government intervention, increasing regulation and supervision, preventing imbalances that could undermine financial stability and it seems to have been fixed. Moreover, the burden of government debt during times of crisis has stimulated discussions about the possible role of FR as a suboptimal alternative solution to mobilize seigniorage income that can be used to reduce debt burden. (Jafarov, Maino, and Pani, 2020). Moreover, Huang and Wand (2011) show that in the sub-period return, FR first promoted economic growth in the 1980s and 1990s, but restrained economic growth over the last decade.

Economists have different views on the impact of repressive financial policies on economic growth. As suggested by (Stieglitz, 1994; Hellmann, Murdock, and Stieglitz, 1997, 2000), generally speaking, the advantage of repressive financial policies is that they enable the authorities to better deal with market failures and financial risks. McKinnon (1973) and Shaw (1973) proposed the negative

effects of reducing economic efficiency. Although the net impact may be determined by a combination of these two possible mechanisms, the actual results may be unclear, depending on which of these effects dominates. Therefore, whether FR can inhibit or promote economic growth is still an empirical question, which is affected by a series of factors such as the conditions of financial institutions, markets, regulatory agencies, and governments (Huang and Wang, 2011).

Empirical evidence shows that there are differences in economic growth rates between developed and underdeveloped financial systems. Countries with developed financial systems have faster economic growth (Haslag and Koo, n.d). The author adds that a developed financial system is positively correlated with economic growth, and even leads to faster economic growth. On the contrary, economic growth is due to financial supervision and government policies. The level of development of the financial system is relatively low. Developing countries have underdeveloped financial systems (Haslag and Koo, n.d), weak structures, imperfect internal policies, and poor economic performance (Graham, 1996).

Financial repression can take many forms (Huang and Wang, 2011, and Etibar et al. (2020): highly regulated interest rates, government-influenced lending, often adjusted reserve requirements, and tightly controlled capital accounts. Restrictions on access to banking, Direct government intervention in the sector and Financial sector Direct lending (mandatory instructions to banks to assign a minimum amount of credit to certain beneficiaries) are other forms of FR (Etibar et al., 2020). Interest rate controls and frequent adjustments to reserve ratios, as well as tight controls on the capital account, delay (affect) economic growth further liberalization of these repressive policies could affect economic growth.

Chinn and Ito (2007) emphasized that capital management policies are often implemented without clear policy objectives for controlling the amount and type of capital flow. Capital account regulation differs in the type of financial transaction and the direction of capital flow (inflow and outflow). This includes the existence of multiple exchange rates. Restrictions on capital account transactions and restrictions on regulatory requirements for export revenue waivers. Countries can limit the flow of capital by limiting current account balances and transactions on other systems, such as multiple exchange rates and requirements for abandoning export revenues. Alternatively, countries that have already closed their capital accounts may impose other types of restrictions (such as current account limits and trade income abandonment requirements) to prevent the private sector from avoiding capital accounts and may also try to increase the strictness of regulation (Chinn and Ito, 2007). Inflation and seigniorage income are important in the presence of capital restrictions (Alesina, et al., 1993). By reducing the likelihood that the portfolio will diversify into foreign currency assets, capital accounts will limit the ability of individuals to avoid inflation taxes and promote the imposition of administrative measures designed to artificially keep domestic interest rates low (Alesina, et al., 1993).

Although it was believed in the 1970s and 1980s that FR in developing economies would have a negative impact on economic growth and financial development, its impact continued after the recent global financial crisis (Murat, 2017). Consistent with this argument, McKinnon (1973) and Shaw (1973)

believe that, especially for developing economies, FR will have a negative impact on economic growth and financial development.

The main advantages of FR are to reduce the domestic debt burden from two directions: to earn savings, keep the nominal interest rate lower than other methods, lower the nominal interest rate and reduce debt repayment costs, and through taxation (negative real interest rates) on savers to erode the Debt-to-GDP ratio (Reinhart, Carmen and Kierkegaard, 2012). In addition, it has been argued that FR may be optimal if the government needs to issue an unusually large amount of debt, such as during the war (Chari, Alessandro, and Patrick, 2018). It is argued that when FR policies are able to successfully address market failures, such as in the case of imperfect information, they may provide positive effects that include enhancing the stability of the banking system and increasing the willingness of depositors to hold their savings in the form of bank deposits. Stieglitz (1993) argued that the benefits of FR in terms of protecting the domestic banking system from the contagion of international financial crises would be achieved when FR's restrictions on market entry and exchange and capital controls are in place.

On the other hand, the gradual distortions of resource allocation, reduction in economic efficiency, and an impediment to financial deepening have been argued as the main costs of financial repression. That is because excessive financial repression leads to inefficient allocation of capital, high costs of financial intermediation, and lower rates of return to savers; it tends to reduce economic efficiency and growth. Overall, the empirical evidence on the effect of financial repression supports this view, and various channels through which FR hinders growth have been evidenced (Roubini and Martin, 1992).

The conduct of repressive policies is more common in relation to banks than in relation to the capital markets. Previous studies have not focused much attention to the relationship between repressive government policies and economic growth. Huang and Wang (2011) found that under the theoretical predictions that capital account control would not hurt economic growth but over time could be a source of financial distortions or risk, empirical evidence suggests that this was the case before and after 2000. Today, because of international capital control restrictions, domestic companies and residents are unable to access international markets to make the best possible use of the money they have available. This paper investigates the impact that capital account control has on economic growth in selected heavily indebted Sab-Saharan African countries.

3. Data and methodology

3.1: Data

Capital account restrictions are imposed to hold the exchange rate down, as well as to control public spending. A desire to limit competition for 'captive' bank deposits is one reason to support higher bank reserves. Some policies related to the capital account include restrictions or taxes on inflows or outflows as well as alternative exchange rates for different forms of transactions across country borders. Without

tight capital account restrictions in place, repressive financial policies such as suppressed interest rates would be much less effective (Johansson, 2012; Johansson and Wang, 2011, 2014).

The literature suggests two broad methods for measuring financial openness: one based on de jure (covering regulations) openness, and two based on actual openness (based on spreads such as unhedged or real interest rate parity and the International Arbitration Pricing Model (IAPM) or the capital asset pricing model (ICAPM) and realistic quantitative measures, i.e. the sum of capital inflows and outflows in relation to GDP).

In Africa, the legal openness is outpacing the actual openness, as countries have been experiencing liberalization without financial integration (Bicaba et al., 2014). The advantage of de jure measures is that they allow for a clear and easy identification of when a country has removed all barriers to capital account transactions. However, a drawback is that countries may liberalize their capital accounts by removing individual barriers gradually over time. The rationale for looking at actual openness is that a country that is actually open may not necessarily experience such inflows. The measures of capital account transactions can reflect changes in macroeconomic conditions even when there is no regulatory change on capital account transactions. This paper has an empirical model that has been accounted for by both measures.

In this paper, the Chinn and Ito indexes, updated to 2020 using the data from the 2020 edition of the Annual Report of Exchange Arrangements and Exchange Restrictions (AREAER), is used to measure the de jure openness of the country. The index is constructed based on the principal component of four variables, which are the presence of multiple exchange rates, restrictions on current account transactions, restrictions on capital account transactions, and variables that indicate the requirement of the surrender of export proceeds. The four elements of Chinn-Ito index are financial current account indicators; Chinn-Ito index provides a comparable measure of the magnitude of restrictions on financial transactions so that countries can be ranked in order. This index takes on higher values the more open a country is to cross-border capital transactions. The Chinn-Ito index is a measure of a country's degree of capital account openness. In 2006, Chinn and Ito introduced a new idea for measuring economic development, called the Index of Economic Development. The Chinn-Ito index is based on the binary dummy variables that codify the tabulation of restrictions on cross-border financial transactions reported in the IMF's AREAER. This update is based on AREAER 2020, which contains information on regulatory restrictions on cross-border financial transactions as of the end of 2019. The Chin-Ito index is there for the principal component of these four components which ranges from -2.5 to 2.5; the more open the country is indicated by the higher the value of this index.

Following the literature, the sum of FDI and portfolio flows scaled by GDP and the sum of FDI scaled by GDP have been used to account for actual openness. Variables in this paper are categorized into four groups: standard growth variables such as Real GDP per capita growth (annual %), total investment (% of GDP), and Real GDP per capita; de jure and de facto measures of financial openness; Institutional variables/government quality such as Bureaucratic quality, Law and order and Corruption;

and other macroeconomic variables such as trade (% of GDP), inflation, Total debt, and Current account balances.

3.2: Specification and Estimation of the Empirical Model

The data for the standard growth regression comes from the World Development Indicator and World Economic Outlook, specifically, real GDP per capita growth rates, real GDP per capita, and the share of investment in GDP. To account for de jure measures of capital control, the data for the standardized and unstandardized capital control comes from the Chinn and Ito Chinn-Ito Index updated in the years 2018. The data for the rate of capital control, specifically the inflow and outflow of capital in relation to the GDP, comes from the World Development Indicators and the World Economic Outlook. The other control variables incorporated in this paper are from the same source as consumer price index (annual %), trade openness (%GDP), final consumption expenditure as a share of GDP, domestic credit to the private sector by banks (% GDP), general government debt (%GDP) and capital account balance (%GDP). This data set for economic growth and other control standard control variables is the most commonly used in the economic literature. Besides these control variables, institutional or government quality variables are accounted. The measure of institutional quality is retrieved from the International Country Risk Guide (ICRG) that is published each year by Political Risk Services (PRS). Their Law and Order and corruption index was found to be the best indicator of institutional quality (Knack, Stephen; Keefer, 1995) and is most prevalent as an institutional measure in studies on capital controls (Versteeg, 2011). The International Country Risk Guide for Governments measures to what extent a rule of law is present in a country and is scored from zero to six, with high scores indicating a better rule of law and low scores indicating a malfunctioning rule of law.

3.3: Model specification

The International Monetary Fund (IMF) and the World Bank (WB) have come up with a comprehensive plan to reduce the debt burden of poor countries. To date, debt relief packages under the HIPC initiative have been approved for 37 countries, 31 of them in Africa, providing $76 billion in debt-service relief over time. To receive debt relief under the World Bank's Highly Indebted Poor Countries (HIPC) Initiative, a country must first meet the HIPC Initiative's threshold requirements. Under HIPC, the primary requirement was that the country's debt remained at unsustainable levels despite the full application of traditional, bilateral debt relief. At the time, the HIPC considered debt unsustainable when the ratio of debt-to-exports exceeded 200-250% or when the ratio of debt-to-government revenues exceeded 280%. The paper uses panel data collected during the period 2000-2020 for 27 HIPCs listed by the IMF as of (2018) as eligible or potentially eligible countries, for which countries may wish to receive HIPC assistance. Heavily Indebted Poor Countries as of February 2020 included in this study

are, Burkina Faso, Burundi, Cameroon, Chad, Comoros, Republic of Congo, Democratic Republic of Congo, Côte d'Ivoire, Ethiopia, the Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Rwanda, Senegal, Sierra Leon, Tanzania, Togo, Uganda, and Zambia.

Following empirical literature (Butkiewicz and Yanikkaya, 2008; Honig, 2008; Quinn and Toyoda, 2008; ur Rehman and Hayat, 2017), the Panel data GMM model is employed in this study to control for country-specific effects and potential endogeneity bias. Using panel data, the model specification starts with a simple growth regression:

$$Yit = \beta CCALX_{it} + YX_{it} + \epsilon_{it} \quad (1)$$

Where Y_{it} represents real GDP per capita growth and CCALit symbolizes any measure of capital and current account liberalization. The vector of control variables is represented by x_{it} . The subscripts *i* and *t* respectively designate the countries and the time periods under consideration while ε_{it} *shows* and identically and independently distributed (i.i.d) stochastic error term. By incorporating a year lag of the dependent variable as explanatory variable and time invariant country specific effects, δ_i, the dynamic nature of the model (1) can be specified as below:

$$Yit = \alpha Y_{it} - 1 + \beta CCALX_{it} + YX_{it} + \delta_i + \epsilon_{it} \quad (2)$$

The study uses a panel data set from 26 HIPC of sub-Saharan Africa (SSA) countries. The cyclicality of the data is reduced by using five year non-overlapping averages for all variables of interest in the model. By eliminating the time-invariant country-specific characteristics of preceding equation in differences, the dynamic system GMM model can further be specified as:

$$Y_{it} = \alpha \Delta Y_{it} - 5 + \beta \Delta CCALX_{it} + Y\Delta X_{it} + \Delta \epsilon_{it} \quad (3)$$

3.4: Empirical results

In summary statistics, a central value for a set of observations is a single value that represents the set as a whole. Measures of central value, such as the mean or median, must be paired with measures of dispersion, e.g., the average distance from the mean, to indicate how well the central value characterizes the data as a whole. In order to investigate the deviation between the mean and median values of some selected variables, average and the standard deviation were calculated at first (Table 1). In this case, the average value of the Chinn-Ito index is 1.43 and the middle value is 1.78, indicating that the data is skewed to the left with a standard deviation of 4.47, indicating more higher values above the sample average. The same applies to the initial real GDP per capita. The mean 13.37 and median 12.21 values of real per capita GDP growth highlight the presence of lower values below the sample mean in the data set.

Table 1: Summary statistics (2000-2020)

Variables	Mean	Median	SD	Max	Min
Chinn-Ito index	1.43	1.78	4.47	21.03	-31.33
D.credit to private sector(%GDP)	-0.63	-1.22	1.35	2.33	-1.92
Real per capita GDP growth (%)	13.37	12.21	8.86	84.05	0.40
Initial real GDP per capita	1.43	1.78	4.47	21.03	-31.33
Investment (%GDP)	22.29	21.36	9.63	79.40	1.09
Trade openness (%GDP)	22.29	21.36	9.64	79.40	1.10
Inflation (CPI %)	67.23	59.47	32.02	311.35	23.98
Final consumption exp.(%GDP)	9.71	5.18	32.01	513.91	-8.24
FDI, Inward flows and stock (%GDP)	86.90	87.43	22.64	241.97	35.07
FDI, net outflows (% of GDP)	4.84	2.64	9.16	103.34	-6.37
Population growth (annual %)	2.73	2.75	0.63	5.36	0.23
general gov.t debt gross (% GDP)	62.61	45.73	61.49	566.62	11.66
current account balance as (% GDP)	-5.74	-5.00	9.64	24.01	-65.03
Corruption (ICRG)	1.97	2.00	0.67	4.00	0.00
Law and order (ICRG)	2.84	3.00	0.91	5.00	0.50
Bureaucratic quality (ICRG)	1.12	1.00	0.74	2.50	0.00
FDI (in and out flows and stock)	4.65	2.60	7.47	70.35	-6.10

The Same explanation is given to trade openness, Inward flows and stock (%GDP) and FDI (In and out flows and stock) with mean and median values of [22.9 21.36] [86.90 87.43] [4.65 2.60], respectively. In all cases, the mean is really fails to give a realistic picture of the major part of the data; it is influenced by extreme values.

Table 2 shows the top 10 countries, from Guinea to South Africa, with the lowest current and capital account liberalization, and the last 10 countries, from Congo, Dem. Rep. to Zambia, with the highest current and capital account liberalization among the sample countries in this study. The minimum and maximum values for current and capital account liberalization are registered for Guinea (-1.786) and Zambia (2.333), respectively. Higher values of the index mean that more financial liberalization. More than 75% of the countries in the sample were with strong current and capital account restrictions over the period 2000-2020. The last five sub-Saharan African countries with relatively better financial liberalization are Kenya, Liberia, Uganda, Gambia, and Zambia.

When the theoretical relationships between the independent and dependent variables are perfect or exact, it is difficult to compute reliable estimates of coefficients. The technique of variance inflation factor is used to help distinguish the problem of multicolinearity for explanatory variables. If the value of the variable's variance inflation factor (VIF) exceeds 10, there is a multicolinearity problem.

Table 2: Summary of 10 countries with the lowest and highest capital account coefficients

10 Countries with Lowest Cap.Lib.	Cap.Lib. (Chin-Ito)	10 countries with Highest Cap.Lib.	Cap.Lib.(Chin-Ito)
Guinea	-1.786	Congo, Dem. Rep.	-1.218
Angola	-1.686	Guinea-Bissau	-1.206
Sierra Leone	-1.562	Congo, Rep.	-1.194
Ghana	-1.519	Zimbabwe	-.960
Burkina Faso	-1.218	Madagascar	-.503
Tanzania	-1.218	Kenya	1.055
Senegal	-1.218	Liberia	2.046
Mali	-1.218	Uganda	2.321
Mozambique	-1.218	Gambia, The	2.333
South Africa	-1.218	Zambia	2.333

However, though it is below 10, VIF values of 7 and 6 are sufficient to worry about, a near to perfect correlation is seen between FDI (inward and outward, %GDP) and Foreign direct investment, net inflows (% of GDP). Foreign direct investment: Inflow and outflow flows and stocks are deleted from the data set because it has higher colinearity with foreign direct investment and net inflows (% of GDP), with VIF and correlation values of 7.06 and 0.88, respectively. Overall, VIF results show that there is no perfect colinearity among and between the explanatory variables because the VIF value is 2.49 (Table 3).

3.4.1: Assumptions of the Arellano–Bover/Blundell–Bond linear dynamic panel-data estimation

Model: $Yit = \beta 0 + \beta 1 x_{it} - 1 + \beta 2\, y_{it} - 1 + \text{□}_i + \mu_{it}$

First differencing:

$$Yit - y_{it} - 1 = \beta 0 + \beta 1\,(x_{it} - 1 - x_{it} - 2) + \beta 2\,(y_{it} - 1 - y_{it} - 2) + (\mu_{it} - \mu_i - 1)$$

Table 3: Multicolinearity issues

Variables	VIF	1/VIF
FDI flows (inward and outward, %GDP)	7.06	0.141
Foreign direct investment, net inflows (% of GDP)	6.09	0.164
Final consumption expenditure (% of GDP)	4.44	0.225
current account balance as % of GDP	3.66	0.272
Gross capital formation (% of GDP)	3.02	0.330
Trade openness, % GDP	2.48	0.403
GDP per capita, PPP (constant 2017 international $)	1.98	0.504
general government debt gross (% GDP)	1.76	0.568
FDI, net outflows (% of GDP)	1.74	0.576
Bureaucratic quality	1.54	0.649
Unstandardized capital control	1.52	0.658
Population growth (annual %)	1.43	0.698
Domestic credit to private sector by banks (% of GDP)	1.21	0.823
Law and order	1.14	0.876
Consumer price index, % GDP	1.08	0.927
Corruption	1.06	0.945
Mean VIF	2.49	

Assumptions are to make sure that sequential Exogeneity (variable uncorrelated with all future errors), no autocorrelated errors, Hansen-Sargan test for exclusion, A-B test for autocorrelation, ad If exclusion is not satisfied, more distant lags can be applied. All these tests are presented in table 4 bellow.

System gmm: Model: $Y_{it} = \beta 0 + \beta 1 x_{it} - 1 + \beta 2\, y_{it} - 1 + \square_i + \mu_{it}$

Two simultaneous equations:

Difference: $Y_{it} - y_{it} - 1 = \beta 0 + \beta 1\,(x_{it} - 1 - x_{it} - 2) + \beta 2\,(y_{it} - 1 - y_{it} - 2) + (\mu_{it} - \mu_i - 1)$

Level: $Y_{it} = \beta 0 + \beta 1 x_{it} - 1 + \beta 2\, y_{it} - 1 + \square_i + \mu_{it}$

Endogeneity exist between $\beta 2\, y_{it} - 1\ and\ \square_i$ in the level equation.

Instrumental variables: $y_{it} - 1 - y_{it} - 2$ and earlier difference will do.

Relevance: autoregressive paths and by definition difference and levels are correlated

Exclusion: sequential Exogeneity assumption, differencing removes$\square_i$. However, problems with A-B approach are that small sample biased that inefficiency and uncertainty about the choice of instruments. One disadvantage of both difference and system gmm is that they are complicated and so can easily generate invalid estimates.

3.4.2: Difference or system gmm

In order to decide between difference and system Gmm estimation techniques, it is advisable to compare coefficients of the lag dependent variable estimated from OLS, FE and one step difference Gmm models. Ordinary least square (OLS) coefficient of the lag dependent variable = .32 = upper-bound estimate. Fixed effect (FE) coefficient of the lag dependent variable = .23 = lower-bound estimate. One step diff.gmm coefficient of the lag dependent variable = 0.27. Thus, if the coefficient of the lag dependent variables estimated from the one step difference gmm (0.27) falls between the coefficients estimated from OLS (0.32) and FE (0.23), run the difference gmm instead of system gmm. Above and beyond, the one-step GMM estimator remains consistent under hetroskedasticity but it is no longer efficient. The efficient two-step estimator uses optimal weighting matrix with the WindMeijer (2005) finite-sample correction standard errors, estimation results are show in table 4 bellow.

Do not take comfort in a Hansen test p-value below 0.1 and above 0.25, as these two values indicate that your hypothesis might be on the right track. The Sargan-Hansen tests fail to reject the null hypothesis that over-identified restrictions are valid with p-values greater than 0.05. The Arellano-Bond test for autocorrelation of the first-differenced residuals rejects and fails to reject the null hypothesis of no autocorrelation of orders 1 and 2, respectively. Both tests fit the assumptions of the GMM estimation technique. According to Roodman (2009), the Hansen test is weak; it is faithful to the regression of the first step. The two-step estimator is efficient and robust to different patterns of

hetroskedasticity and cross correlation. Hence, the p-values for Hansen's test were reported from the second step. The p-values of the Arellano-Bond test for second-order autocorrelation are greater than 10% indicating the absence of autocorrelation. The Hansen test p-values are greater than 0.10 in each case which indicates that the instruments are correctly specified. In each case of GMM regression, the p-values associated with the Arellano-Bond test of second-order autocorrelation are greater than 0.10, indicating the absence of autocorrelation.

Trade liberalization is widely supported in the literature, but the impact of capital account liberalization on economic growth is diverse and lacks theoretical foundations and empirical measures. Different empirical results have been found for short-term and long-term capital flows, while fluctuating short-term flows hinder economic growth, and long-term flows provide substantial growth-promoting benefits. Table 4 shows the results of the two-step difference estimation Gmm. The coefficient of the chin-Ito index (a measure of capital and current account openings) is significant in the short and long term, while the coefficient for the de facto measure of capital account liberalization (FDI inward flows and stock (%GDP)) is found insignificant. In relative terms, the coefficients are highly statistically significant in the long-run (at 1% level) than in the short-run (at 5% level).

Total capital formation (investment), foreign direct investment inflows, population growth, and total general government debt) enter the regression as insignificant variables. Important and worth mentioning control variable vectors include the logarithm of the initial per capita GDP that controls the convergence effect, the domestic credit of banks to the private sector used to measure the degree of banking development, and the degree of trade openness (measure the degree to which the domestic economy is affected by external shocks), inflation (CPI %), final consumption expenditure (final private and government consumption), current account balance (to obtain funds around a country's industries, capital markets, services, and funds that enter the country from other governments or through remittances) and institutional quality (Corruption, law and order, and bureaucracy). Except for the initial GDP per capita (significant at 10% level estimated with de jure measure only), the short and long-run coefficients for these variables are found statistically significant.

The negative and significant coefficient on the initial income indicates conditional convergence (ur Rehman and Hayat, 2017; Versteeg, 2011). Domestic credit provided by the banking sector, as a percentage of the country's GDP, is the total amount of credit given by banks to all sectors of the economy, minus the amount of credit given to the central government. Because loans to the central government are measured in net terms (Table 4), the value of the variable can be negative. The negative sign of FDI inward flows can be negative due to the possibility of disinvestment.

Table 4: Two step difference Gmm results

Dependent variable: Real per capita GDP growth (%)			
Capital liberalization measure:	**Chinn-Ito and inflows**	**Chin-Ito**	**Long run coefficients**
Lag Per capita GDP growth	0.208	0.207	
	(0.235)	(0.192)	
Chinn-Ito index	3.707**	3.695**	4.657***
	(1.472)	(1.459)	(1.808)
Domestic credit to private sector by banks (% of GDP)	-0.225*	-0.226*	-.284*
	(0.121)	(0.121)	(.163)
Log initial GDP per capital	-7.509	-7.539*	-9.502
	(5.153)	(4.523)	(6.159)
Investment (%)	0.017	0.016	
	(0.088)	(0.087)	
Trade openness (%)	0.048***	0.048***	.0603**
	(0.018)	(0.017)	(.028)
Inflation (CPI %)	-0.558**	-0.558**	-.702**
	(0.227)	(0.226)	(.346)
Final consumption expenditure (% of GDP)	-0.113*	-0.113**	-.141**
	(0.060)	(0.057)	(.069)
FDI Inward flows and stock (%GDP)	-0.002		
	(0.067)		
Population growth (annual %)	-1.870	-1.874	
	(1.484)	(1.363)	
general government debt gross (% GDP)	-0.001	-0.001	
	(0.011)	(0.011)	
current account balance as % of GDP	0.127**	0.127**	.160*
	(0.063)	(0.063)	(.092)
Institutional quality	4.192**	4.201**	5.295**
	(1.909)	(1.853)	(2.686)
Year	0.087	0.092	
	(0.431)	(0.372)	
Observations	66	66	
AR(1)	0.009	0.006	
AR(2)	0.191	0.209	
Hansen	0.168	0.384	
Sargan	0.165	0.377	
Number of Instruments	15	15	

Robust standard errors are in parentheses. Long-run coefficients for insignificant short run coefficients are not presented in the table. AR(1) and AR(2) tests are the Arellano–Bond test for autocorrelation. Hansen test is the test of over identifying restrictions.
*Significant at 10%, **significant at 5% and ***significant at 1%.

Trade openness measures the extent to which the domestic economy is subject to external shocks. This variable enters in the empirical investigation highly significant both in the short and long-run. If an economy relies on export demand and imported inputs/products, it may be subject to the potential spread

of interference from abroad. If contracts with other parts of the world are institutionalized through appropriate policy adjustments, including appropriate government intervention, to make the domestic economy more sensitive to changes, then trade opening will have a positive effect. At the same time, gross capital formation (investment) and institutional quality (law and order, bureaucratic quality, corruption) shows positive signs. This means that better institutions and better investment in physical capital will lead to a more balanced growth path (Versteeg, 2011).

The estimation results of the two-step difference GMM show that the legal measures of capital and current account liberalization have a positive and significant impact, both in the short-term and long-term, on economic growth of highly indebted countries in sub-Saharan Africa. This result is in line with (Rancière and Tornell, 2016 ; Quinn and Toyoda, 2008). Using de jure measures of capital and current account liberalization for 94 nations and applying pooled time series, cross-sectional OLS and system gmm estimators, (Quinn and Toyoda, 2008) found that capital account had positive and significant effect on growth for both developed and emerging market nations. Most of the recent papers have essentially attempted to verify the robustness of the results using different country samples, openness measures, time periods and empirical methodologies. Using Arellano-Bond dynamic panel data estimator and de jure measures of financial openness Fratzscher and Bussiere (2004) investigated the effect of financial account liberalization on growth for 45 industrialised and emerging market economies and finds that openness influences growth significantly in the short run and argues that the acceleration of growth immediately after liberalization is often driven by an investment boom and a surge in portfolio and debt inflows.

This result seems to be in line with the theoretical prediction that capital account liberalization reforms will benefit economic growth in the short term rather than in the long term. In other words, capital account limits do not impair economic growth in the early stages of reform, but they can cause financial distortions and risks over time (Fratzscher and Bussiere, 2004). Capital account management in SSA today limits the ability of domestic businesses and residents to access international capital markets and maximize return on investment, including restrictions on cross-border borrowing and foreign direct investment. This result provides evidence of changing impacts on the growth of individual oppressive financial instruments.

Different viewpoints in the literature on whether capital account liberalization is a sensible policy choice for developing nations can be used to support this conclusion (Henry, 2007). The first point of view, distribution efficiency, is largely based on the predictions of Solow's typical neoclassical growth model (1956). Capital account liberalization has fostered more effective international resource allocation and had many favorable impacts, according to the neoclassical model. Resources flow from resource-rich developed countries with low capital returns to resource-poor emerging countries with high capital returns. The transfer of resources to developing countries lowers their capital costs, resulting in a temporary spike in investment and growth that raises their standard of living permanently. Over the last quarter-century, governments in SSA have implemented some kind of capital account

liberalization, partly motivated by the potential gains from adopting allocation efficiency considerations into their economic policy.

On the other hand, allocative efficiency is regarded as a ridiculous attempt to transfer the effects of profits from international commodities trade to international asset trading. Only if the economy is free of other distortions, such as barriers to the free flow of money, can allocation efficiency be predicted. Since many other distortions exist in Sub-Saharan Africa, the neoclassical model's theoretical predictions are remarkably close to the reality of capital account policies. As a result, for the sampled deeply indebted Sub-Saharan African countries, the empirical finding of this article confirms the first premise.

3.4.3: Robustness checks

Estimation results from both difference and system gmm assure that coefficients of the de jure measure of capital account liberalization are efficient and consistent in affecting growth. The difference gmm (column 1 of table 5) implements the Arellano and Bond estimator, which uses moment conditions in which lags of the dependent variable and first differences of the exogenous variables are instruments for the first-differenced equation.

Table 5: Summary of results from system and difference Gmm

Dependent variable: per capita real GDP growth **Independent and control variables:**	**(model1)**	**(model2)**	**(model3)**
Lag Per capita GDP growth	0.242*	0.241*	0.191*
	(0.131)	(0.137)	(0.106)
Chin-Ito index	3.780***	3.788***	3.682***
	(0.691)	(0.704)	(1.045)
Domestic credit to private sector by banks (% of GDP)	-0.058	-0.057	-0.053
	(0.084)	(0.086)	(0.064)
Log initial GDP per capital	-5.822*	-5.765	-0.330
	(3.217)	(4.515)	(0.711)
Investment (% GDP)	0.045	0.045	0.028
	(0.056)	(0.057)	(0.045)
Trade openness (%GDP)	0.032**	0.032**	0.036***
	(0.014)	(0.014)	(0.012)
Inflation (CPI)	-0.018	-0.020	-0.080**
	(0.048)	(0.111)	(0.036)
Final gov.t consumption	0.030	0.029	-0.019
	(0.038)	(0.041)	(0.030)
FDI Inward flows and stock (%GDP)	-0.053	-0.053	-0.047
	(0.040)	(0.051)	(0.035)
Population growth (annual %)	1.246	1.238	0.873
	(0.780)	(0.920)	(0.661)
general government debt gross (% GDP)	-0.017*	-0.017*	-0.013*
	(0.009)	(0.010)	(0.008)
current account balance as % of GDP	0.043	0.043	0.029
	(0.069)	(0.075)	(0.053)
Institutional quality	-0.370	-0.349	-0.339
	(1.569)	(1.741)	(1.274)

Year	-0.499	-0.496	-0.260
	(0.321)	(0.362)	(0.265)
Observations	66	66	89
Number of C_id	23	23	23
AR(1)	0.046	0.019	0.048
AR(2)	0.421	0.33	0.726
Sargan	0.18	0.11	0.401
Number of Instruments	19	18	22

Robust standard errors in parentheses, AR (1) and AR (2) tests are the Arellano–Bond test for autocorrelation. Hansen test is the test of over identifying restrictions.
*Significant at 10%, **significant at 5% and ***significant at 1%.

The system Gmm (column 3 of table 5) implements the Arellano and Bover/Blundell and Bond system estimator, which uses moment conditions and moment conditions in which lagged first differences of the dependent variable are instruments for the level equation. Besides a more flexible alternative that can fit models with low-order moving-average correlations in the idiosyncratic errors and predetermined variables has also been estimated (column 2 of table 5) and assures the positive and significant effect of capital account liberalization on economic growth in those sample economies. Post estimation test for serial correlation in the first-differenced residuals and test for the validity of the over identifying restrictions are presented in the table too.

4. Conclusion and recommendations

This paper investigates the relationship between capital and current account liberalization, and growth using the two category measures, de jure and de facto, for a large sample of heavily indebted Sub-Saharan African countries than in most previous studies. The estimation results of the two-step difference GMM show that the de jure of capital and current account liberalization have a positive and significant impact, both in the short-term and long-term, on economic growth of highly indebted countries in sub-Saharan Africa. No significance evidence for the de facto measures. Because central banks are not independent, capital restrictions are more likely to be imposed in poor Sub-Saharan African countries where monetary policy is under government control and with poor taxation, and where the government has a large share and the economy is more closed. Capital regulation appears to have a strong financial impact through its impact on the use of Seigniorage as a source of income and its impact on the repayment of domestic government debt.

Capital account opening is consistent with the larger financial market reform program and should be carried out in an orderly manner. The capital market is generally regarded as the last market that should be opened. Only by first eliminating fiscal imbalances, establishing an effective tax system, opening the trade market, controlling corruption, and establishing sound institutions, can the capital market effectively allocate capital. Opening a capital account is only beneficial if local conditions are good enough to initiate spillovers effects. It can be argued that these conditions are more likely to exist

in developed versus developing countries, which explains the larger effects of capital controls in the sub-region of Africa. Thus, priorities for future financial liberalization in the economies of Sab-Saharan Africa should be: improving lending between government and non-government sectors, abolishing frequent adjustments to reserve requirements, introducing market-based interest rates and liberalizing the capital account.

References

Abebe, A. (1990). Financial repression and its impact on financial development and economic growth in the African least developed countries. *Savings and Development, 14*(1), 55-87. http://www.jstor.org/stable/25830212. (Accessed on September 1, 2021).

Andrés Fernandez, Michael W. Klein, Alessandro Rebecca, Martin Schindler, and Martín Uribe. (2015). Capital Control Measures: A New Dataset. IMF Working Paper (WP/15/80), Institute for Capacity Development.

Bicaba, Z., Brixiova, Z., and Ncube, M. (2014). Capital Account Policies, IMF Programs and Growth in Developing Regions. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2530702

Butkiewicz, J. L., and Yanikkaya, H. (2008). Capital account openness, international trade, and economic growth : A cross-country empirical investigation. *Emerging Markets Finance and Trade*, *44*(2), 15–38. https://doi.org/10.2753/REE1540-496X440202

Cameron, R. (1967). *Banking in the early stages of industrialization: A study in comparative economic history*. New York, NY: Oxford University Press.

Chari, V., Dovis, A., and Patrick J. Kehoe (2018). On the Optimality of Financial Repression. Federal Reserve Bank of Minneapolis, Research Department Staff Report 1000

Chauffour, J.P., and Gobezie, M. A. (2019) .Exiting Financial Repression: The Case of Ethiopia. Macroeconomics, Trade and Investment Global Practice. Policy Research Working Paper 9082.

Espinosa-Vega, M.A.; and B.D. Smith. 2001. "Socially Excessive Bankruptcy Costs and the Benefits of Interest Rate Ceilings on Loans." *FRB Atlanta Working Paper* 2001-27.

Goldsmith, R. W. (1969). *Financial structure and development*. New Haven, CT: Yale University Press.

Graham. (1996). Financial Repression, Interest Rates, and capital Allocation in Sub-Saharan Africa: UNU World Institute for Development Economics Research (UNU/WIDER). Katajanokanlaituri 6 B 00160, Helsinki, Finland.

Haslag J. H. and Koo J. (n.d). Financial repression, financial development and Economic growth. Research department working paper 9902. Federal Reserve Bank of Dallas.

Hellmann, T., Murdock, K. and Stieglitz, J. (1997). 'Financial restraint: toward a new paradigm', in Aoki M., Kim H.-K. And Okuno-Fujuwara M. (eds), *The Role of Government in East Asian Economic Development: Comparative Institutional Analysis*, Oxford: Clarendon Press, pp. 163–207.

Hellmann, T., Murdock, K. and Stieglitz, J. (2000). 'Liberalisation, moral hazard in banking and prudential regulation: are capital controls enough?' *American Economic Review*, 90:147–165.

Honig, A. (2008). Addressing causality in the effect of capital account liberalization on growth. *Journal of Macroeconomics*, *30*(4), 1602–1616. https://doi.org/10.1016/j.jmacro.2008.03.003

Johansson, A. C. (2012). Financial Repression and China's Economic Imbalances. *Rebalancing and Sustaining Growth in China*, *Hu 2011*, 45–64. https://doi.org/10.22459/rsgc.07.2012.03

Jafarov, E., Maino, R., and Pani, M. (2020). Financial Repression is Knocking at the Door, Again. Should We Be Concerned? IMF working paper, WP/19/211

Johansson, A. C., and Wang, X. (2011). *Financial Repression and Structural Imbalances Stockholm School of Economics*. *December*.

Johansson, A. C., and Wang, X. (2014). *IMBALANCES*. *January 2012*.

McKinnon, R. I. (1973). *Money and Capital in Economic Development*, the Brookings Institution, Washington, DC.

Murat A. Yülek. (2017). why governments may opt for financial repression policies: selective credits and endogenous growth, Economic Research-Ekonomska Istraživanja, 30:1, 1390-1405, DOI: 10.1080/1331677X.2017.1355252

Pain, L. (2004). financial openness and growth: *Social Science Research*. Working paper series no. 348,

Quinn, D. P., and Toyoda, A. M. (2008). Does capital account liberalization lead to growth? In *Review of Financial Studies* (Vol. 21, Issue 3). https://doi.org/10.1093/rfs/hhn034

Reinhart, Carmen and Jacob Kierkegaard (2012). Financial repression: Then and now. VoxEU CEPR Policy Portal. https://voxeu.org/article/financial-repression-then-and-now

Robert M. Solow, A. (1956). Contribution to the Theory of Economic Growth, *the Quarterly Journal of Economics*, Volume 70, Issue 1, Pages 65–94, https://doi.org/10.2307/1884513

Roubini, N. and X. Sala-i-Martin (1992). Financial Repression and Economic Growth, Journal of Development Economics 39, p. 5 – 30.

Shaw, A. S. (1973). *Financial Deepening in Economic Development*, Oxford University Press, New York.

Stieglitz, J.E., and A. Weiss. (1981). Credit Rationing in Markets with Imperfect Information. *American Economic Review* 71 (3): 393-410.

Stieglitz, J.E. (1989). Financial Markets and Development. *Oxford Review of Economic Policy* 5 (4): 55-68.

Stieglitz, Joseph E. (1993). The Role of the State in Financial Markets, in proceedings of the World Bank Annual Conference on Development Economic, 19-52, Washington DC.

Stieglitz, J. E. (1994). The role of the state in financial markets, in Bruno M. and Pleskovic B. (eds), *Proceeding of the World Bank Annual Conference on Development Economics, 1993:*

Supplement to the World Bank Economic Review and the World Bank Research Observer, Washington, DC: World Bank, pp. 19–61

Stieglitz, J. E. (2000). 'Capital market liberalization, economic growth and instability', *World Development*, Vol. 28, pp. 1075–1086.

Tobin, J. (1965). Money and economic growth. *Econometrica, 33*, 671–684.

ur Rehman, M. A., and Hayat, M. A. (2017). Capital Account Liberalization and Economic Growth: Evidence From Emerging Market Economies. *Pakistan Economic and Social Review*, *55*(1), 271–285.

Versteeg, R. J. (2011). Capital Controls and Economic Growth: How Controls on Inflows and Outflows are Different. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1098261