How has politico-economic liberalization affected financial allocation efficiency? Fresh African evidence

Asongu, Simplice A

African Governance and Development Institute

3 January 2013

How has politico-economic liberalization affected financial allocation efficiency? Fresh African evidence

Simplice A. Asongu
African Governance and Development Institute,
P.O. Box 18 SOA/ 1365 Yaoundé, Cameroon.
E-mail: asongusimplice@yahoo.com

How has politico-economic liberalization affected financial allocation efficiency? Fresh African evidence

Abstract

This paper investigates how financial, trade, institutional and political liberalization policies have affected financial efficiency in Africa. It uses updated data to appraise second generation reforms in order to gather fresh evidence and derive more updated policy implications. The 'freedom to trade' and 'economic freedom' indices are also employed. The following findings are established. (1) Financial liberalization mitigates financial allocation efficiency, with the magnitude of the *de jure* indicator (KAOPEN) higher than that of the *de facto* measurement (FDI). (2) Exports significantly improve financial efficiency. (3) Institutional liberalization has a positive effect on the efficiency of allocation while the effect of political liberalization is not significant. (4) Freedom of trade decreases (improves) financial (banking) system efficiency. (5) Economic freedom facilitates the transformation of mobilized financial resources (deposits) into credit for economic operators. Justifications for these nexuses are provided.

JEL Classification: D6; F30; F41; F50; O55
Keywords: Liberalization policies; Capital allocation; Africa

1. Introduction

The recent financial crisis has brought renewed interest in the fierce debate about the lofty goals of liberalization policies and their implications for financial development, especially in developing countries. Some analysts are of the stance that the global financial crisis has dramatically unraveled the downsides of politico-economic globalization, as many emerging markets and developing economies (which had to grapple with surges in capital flows earlier in the last decade) are now experiencing a sharp reversal of those inflows due to the crisis (Kose et al., 2011; Asongu, 2012a). Financial mechanisms that have eased the economic downturn have resurfaced concerns about the appealing ambitions of financial globalization and their implications for growth and volatility, with particular emphasis on developing countries. The premise for this strand of fears is that, according to theoretical postulation the benefits of financial liberalization are expected to the higher in developing countries[1].

The current wind of politico-economic globalization began in the 1980s with soaring cross border financial flows among industrial economies as well as among developing countries. This was eased by the liberalization of capital controls in many of these countries since it was widely anticipated that increased cross-border flows would bring higher appeals in terms of better capital allocation and improved possibilities of international risk-sharing. Many economic policy makers have been of the view that, these benefits ought to be high for developing countries that have more volatile income growth and tend to be relatively capital-poor (Kose et al., 2006). With the surge in financial inflows, came a spade of currency and financial turmoils in the late 1980s and 1990s. This pattern set the course for many scholars to

[1] From a theoretical standpoint, financial globalization should ease the efficient international allocation of capital and promote international risk sharing. These benefits should be much higher for developing countries because they are relatively capital scarce and labor rich. Hence, access to foreign capital should help them increase investment and growth (Asongu, 2012a). Moreover, developing countries have more volatile output than advanced industrial countries which increases their potential welfare gains from international risk sharing (Kose et al., 2011).

begin advocating that developing countries which opened-up their capital accounts have been more vulnerable to crises (and consequently more adversely affected) than their industrial counterparts (Kose et al., 2011; Henry, 2007; Asongu, 2012a). These developments have ignited a fierce and heated debate among academics and practitioners of liberalization policies. While the debate over the positive gains from trade liberalization has tilted towards a consensus (Kose et al., 2006), that on other liberalization policies (especially capital account openness) has intensified and become more polarized (Asongu, 2012a).

In the 1980s and 1990s, most African countries embarked on a chain of structural and policy adjustments at financial, economic and political levels with the goal of given impetus to economic growth as well as improving overall economic and financial efficiency (Janine & Elbadawi, 1992). In the first generational reforms, adopted policies included: reducing direct government intervention in bank credit decisions, abolishing explicit control on the pricing and allocation of credit, relaxing of control on international capital movements and, allowing of interests rates to be market determined. Second generational reforms targeted structural and institutional constraints, notably: improvement of the legal, regulatory, supervisory and institutional environments, restoring of bank soundness and, rehabilitation of financial infrastructure (Batuo et al., 2010). Unfortunately, despite over two decades of financial reforms, African economies have not made significant strides in tackling the substantially documented excess liquidity issues (Saxegaard, 2006; Founda, 2009; Asongu, 2012b). Accordingly, the weight of this empirical evidence on surplus liquidity adequately justifies the temptation of questioning the financial allocation efficiency gains of the reforms. While a substantial bulk of the literature has examined the impact of financial reforms on financial development (Cho et al., 1986; Arestis et al., 2002; Batuo & Kupukile, 2010), but for Asongu (2012b), the financial efficiency dimension has not been tackled from a fundamental allocation efficiency standpoint (Ataullah et al., 2004; Saxegaard, 2006; Al-Obaidan, 2008;

Kiyato, 2009; Kablan, 2010). Perhaps the main hurdle in investigating the linkage between liberalization of financial markets and capital allocation efficiency lies in the fact that, the efficiency of capital allocation is not directly observable (Kukenova, 2011, p.1).

In light of the above, the present study steers clear of past works from four standpoints: the conception and definition of efficiency, the focus on Africa, employment of a plethora of liberalization policy variables and, the use of updated data. Firstly, contrary to authors that have conceived financial allocation efficiency from three mainstream perspectives (the efficiency of decision making units through Data Envelopment Analysis (DEA)[2], Overall Economic Efficiency (OEE) with respect to the product of technical and scale efficiencies[3] or cost and profitability orientated views)[4], the concept adopted in the current work reflects how financial intermediaries (banks) fulfill their fundamental role of transforming mobilized deposits into credit for economic operators. In so doing, the issue of surplus liquidity is rightly calibrated. Secondly, we are focusing on a continent that is suffering from the paradox of 'excess bank liquidity and dire investment needs'. Thirdly, by employing a plethora of liberalization policies (financial, trade, institutional, political ...etc.), we present a broad and exhaustive picture of the nexuses between liberalization policies and financial efficiency. Lastly, the use of much recent data provides findings with more focused and updated policy implications.

The rest of the paper is organized as follows. Section 2 briefly provides an insight into the debate. Measurement issues and estimation strategy are discussed and outlined

[2] Refer inter alia to Ataullah et al. (2004) who have used DEA to investigate the technical and scale efficiencies of financial intermediaries in India and Pakistan.

[3] For example see Al-Obaidan (2008) who has used a composite indicator for the efficiency of the banking industry in the Gulf region to show (with deterministic and stochastic analyses) that openness enhances technical efficiency.

[4] Refer to the African financial efficiency literature (Kiyato, 2009; Kablan, 2010). From a broader perspective, four main indicators of this stance on efficiency are discussed in Demirgüç-Kunt & Beck (2009). They include: the ratio of bank deposits (which measures the extent to which savings can fund private credit), the net interest margin (which is the accounting value of a bank's net interest revenues as a share of its total assets), overhead cost (or the accounting value of the bank's overhead cost as a share of its total assets) and, cost/income ratio (which assesses overhead costs relative to revenues). While the last three are profitability oriented, our conception of efficiency is captured by the first (Asongu, 2012b).

respectively in Section 3. Empirical analysis and corresponding discussion are covered in Section 4. We conclude with Section 5.

2. Brief insights into the debate on financial allocation efficiency

The decision on whether to embrace liberalization policies as means of facilitating the efficient allocation of financial resources and reaping the benefits of international risk sharing is not without controversy. From a broad standpoint, there are two different narratives on the wisdom of liberalization as a policy choice for developing countries in their attempt to improve allocation efficiency.

The first strand that supports the benefits of 'allocation efficiency' substantially relies on the seminal work of Solow (1956) on the predictions of standard neoclassical growth. In this neoclassical model, liberalization policies (especially capital account openness) facilitate a more efficient allocation of resources and produce all kinds of appealing effects. Consistent with this strand, resources flow from capital abundant developed countries (where the return for capital is low) to capital-scarce developing countries (where the return of capital is high). The trickle of resources to developing countries reduces their cost of capital, triggering a temporal improvement in investment and growth that raise living standards permanently (Obstfeld, 1998; Fischer, 1998; Rogoff, 1999; Summers, 2000; Asongu, 2012a). Partly motivated by the potential gains from incorporating 'allocating efficiency' arguments into their economic policies, many developing countries from Santiago to Seoul have implemented some form of liberalization during the past quarter century (Asongu, 2012a).

In the second strand, 'allocation efficiency' is conceived, viewed and depicted as a fanciful attempt to extend to the results of the gains from international trade in goods to international trade in assets. The predictions of 'allocation efficiency' have meaning (if any), only and only if the economy suffers from no distortions other than the free flow of capital. Therefore, owing to the distortions witnessed in developing countries, the antithesis argues

that the theoretical predictions of the neoclassical model bear little resemblance to the reality of liberalization policies. For example, from a financial liberalization standpoint, provocative titles like, "Who Needs Capital Account Convertibility? (before the turn of the century) and "Why did financial globalization disappoint?" (a decade after) by Rodrik (1998) and Rodrik & Subramanian (2009) respectively, best characterize this antithesis. There appears to be no apparent correlation between the openness of countries' capital accounts and the amount they invest or the rate at which they grow. According to this stance, the benefits of open capital account (if at all they exist) are not really apparent, but the costs are manifestly evident through recurrent emerging-market crises (Rodrik, 1998). At the dawn of the sub-prime financial crisis, the claims that recent financial engineering has generated large gains sounded less plausible and it is becoming increasingly clear that domestic financial markets will be more scrutinized (Sodrik & Subramanian, 2009). With regard to this narrative, even leaving financial crises aside, on the international front it is increasingly crystal-clear that the benefits of financial liberalization have been hard to find[5]. This narrative further argues that; financial globalization has not generated increased investment or higher growth in developing countries. Accordingly, economies that have progressed most rapidly have been those that have relied less on capital inflows. Hence, globalization policies have felt short of smoothing consumption and/or reducing volatility. According to this strand, the evidence based on the phenomenon today is indirect, speculative and ultimately unpersuasive (Asongu, 2012a). This antithesis has concluded with the recommendation that, it is time for a new paradigm on liberalization policies that recognizes that more is not necessarily better.

[5] This stance is still object of a heated debate. Whereas, Leung (2003) has concluded that, increase in external debts flows in least developed countries is worsening business cycles, Kholdy & Sohrabian (2008) have established that, foreign investment may jump-start financial development in developing countries; especially in countries which experience a higher level of corruption in the forms of excessive patronage, job reservations, nepotism, "favor-for-favors", secret party funding and, suspiciously close links between politics and business. From an industrial standpoint, in some developing countries, liberalization has not been found to exert a significant impact on efficiency and productivity (Mulwa et al., 2009).

3. Data and Methodology

3.1 Data

We assess a sample of 28 African countries with annual data from African Development Indicators (ADI) of the World Bank (WB), Chinn & Ito (2002), Gwartney et al. (2011) and the Financial Development and Structure Database (FDSD) for the period 1996 to 2010. Limitations to the number of countries and periodicity of analysis have a twofold justification: (1) constraints in data availability on institutional quality and; (2) the motivation of capturing the effects of second generational financial reforms (that targeted institutional and structural constraints) for more updated and focused policy implications.

Consistent with Asongu (2012b), the dependent variable measuring financial allocation efficiency seeks to capture how mobilized deposits are transformed into credit for economic operators; hence, it addresses the concern of excess liquidity. In quest for robustness, we employ two indicators: banking-system-efficiency and financial-system-efficiency (respectively 'bank credit on bank deposits: *Bcbd'* and 'financial system credit on financial system deposits: *Fcfd'*).

In this study, we distinguish among five types of liberalization policies: financial, trade, institutional, political and other liberalizations. (1) Financial liberalization is measured by: *de jure* capital account openness (KAPOPEN), developed by Chinn & Ito (2002); and *de facto* capital account openness (foreign direct investment: FDI). KAOPEN is the first principal component of four binary variables in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) and it takes higher values for more open financial regimes. We are poised to add subtlety to the analysis by complementing KAOPEN with FDI because: the former may not capture the actual ebb and flow of cross border capital and its impact (Aizenman et al., 2009); the private sector often circumvents capital account restrictions, nullifying the expected effect of regulatory capital controls

(Edwards, 1999) and; more recently, China's *de facto* openness, despite its *de jure* closeness has been subject to discussion in research circles (Prasad & Wei, 2007; Aizenman & Glick, 2009; Shah & Patnaik, 2009). (2) Trade liberalization is measured by trade openness and exports. While the former is the sum of imports and exports of commodities as a % of GDP, the latter only consists of commodity exports on GDP. (3) Institutional liberalization is the first principal component of six good governance indicators: corruption-control, government effectiveness, rule of law, regulation quality, political stability and voice & accountability. (4) Political liberalization is appreciated by the Democracy index. (5) Other liberalization measures include: 'freedom to trade' and economic freedom (Gwartney et al., 2011). 'Freedom to trade internationally' is an index representing: taxes on international trade (international trade tax revenues as % of trade sector; mean tariff rate and standard deviation of tariff rates); regulatory trade barriers (non tariff trade barriers and compliance cost of exporting and importing); size of trade sector relative to expected; black market exchange rates and international market capital controls ('foreign ownership /investment' restrictions and capital controls). Economic freedom broadly represents: freedom to trade internationally; legal structure and security of property rights; access to sound money; size of government (expenditures, taxes and enterprises) and; regulation of credit, labor and business.

Control variables include: inflation, government expenditure, economic prosperity (GDP growth), human development, foreign aid and population growth. Consistent with recent African finance literature, we expect inflation to decrease financial efficiency (Asongu, 2011a; Asongu, 2012c) while economic prosperity and population growth should improve it (Asongu, 2011a). Human development should also improve efficiency whereas the effects of government expenditure and development assistance are contingent on the quality of institutions. Accordingly, government expenditure and development assistance destined for

the improvement of the financial sector that is not tainted with corrupt practices will improve efficiency.

Details about the summary statistics (with presentation of countries), correlation analysis (showing the nexuses among key variables used in the paper), and variable definitions are presented in the appendices. The 'summary statistics' (Appendix 1) of the variables used in the panel regressions reveals that, there is quite some variation in the data utilized so that one should be confident that reasonable estimated linkages should emerge. The object of the correlation matrix (Appendix 3) is to mitigate issues resulting from overparametization and multicolinearity. Based on a preliminary assessment of the correlation coefficients, there do not appear to be any disturbing issues in terms of the relationships to be estimated. Appendix 2 reveals definitions and corresponding sources of the variables.

3.2 Methodology

3.2.1 Principal Component Analysis (PCA)

Due to the high correlation among various good governance indicators, one might criticize the redundancy of some information. Hence, we use principal component analysis (PCA) to reduce the dimensions of government-effectiveness, rule of law, corruption-control, regulation quality, voice & accountability and political stability. PCA is a widely used statistical technique applied to reduce a larger set of correlated variables into a smaller set of uncorrelated variables called principal components (PC) that account for most of the information in the original data set. In the selection of the PCs, the criteria applied to determine how many common factors to retain are taken from Kaiser (1974) and Jolliffe (2002). Therefore, only PCs with an eigenvalue greater than one are retained. As shown in Table 1, the first PC is appropriate since it has an eigenvalue of 4.705 and represents more than 78% of information in the institutional indicators combined. The first PC will subsequently represent the institutional liberalization index (Instidex).

Table 1: Principal Component Analysis (PCA) for Institutional Index (Instidex)

Principal Components	Component Matrix(Loadings)						Proportion	Cumulative Proportion	Eigen Value
	V & A	R.L	R.Q	G.E	PS	CC			
First P.C	0.369	0.435	0.412	0.425	0.388	0.416	0.784	0.784	4.705
Second P.C	-0.690	0.103	0.258	0.436	-0.453	0.227	0.083	0.867	0.499
Third P.C	-0.591	0.187	-0.299	-0.051	0.724	0.002	0.054	0.922	0.327

P.C: Principal Component. V& A: Voice & Accountability. R.L: Rule of Law. R.Q: Regulation Quality. G.E: Government Effectiveness. PS: Political Stability. CC: Control of Corruption.

3.2.2 Estimation technique

When compared with cross-country analysis, estimation with dynamic panel data has some important upsides and one downside (Demirgüç-Kunt & Levine, 2008). On the positive side: (1) it makes use of both time-series and the cross sectional variations in the data; (2) in cross-country regressions, the unobserved country-specific effect is part of the error term, so that correlations between the error term and the exogenous variables results in biased estimated coefficients. More so, in cross-country regressions, if the lagged dependent variable is included among the explanatory variables, the country-specific effect is certainly correlated with the regressors. A measure of controlling for the presence of the unobserved country-specific effect is to first-difference the regression equation to eliminate the country-specific effect and, then make use of instrumental variables to control for endogeneity. Addressing the endogeneity concern is the second positive side of dynamic panel data analysis. Uncontrolled endogeneity can substantially bias estimates and, lead to misleading inferences and unhealthy policy recommendations. Dynamic panel data analysis addresses this endogeneity issue by using lagged values of exogenous variables as instruments.

The principal downside linked with dynamic panel data analysis is using data-averages over shorter time spans. Consequently, the estimated results reveal short-run impacts and not long-term effects, which should be kept in mind when interpreting and discussing results. The redeeming feature however is that, the use of average data mitigates short-run disturbances that may loom substantially large.

The dynamic panel regression model is expressed as follows:

$$FE_{i,t} = \sigma_0 + \sigma_1 FE_{i,t-1} + \sigma_2 F_{i,t} + \sigma_3 T_{i,t} + \sigma_4 I_{i,t} + \sigma_5 P_{i,t} + \sigma_6 O_{i,t} + \sigma_y W_{i,t} + \eta_i + \xi_t + \varepsilon_{i,t} \quad (1)$$

Where 't' stands for the period and 'i' represents a country. FE is financial efficiency; F, financial liberalization (KAOPEN and FDI); T, trade liberalization (trade and exports); I, institutional liberalization (Instidex); P, political liberalization (democracy); O, other liberalizations (economic freedom and freedom to trade). $W_{i,t}$ is a vector of control variables (inflation, government expenditure, human development, economic prosperity, foreign aid and population growth)[6] with $6 < y < 13$, η_i is a country-specific effect, ξ_t is a time-specific constant and $\varepsilon_{i,t}$ an error term.

Estimates will be unbiased if and only if, the explaining variables above are strictly exogenous. Unfortunately, this is not the case in the real world because: (1) while they have a substantial incidence on financial efficiency, the reverse effect cannot be ruled-out because the efficiency in allocation of financial resource in an economy also has some bearing on the plethora of regressors; (2) the regressors could be correlated with the error term ($\varepsilon_{i,t}$) and; (3) country- and time-specific effects could also be correlated with other variables in the model, which is often the case with lagged dependent variables included in the equations. Hence, an issue of endogeneity emerges as a result of endogenous regressors. A way of dealing with the problem of the correlation between the individual specific-effect and the lagged dependent variables involves eliminating the individual effect by first differencing. Therefore Eq. (1) becomes:

$$FE_{i,t} - FE_{i,t-1} = \sigma_1 (FE_{i,t-1} - FE_{i,t-2}) + \sigma_2 (F_{i,t} - F_{i,t-1}) + \sigma_3 (T_{i,t} - T_{i,t-1}) + \sigma_4 (I_{i,t} - I_{i,t-1})$$
$$+ \sigma_5 (P_{i,t} - P_{i,t-1}) + \sigma_6 (O_{i,t} - O_{i,t-1}) + \sigma_y (W_{i,t} - W_{i,t-1}) + (\xi_t - \xi_{t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad (2)$$

[6] We have already discussed the expected signs of control variables in the Data section.

However Eq. (2) presents another concern; estimation by Ordinary Least Squares (OLS) is still bias because there remains a correlation between the lagged endogenous independent variable and the error term. In order to tackle this new concern, we estimate the regression in differences jointly with the regression in levels using the Generalized Method of Moments (GMM) estimation. The technique uses lagged levels of the regressors as instruments in the difference equation and lagged differences of the regressors as instruments in the level equation, hence, exploiting all the orthogonality conditions between the lagged dependent variables and the error term. Between the difference GMM estimator (Arellano & Bond, 1991) and the system GMM estimator (Arellano & Bover, 1995; Blundell & Bond, 1998), we go for the latter with respect to Bond et al. (2001, 3-4)[7].

In specifying the dynamic panel system estimation, we opt for the *two-step* GMM because it corrects the residuals for heteroscedasticity. In the *one-step*, the residuals are considered to be homoscedastic. The assumption of no auto-correlation in the residuals is relevant as past lagged variables are to be used as instruments for the endogenous variables. Moreover, the estimation depends on the hypothesis that the lagged values of the dependent variable and other independent variables are valid instruments in the regression. When the error terms of the level equation are not auto-correlated, the first-order auto-correlation of the differenced residuals should be significant while their second-order auto-correlation: *AR(2)* should not be. The validity of the instruments is investigated with the Sargan over-identifying restrictions (OIR) test. In summary, the main arguments for using the system GMM estimation are that: it does not eliminate cross-country variation, it mitigates potential biases

[7] "*We also demonstrate that more plausible results can be achieved using a system GMM estimator suggested by Arellano & Bover (1995) and Blundell & Bond (1998). The system estimator exploits an assumption about the initial conditions to obtain moment conditions that remain informative even for persistent series, and it has been shown to perform well in simulations. The necessary restrictions on the initial conditions are potentially consistent with standard growth frameworks, and appear to be both valid and highly informative in our empirical application. Hence we recommend this system GMM estimator for consideration in subsequent empirical growth research*". Bond et al. (2001, pp. 3-4).

of the difference estimator in small samples and, it can control for the potential endogeneity of all regressors (Asongu, 2012d).

Table 2: Two-step System GMM for financial allocation efficiency

		Dependent variable: Financial Efficiency(E)							
		Two Year Non Overlapping Intervals				Three Year Non Overlapping Intervals			
		Banking System E		Financial System E		Banking System E		Financial System E	
constant		**-0.437***	-0.373	0.081	**0.336****	**1.06*****	**0.633***	0.035	-0.657
		(-1.781)	(-1.092)	(0.542)	**(2.186)**	**(6.691)**	**(1.665)**	(0.153)	(-1.168)
Finance_1		**0.685*****	**0.667*****	**1.147*****	**0.401***	-0.296	-0.160	**0.840*****	**0.760*****
		(3.578)	**(3.887)**	**(9.205)**	**(1.715)**	(-1.450)	(-0.336)	**(3.544)**	**(4.257)**
	Kaopen	**-0.048****	**-0.047****	0.030	**-0.038****	**-0.082*****	**-0.09****	-0.006	**-0.051****
Financial		**(-2.344)**	**(-2.338)**	(1.349)	**(-2.398)**	**(-3.900)**	**(-2.244)**	(-0.224)	**(-1.996)**
Liberalization	FDI	-0.006	---	---	**-0.007****	**-0.012****	-0.010	-0.004	0.0009
		(-1.006)			**(-2.256)**	**(-2.280)**	(-1.458)	(-0.831)	(0.106)
	Trade	-0.0004	---	0.0009	---	-0.000	---	0.0002	
Trade		(-0.629)		(0.985)		(-0.013)		(0.252)	
Liberalization	Exports	---	---	---	**0.002***	---	0.000	---	-0.001
					(1.946)		(0.016)		(-0.867)
	Instidex	---	-0.010	-0.012	---	**0.052****	**0.081***	0.007	0.002
Institutional			(-0.767)	(-0.763)		**(2.201)**	**(1.784)**	(0.579)	(0.330)
Liberalization	Demo	---	0.002	0.007	---	---	-0.015	---	---
			(0.416)	(1.418)			(-1.146)		
Freedom of Trade		---	---	**-0.062****	---	---	**0.055****	---	---
				(-2.131)			**(2.083)**		
Economic Freedom		**0.119*****	**0.110****	---	---	---	---	---	**0.140****
		(3.645)	**(2.046)**						**(1.985)**
Inflation		-0.001	-0.002	0.0001	-0.001	**-0.013*****	**-0.007***	**-0.006***	-0.003
		(-0.763)	(-1.263)	(0.134)	(-0.861)	**(-3.875)**	**(-1.745)**	**(-1.658)**	(-0.654)
Government Expenditure		-0.0005	-0.002	0.0002	0.0005	**-0.002****	-0.001	**0.002****	0.001
		(-0.245)	(-0.889)	(0.113)	(0.517)	**(-2.024)**	(-0.501)	**(2.047)**	(0.880)
Human Development		---	0.001	---	**0.007****	---	---	0.005	0.005
			(0.948)		**(2.084)**			(0.754)	(0.702)
Economic Prosperity		**0.007***	0.002	---	**0.007*****	---	---	**0.020***	---
		(1.886)	(0.513)		**(3.648)**			**(1.858)**	
Foreign Aid		---	0.0008	---	**-0.012****	---	---	---	---
			(0.209)		**(-2.814)**				
Population Growth Rate		-0.025	-0.026	0.050	**0.044****	---	---	---	---
		(-0.676)	(-1.277)	(1.194)	**(2.121)**				
Test for AR(2) errors		**0.026**	**-1.031**	**-0.832**	**-0.120**	**-0.699**	**-0.644**	-2.055**	-1.702*
		[0.979]	**[0.3021]**	**[0.405]**	**[0.903]**	**[0.484]**	**[0.519]**	[0.039]	[0.088]
Sargan OIR test		**13.515**	**8.555**	**12.595**	**7.174**	**4.245**	**6.243**	**11.032**	**7.642**
		[0.969]	**[0.999]**	**[0.981]**	**[0.999]**	**[0.834]**	**[0.620]**	**[0.199]**	**[0.469]**
Wald(joint) test		**457.3*****	**40047*****	**1555*****	**1479*****	**93.48*****	**175.8*****	**9883*****	**40586*****
		[0.000]	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**
Number of Instruments		35	37	35	37	16	18	18	18
Number of Countries		19	18	20	19	19	18	17	16
Number of Observations		92	84	98	103	68	62	58	53

*;**;***: significance levels of 10%, 5% and 1% respectively. Z-statistics in parentheses. [ ]: P-values. Instidex: Institutional index. FDI: Foreign Direct Investment. Demo: Democracy. OIR: Overidentifying Restrictions.

4. Empirical analysis

4.1 Presentation of results

Based on the results presented in Table 2 above, the following conclusions could be drawn. (1) Financial liberalization mitigates financial efficiency, with the effect of the *de jure* indicator (KAOPEN) higher than that of the *de facto* measurement (FDI). (2) Exports significantly improve financial efficiency. (3) Institutional liberalization has a positive effect on the efficiency of allocation while the effect of political liberalization is not significant. (4) Freedom of trade decreases (improves) financial (banking) system efficiency. (5) Economic freedom facilitates the transformation of mobilized financial resources (deposits) into credit for economic operators. (6) Most of the control variables are significant with expected signs. Inflation decreases efficiency (Asongu, 2011a; Asongu, 2012c) while economic prosperity (Asongu, 2011a) and population growth increase it.

4.2 Discussion of results

We now devote space to discussing the results. Firstly, we have found that financial liberalization is not pro-financial efficiency with the magnitude of KAOPEN higher than that of FDI. The two financial liberalization measures differ principally from the view that, KAOPEN measures *de jure* capital openness by accounting for regulatory restrictions on capital account transactions, while FDI is capital account openness. Hence, KAOPEN tends to increase as capital markets are more liberalized; so with FDI, KAOPEN increases. The greater detrimental effect of KAOPEN confirms China's capital account opening strategy. In fact, very recently, China's *de facto* openness despite its *de jure* closeness has been subject to much discussion in research and policy making circles (Prasad & Wei, 2007; Aizenman & Glick, 2009; Shah & Patnaik, 2009).

Secondly, the fact that exports improve efficiency is logical in the perspective that, despite the surplus liquidity issues witnessed by African financial institutions, credit would

easily be granted for export-oriented activities because it is a direct source of income with less credit risk. Indeed there is a wide consensus on this positive effect of trade (Kose et al., 2006).

Thirdly, the fact that institutional liberalization is pro-efficiency while the political liberalization effect is insignificant is also logical. Institutional adjustments (corruption-control, government effectiveness, political stability, voice & accountability, rule of law and regulation quality) were part of second generational reforms that aimed to improve economic and financial efficiency. Conversely, the effect of democracy cannot be too apparent because elections are multi-annual; hence, it is not directly linked to financial development. Another explanation that is consistent with recent finance-democracy literature is the *time* and *level* hypothetical benefits of democracy in financial development (Asongu, 2011b). According to Asongu, democracy in Africa has important effects on the degree of competition for public offices but less significant effects in comparison with autocracy on policies of financial development because, democracies in the continent are young (*time hypothesis)* and weak (*level hypothesis*).

Fourthly, the fact that freedom to trade decreases (improves) financial (banking) system efficiency means that traders operating with semi-formal and informal financial institutions have less access to credit facilities for their activities.

Fifthly, the fact that economic freedom facilitates the transformation of mobilized financial resources (deposits) into credit for economic operators, could be due to the substantial weight of its legal structure component (see definition in Section 3.1 and correlation with *Instidex* in Appendix 3): which is undoubtedly positively associated with the institutional impact already covered above.

5. Conclusion

This paper has investigated how financial, trade, institutional and political liberalization policies have affected financial efficiency in Africa. It has used updated data to appraise second generation reforms in order to gather fresh evidence and derive more updated policy implications. The 'freedom to trade' and 'economic freedom' indices are also employed. The following findings are established. (1) Financial liberalization mitigates financial allocation efficiency, with the magnitude of the *de jure* indicator (KAOPEN) higher than that of the *de facto* measurement (FDI). (2) Exports significantly improve financial efficiency. (3) Institutional liberalization has a positive effect on the efficiency of allocation while the effect of political liberalization is not significant. (4) Freedom of trade decreases (improves) financial (banking) system efficiency. (5) Economic freedom facilitates the transformation of mobilized financial resources (deposits) into credit for economic operators. Justifications for these nexuses are provided.

Appendices

Appendix 1: Summary statistics and presentation of countries

Panel A: Summary Statistics

		Mean	S.D	Min	Max	Obser.
Financial Efficiency	Banking System Efficiency (BcBd)	0.786	0.352	0.206	2.249	379
	Financial System Efficiency (FcFd)	0.848	0.462	0.214	2.587	363
Financial Liberalization	KAOPEN	-0.505	1.278	-1.843	2.477	392
	Foreign Direct Investment (FDI)	2.777	4.252	-8.629	36.114	346
Trade Liberalization	Trade	68.687	29.967	21.574	187.68	401
	Exports	30.245	14.618	5.820	69.032	401
Institutional & Political Liberalizations	Institutional Index	0.088	2.152	-4.569	5.233	320
	Democracy	3.263	3.959	-8.000	10.000	224
Other Liberalizations	Freedom to Trade	6.060	0.917	3.400	8.100	250
	Economic Freedom	6.118	0.632	4.710	7.820	250
Control Variables	Inflation	7.239	9.496	-100.00	46.561	395
	Government Expenditure	4.304	10.670	-34.882	61.364	298
	Human Development	1.913	8.0128	0.204	47.486	341
	Economic Prosperity	4.273	3.710	-16.740	27.462	420
	Foreign Aid	9.447	8.946	-0.251	54.785	392
	Population growth	2.275	0.741	0.042	4.146	420

Panel B: Presentation of Countries

Botswana, Cameroon, Ivory Coast, Egypt, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mauritania, Mauritius, Morocco, Nigeria, Senegal, Sierra Leone, South Africa, Tanzania, Tunisia, Uganda, Zambia, Niger, Mali, Guinea, Burkina Faso, Burundi, Central African Republic.

S.D: Standard Deviation. Min: Minimum. Max: Maximum. Obser: Observations.

Appendix 2: Variable definitions

Variables	Signs	Variable definitions	Sources
		Dependent Variables	
Banking System Efficiency	BcBd	Bank credit on Bank deposit	FDSD (World Bank)
Financial System Efficiency	FcFd	Financial credit on Financial deposit	FDSD (World Bank)
		Independent Variables	
Financial Liberalization 1	KAOPEN	De Jure Capital Openness	Chinn & Ito (2002)
Financial Liberalization 2	FDI	Foreign Direct Investment (% of GDP)	WDI (World Bank)
Trade Liberalization 1	Trade	Imports + Exports of Commodities (% of GDP)	WDI (World Bank)
Trade Liberalization 2	Export	Exports of Good & Services (% of GDP)	WDI (World Bank)
Institutional Liberalisation1	Instidex	1st Principal Component of: RL; RQ; CC;V&A; PS; GE	P.C Analysis
Democracy	Demo	Institutionalized Democracy(Estimate)	WDI (World Bank)
Trade Freedom	TFree	Freedom of Trade Index	Gwartney et al. (2011). Economic Freedom Dataset
Economic Freedom	EcoFree	Economic Freedom Index	
		Control Variables	
Inflation	Inflation	Consumer Price Index (Annual %)	WDI (World Bank)
Government Expenditure	GE	Government Final Expenditure (% of GDP)	WDI (World Bank)
Human Development	IHDI	Inequality adjusted Human Development Index	WDI (World Bank)
Economic Prosperity	GDPg	GDP growth rate (annual %)	WDI (World Bank)
Foreign-Aid	NODA	Net Official Development Assistance (% of GDP)	WDI (World Bank)
Population Growth	Popg	Population Growth Rate (annual %)	WDI (World Bank)

WDI: World Bank Development Indicators. GDP: Gross Domestic Product. PC: Principal Component. FDSD: Financial Development and Structure Database. RL: Rule of Law. RQ: Regulation Quality. CC: Corruption-Control. V& A: Voice & Accountability. PS: Political Stability. GE: Government Effectiveness.

Appendix 3: Correlation analysis

Dependent Vbles		Economic liberalization Independent Variables								Control Variables						
Fin. Efficiency		Fin. Lib.		Trade Lib.		Inst & Pol. Lib		Other Libs								
BcBd	FcFd	KAOPEN	FDI	Trade	Exports	Instidex	Demo	TFree	EFree	Infl	GE	IHDI	GDPg	NODA	Popg	
1.000	0.830	-0.209	-0.19	0.008	0.110	0.100	-0.08	-0.12	-0.08	-0.172	0.03	0.04	-0.17	-0.169	-0.12	BcBd
	1.000	-0.267	-0.19	-0.07	0.032	0.190	0.059	-0.16	0.023	-0.215	-0.00	0.35	-0.19	-0.195	-0.18	FcFd
		1.000	0.058	0.050	0.110	0.300	0.188	0.542	0.692	0.117	0.04	-0.11	0.091	-0.206	-0.11	KAOPEN
			1.000	0.470	0.107	0.094	0.010	0.331	0.306	-0.302	0.07	-0.03	0.095	-0.015	-0.15	FDI
				1.000	0.840	0.472	0.193	0.451	0.344	-0.110	0.04	-0.12	-0.02	-0.25	-0.42	Trade
					1.000	0.507	0.154	0.464	0.380	-0.019	0.02	-0.09	-0.08	-0.48	-0.43	Exports
						1.000	0.542	0.574	0.680	-0.009	-0.00	0.13	0.146	-0.409	-0.34	Instidex
							1.000	0.324	0.381	0.152	0.01	0.11	0.125	-0.016	-0.08	Demo
								1.000	0.770	0.230	0.01	0.08	0.097	-0.429	-0.19	TFree
									1.000	0.084	0.12	0.12	0.14	0.021	-0.37	EFree
										1.000	-0.17	0.04	0.021	0.178	0.09	Infl
											1.00	-0.22	0.214	0.040	0.02	GE
												1.00	-0.05	-0.095	0.01	IHDI
													1.000	0.158	0.23	GDPg
														1.000	0.50	NODA
															1.00	Popg

BcBd: Bank credit on Bank deposits (Banking System Efficiency). FcFd: Financial credit on Financial deposits (Financial System Efficiency). KAOPEN: De Jure measure of Capital Openness. FDI: Foreign Direct Investment. Instidex: Institutional Liberalization Index. Demo: Democracy. TFree: Freedom to Trade. EFree: Economic Freedom. Infl: Inflation. GE: Government Expenditure. IHDI: Inequality Adjusted Human Development Index. GDPg: GDP growth rate. NODA: Net Official Development Assistance. Popg: Population growth rate. Inst. & Pol: Institutional and Political. Vbles: Variables.

References

Aizenman, J., Glick, R., (2009). "Sterilization, Monetary Policy, and Global Financial Integration", *Review of International Economics*, 17(4), pp. 777-801.

Al-Obaidan, A, M., (2008). "Efficiency Effect of Openness in the Banking Industry of Emerging Markets", *International Research Journal of Finance and Economics*, 17, pp.92-104.

Arellano, M., & Bond, S., (1991). "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations", *The Review of Economic Studies*, 58, pp. 277-297.

Arellano, M., & Bover, O., (1995). "Another look at the instrumental variable estimation of error-components models", *Journal of Econometrics*, 68, pp.29-52.

Arestis, P., Demetriades, P. O., Fattouh, B., & Mouratidis, K., (2002). "The impact of financial liberalisation policies on financial development: evidence from developing countries", *International Journal of Finance and Economics*, 7(2), pp. 109-121.

Asongu, S. A., (2011a). "Why do French civil-law countries have higher levels of financial efficiency?", *Journal of Advanced Research in Law and Economics*, 2(2), pp. 94-108.

Asongu, S. A., (2011b). "Finance and democracy in Africa", *Institutions and Economies*: Forthcoming.

Asongu, S. A., (2012a). "Financial development dynamic thresholds of financial globalization: evidence from Africa", *Journal of Economic Studies*; Forthcoming.

Asongu, S. A., (2012b). "Bank efficiency and openness in Africa: do income levels matter?", *The Review of Finance and Banking*, 4(2), pp. 115-122.

Asongu, S. A., (2012c). "How has mobile phone penetration stimulated financial development in Africa", *Journal of African Business*: Forthcoming.
http://econpapers.repec.org/paper/pramprapa/41198.htm (accessed: 23/12/2012).

Asongu S. A., (2012d). "Harmonizing IPRs on Software Piracy: Empirics of Trajectories in Africa", *Journal of Business Ethics*: Forthcoming.
http://link.springer.com/article/10.1007%2Fs10551-012-1552-7 (accessed: 23/12/2012).

Ataullah, A., Cockerill, T., & Le, H., (2004). "Financial liberalization and bank efficiency: a comparative analysis of India and Pakistan", Applied Economics, 36(17), pp. 1915-1924.

Batuo, M. E., Guidi, F., & Kupukile, M., (2010, August). "Financial Development and Income Inequality: Evidence from African countries", African Development Bank.

Batuo, M. E., & Kupukile, M., (2010). "How can economic and political liberalization improve financial development in African countries?", *Journal of Financial Economic Policy*, 2(1), pp. 35-59.

Blundell, R., & Bond, S., (1998). "Initial conditions and moment restrictions in dynamic panel data models", *Journal of Econometrics*, 87(1), pp.115-143.

Bond, S., Hoeffler, A., & Tample, J.,(2001). "GMM Estimation of Empirical Growth Models", University of Oxford.

Chinn, M.D., & Ito, H., (2002). "Capital Account Liberalization, Institutions and Financial Development: Cross Country Evidence", *NBER Working Paper, No. 8967*, Cambridge, MA: National Bureau of Economic Research.

Cho, Y. J., (1986). "Inefficiencies of financial liberalization in the absence of well-functioning equity markets". *Journal of Money, Credit and Banking*, 18 (2), pp. 191-199.

Demirguc-Kunt, A., & Beck, T., (2009). "Financial Institutions and Markets across Countries over time: Data and Analysis", *World Bank Policy Research Working Paper* No. 4943.

Demirgüç-Kunt, A., & Levine, R., (2008). "Finance, Financial Sector Policies, and Long-Run Growth", *World Bank Policy Research Working Paper* No. 4469, Washington, DC: The World Bank.

Fischer, S., (1998). "Capital Account Liberalisation and the Role of the IMF", in "Should the IMF Pursue Capital-Account Convertibility?", Essays in International Finance, Department of Economics, Princeton University, 207, pp. 1-10.

Founda, O., J., P., (2009). "La surliquidité des banques en zone franc : Comment expliquer le paradoxe de la CEMAC ? ", *Revue Africaine de l'Intégration*, 3(2), pp. 43-97.

Gwartney, J., Hall, J., & Lawson, R.,(2011). "2011 Economic Freedom Dataset", Economic Freedom Network.

Henry, P. B., (2007). "Capital Account Liberalization: Theory, Evidence and Speculation", *Journal of Economic Literature*, XLV, pp. 887-935.

Janine, A., & Elbadawi, I. A., (1992). "Parallel Markets, the foreign Exchange Auction, and Exchange Rate Unification in Zambia", *World Bank Policy Working Paper* No. 909, The World Bank.

Jolliffe, I. T., (2002). *Principal Component Analysis*(2nd Ed.), New York: Springer.

Kablan, S., (2010). "Banking efficiency and financial development in Sub-Saharan Africa", *IMF Working Paper 10/136.*

Kaiser, H. F., (1974). "An index of factorial simplicity". *Psychometrika,* 39, pp. 31–36.

Kholdy, S., & Sohrabian, A., (2008). "Foreign direct investment, financial markets, and political corruption", *Journal of Economic Studies*, 35 (6), pp. 486-500.

Kiyota, H., (March 2009). "Efficiency of commercial banks in Sub-Saharan Africa: a comparative analysis of domestic and foreign banks", Asian Development Bank Institute.

Kose, M. A., Prasad, E. S., & Taylor, A. D., (2011). "Threshold in the process of international financial integration", *Journal of International Money and Finance*, 30(1), pp. 147-179.

Kose, M. A., Prasad, E. S., & Rogoff, K., Wei, S. J., (2006). "Financial globalization: a reappraisal", *IMF Staff Papers*, 56(1), pp. 8-62.

Kukenova, M., (2011). "Financial liberalization and allocative effective of capital", *World Bank Policy Research Working Paper* No. 5670.

Leung, H. M., (2003). "External debt and worsening business cycles in less developed countries", *Journal of Economic Studies*, 30(2), pp. 155-168.

Mulwa, M. R., Emrouznejad, A., & Murithi, F. M., (2009). "Impact of liberalization on efficiency and productivity of sugar industry in Kenya", *Journal of Economic Studies*, 36 (3), pp. 250 -264.

Obstfeld, M., (1998). "The Global Capital Market: Benefactor or Menace?" *Journal of Economic Perspectives*, 12(4), pp. 9-30.

Prasad, E.S., & Wei. S. J., (2007). "China's Approach to Capital Inflows: Patterns and Possible Explanations". In S. Edwards ed., *Capital Controls and Capital Flows in Emerging Economies: Policies, Practices, and Consequences.* Chicago: University of Chicago Press.

Rodrik, D., (1998). "Who Needs Capital-Account Convertibility?" Essays in International Finance, No. 207 (Princeton, New Jersey: Princeton University).

Rodrik, D., & Subramanian, A., (2009). "Why did financial globalization disappoint?", *IMF Staff Papers*, 56(1), pp. 112-138.

Rogoff, K., S., (1999). "International Institutions for Reducing Global Financial Instability", *Journal of Economic Perspectives*, 13(4), pp. 21-42.

Saxegaard, M., (2006). "Excess liquidity and effectiveness of monetary policy: evidence from sub-Saharan Africa", *IMF Working Paper* 06/115.

Shah, A., & Patnaik, I., (2009). "Asia Confronts the Impossible Trinity." Mimeo, NIPFP-DEA.

Solow, R., M., (1956). "A Contribution to the Theory of Economic Growth", *Quarterly Journal of Economics*, 70(1), pp. 65-94.

Summers, L. H., (2000). "International Financial Crises: Causes, Prevention and Cures", *American Economic Review*, 90(2), pp. 1-16.