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Financial crisis, financial globalisation and financial development in Africa[1]

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Abstract

This study unites two streams of research by simultaneously focusing on the impact of financial globalisation on financial development and pre- and post-crisis dynamics of the investigated relationship. The empirical evidence is based on 53 African countries for the period 2004-2011 and Generalised Method of Moments. The following findings are established. First, whereas marginal effects from financial globalisation are positive on financial dynamics of activity and size, corresponding net effects (positive thresholds) are negative (within range). Second, while decreasing financial globalisation returns are apparent to financial dynamics of depth and efficiency, corresponding net effects (negative thresholds) are positive (not within range). Third, financial development dynamics are more weakly stationary and strongly convergent in the pre-crisis period. Fourth, the net effect from the: pre-crisis period is lower on money supply and banking system efficiency; post-crisis period is positive on financial system efficiency and pre-crisis period is positive on financial size.

1. Introduction

There are at least four reasons for assessing pre- and post-crisis dynamics[2] of financial globalisation for financial development in Africa, notably: surplus liquidity issues; substantial need for foreign investment to finance Africa's growing projects; ongoing debates on the effect of financial globalisation on development and gaps in the literature assessing outcomes of the recent global financial crisis on the continent's development[3].

First, a major and longstanding financial development concern in Africa has been the substantially documented issue of surplus liquidity that is inhibiting financial access to corporations and households (Asongu, 2014a). Second, African business literature is consistent on the crucial need for foreign investment to finance the continent's growing ambitions and projects (Asongu & Odhiambo, 2019). Third, the recent (2007-2008) financial crisis has reignited the debate over the benefits of regional financial integration and consequences of increasing financial globalisation in Africa (Price & Elu, 2014; Motelle & Biekpe, 2015). Fourth, as far as we have reviewed, the bulk of literature assessing the development outcomes of the financial crisis on the continent has failed to engage pre- and post-crisis effects of financial globalisation on financial intermediary development.

To the best our knowledge, the extant literature on continental effects of the financial crisis has for the most part focused on: growth (Brambila-Macias & Massa, 2010; Chauva & Geis, 2011; Price & Elu, 2014); financial flows (e.g. remittances and foreign direct investment (FDI)) other macroeconomic outcomes (Massa & Te Velde, 2008 ; Arieff et al., 2010; Allen & Giovannetti, 2010) and financial development (Massa & Te Velde, 2008; Motelle & Biekpe, 2015). Accordingly, some studies have: assessed the impact of the crisis on capital flows in terms of foreign aid and remittances (e.g. Arieff et al., 2010); used financial development as a channel through which the financial crises has affected growth (Elu & Price, 2014); examined the underlying effect on trade (Allen & Giovannetti , 2010); engaged a limited number of countries with well-functioning financial markets (Massa & Te Velde, 2008) and investigated the relevance of FDI as a mechanism by which the crisis has affected economic growth (Brambila-Macias & Massa, 2010).

Noticeably, the above literature leaves room for improvement in four main areas. First, a direct engagement of financial development externalities from the crisis is scarce. In essence, whereas Massa and Te Velde (2008) have adopted selected countries from a stock

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[2] Dynamics within the framework of this study refer to marginal, net and threshold effects. A positive financial globalisation threshold is the level of FDI inflows required for an initially negative effect on financial development to become positive.

[3] Crisis, crises and 'financial crises' are used interchangeably to denote the 2007-2008 financial crises.

market perspective, very few African countries have financial markets that are globally integrated (Alagidede et al., 2011, p. 1333). Hence, continental policy implications of the underlying study are skewed exclusively towards African countries with well-functioning and internationally integrated stock markets. Moreover, some studies that have engaged the financial intermediary sector have also been: positioned on selected countries (Motelle & Biekpe, 2015) and limited to examining financial channels by which the crisis has affected macroeconomic outcomes like economic growth (Elu & Price, 2014). Second, with the exception of Massa and Te Velde (2008) that have focused on financial globalisation in terms of FDI (albeit on selected countries), scholarly focus on financial globalisation externalities has been limited. As we have highlighted above, the conception of capital flows has been restricted to aid and remittances, for the most part. Even the comprehensive analysis of Arieff et al. (2010) has stopped short of assessing the effects on financial globalisation, despite engaging a plethora of macroeconomic and institutional outcomes, notably: trade and fiscal balances, remittances, foreign aid, poverty reduction, food security and political stability. The present inquiry which is positioned on 'effects of' FDI steers clear of the highlighted stream on 'effects on' FDI. Third, as far as we have reviewed, extant literature has failed to compare pre- and post-crisis effects to clearly articulate a 'crisis impact'. Fourth, the post-crisis literature has not exhaustively engaged the crisis in light of Henry (2007) and Kose et al. (2011) hypothesis within the framework of initial domestic financial development (and financial globalisation) conditions for the materialisation of financial globalisation rewards in domestic financial development. Asongu (2014b) and Asongu and De Moor (2017), in attempting to investigate the underlying hypothesis, have not positioned their inquiries within the specific context of the crisis notably: in terms of motivation, sampling and comparative modelling.

The present inquiry contributes to the extant literature by filling identified gaps above. It employs all dimensions identified by the Financial Development and Structure Database (FDSD) of the World Bank and interactive Generalised Method of Moments (GMM) to assess the impact of financial globalisation on financial development in 53 African countries[4]. Hence, the study unites two streams of research by simultaneously focusing on the: impact of financial globalisation on financial development and pre- and post-crisis dynamics in the investigated relationship. These dynamics are articulated with marginal, threshold and net

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[4] The engaged financial dimensions include: financial depth (overall money supply and financial system deposits); financial efficiency (at banking and financial system levels); financial activity (from banking and financial system perspectives) and financial size.

effects of financial globalisation. This emphasis enables the assessment of the Henry (2007) and Kose et al. (2011) hypothesis while simultaneously comparatively investigating pre- and post-crisis effects of financial globalisation.

The rest of the study is structured as follows. The data and methodology are covered in Section 2. Section 3 discusses empirical results and implications. Section 4 concludes with future directions.

2. Data and Methodology

2.1 Data

We investigate a panel of 53 African countries with data for the period 2004-2011 from African Development Indicators (ADI) and the Financial Development and Structure Database (FDSD) of the World Bank. Limitation to the year 2011 is due to data availability constraints. Accordingly, 2011 is the most recent date in the FDSD. The periodicity is motivated by the need to have 5 years in both the pre-crisis and post-crisis samples. Hence the two sub-samples are 2004-2008 and 2007-2011, respectively. The sampling is tailored to nullify the 2007-2008 crisis period in both sub-samples so that the pre- and post-crisis effects are apparent. Moreover, we overlap the crisis period in both sub samples because the adopted estimation technique (GMM) is not consistent with a periodicity of less than 5 years. Given that the FDSD is limited to the year 2011, the obvious post-crisis period is 2007-2011. In the same vein, for the purpose of comparative symmetry, the pre-crisis period consists of a 5 year periodicity (2004-2008). This latter clarification doubles as a justification for adopting a starting year of 2004. In light of the above, and given that the crisis period is embodied in the two-subsamples, we can reasonably infer that when underlying sub-samples are compared under homogenous specifications, the effect of the crisis is nullified so that only the 2004-2006 and 2009-2011 periodicities are relevant to account for pre- and post-crisis effects respectively.

Consistent with the engaged literature (Brambila-Macias & Massa, 2010; Kose et al., 2011; Asongu, 2014b), FDI is adopted as the financial globalisation variable. The dependent variables which are in accordance with Asongu and De Moor (2017) are financial development dynamics of depth (at overall economic and financial system levels), efficiency (banking and financial system efficiency), activity (banking and financial system activity) and size. Hence, except for financial size, two measures of each financial dynamic are used for robustness purposes.

In order to ensure that estimated results are not biased by omitted variables, this paper includes six control variables: economic growth (GDP growth), public investment, inflation, trade openness, foreign aid and a lagged term of the dependent variable. The choice of these control variables is in accordance with Asongu and De Moor (2017). Moreover, the variables have been substantially documented in financial development studies, *inter alia*: Asongu (2014b). The definitions of variables and corresponding sources are disclosed in Table 1 while evidence of persistence which motivates the choice of the estimation technique in the methodology section is provided in Table 2.

Table 1: Definitions of variables

Variables	Signs	Definitions of variables	Sources
Economic Financial Depth	M2	Money Supply (% of GDP)	World Bank (FDSD)
Financial System Depth	Fdgdp	Liquid Liabilities (% of GDP)	World Bank (FDSD)
Banking System Efficiency	BcBd	Bank credit on Bank deposits	World Bank (FDSD)
Financial System Efficiency	FcFd	Financial credit on Financial deposits	World Bank (FDSD)
Banking System Activity	Prcb	Private domestic credit from deposit banks (% of GDP)	World Bank (FDSD)
Financial System Activity	Prcbof	Private domestic credit from financial institutions (% of GDP)	World Bank (FDSD)
Financial Size	Dbacba	Deposit bank assets on Central bank assets plus Deposit bank assets	World Bank (FDSD)
Financial Globalisation	FDI	Foreign Direct Investment Net Inflows (% of GDP)	World Bank (WDI)
Economic Prosperity	GDPg	GDP Growth (annual %)	World Bank (WDI)
Inflation	Infl	Consumer Price Index (annual %)	World Bank (WDI)
Public Investment	PubIvt	Gross Public Investment (% of GDP)	World Bank (WDI)
Development Assistance	NODA	Total Net Official Development Assistance (% of GDP)	World Bank (WDI)
Trade openness	Trade	Imports plus Exports in commodities (% of GDP)	World Bank (WDI)

WDI: World Bank Development Indicators. FDSD: Financial Development and Structure Database.

Table 2: Persistence of the dependent variables

	Financial Depth		Financial Efficiency		Financial Activity		Fin. Size
	M2	Fdgdp	BcBd	FcFd	Pcrd	Pcrdof	Dbacba
M2(-1)	0.9837						
Fdgdp(-1)		0.990					
BcBd(-1)			0.9438				
FcFd(-1)				0.9815			
Pcrd (-1)					0.9919		
Pcrdof(-1)						0.9945	
Dbacba(-1)							0.9330

M2: Money Supply. Fdgdp: Financial deposits(liquid liabilities). BcBd: Bank credit on bank deposits. FcFd: Financial credit on Financial deposits. Pcrb: Private domestic credit from deposit banks. Pcrbof: Private domestic credit from deposit banks and other financial institutions. Dbacba: Deposit bank assets on central bank assets plus deposit bank assets. M2(-1): Lagged value of Money Supply. Fin: Financial.

2.2 Methodology

Consistent with Asongu and De Moor (2017), the study adopts an endogeneity robust GMM approach for a fourfold reason. Whereas the first-two are initial requirements for the estimation strategy, the last-three are technical rewards of the estimation approach. First, the rule of thumb threshold (0.800) of first-order autocorrelation required to ascertain persistence in the dependent variables is met. In essence, Table 2 shows the following correlations between financial indicators and their first lagged values: 0.983, 0.990, 0.943, 0.981, 0.991, 0.994, 0.933 respectively for money supply, financial system deposits, banking system efficiency, financial system efficiency, banking system activity, financial system activity and financial size. Second, the number of years in a time series of the full sample (T=8) is less than the number of cross-sections (N=53). Therefore N>T. Third, the modelling strategy enables the control for endogeneity in all regressors. Fourth, with the estimation approach, cross-country variations are not eliminated. This study employs the Roodman (2009) technique because it has been established in recent literature to produce more robust findings (Tchamyou & Asongu, 2017; Tchamyou, 2019).

The specification is *two-step* to account for heteroscedasticity because the *one-step* approach is homoscedasticity-consistent. The standard system GMM estimation procedure is summarised by the following equation in levels (1) and first difference (2):

$$FD_{i,t} = \sigma_0 + \sigma_1 FD_{i,t-\tau} + \sigma_2 FI_{i,t} + \sigma_3 FIFI_{i,t} + \sum_{h=1}^{5} \delta_h W_{h,i,t-\tau} + \eta_i + \xi_t + \varepsilon_{i,t} \quad , \tag{1}$$

$$FD_{i,t} - FD_{i,t-\tau} = \sigma_1 (FD_{i,t-\tau} - FD_{i,t-2\tau}) + \sigma_2 (FI_{i,t} - FI_{i,t-\tau}) + \sigma_3 (FIFI_{i,t} - FIFI_{i,t-\tau})$$
$$+ \sum_{h=1}^{5} \delta_h (W_{h,i,t-\tau} - W_{h,i,t-2\tau}) + (\xi_t - \xi_{t-\tau}) + (\varepsilon_{i,t} - \varepsilon_{i,t-\tau}) \quad , \tag{2}$$

where $FD_{i,t}$ is a financial development dependent variable (depth, efficiency, activity or size) of country i at period t; σ_0 is a constant; τ is the coefficient of auto-regression which is one because one lag is enough to capture past information ; FI, Net FDI inflows; $FIFI$, interaction between Net FDI inflows (FI) and Net FDI inflows (FI); W is the vector of control variables (*GDP growth, inflation, public investment, foreign aid* and *trade openness*), η_i is the country-specific effect, ξ_t is the time-specific constant and $\varepsilon_{i,t}$ the error term.

We devote some space to articulating some pitfalls associated with interactive regressions. According to Brambor et al. (2006), all constitutive variables should be involved in the specifications. Moreover, for corresponding interaction estimates to have economic

meaning, they should be interpreted as conditional marginal effects. The resulting FDI thresholds should also be within the range disclosed by the summary statistics.

3. Empirical results

Tables 3, 4 and 5 present findings corresponding respectively to regressions with: 'financial depth', 'financial efficiency' and 'financial activity and financial size'. Three specifications characterise each of the seven financial development variables, namely, the: full sample, the pre-crisis sample and the post-crisis sample. The study uses four principal information criteria to examine the validity of estimated models. First, the Fisher test is employed to assess the joint validity of estimated parameters. Second, in order to ascertain the absence of autocorrelation in the residuals, the null hypothesis of the second-order Arellano and Bond autocorrelation test in difference (AR(2)) should not be rejected. Third, the null hypotheses corresponding to the Sargan and Hansen over-identification restrictions (OIR) tests should also not be rejected for the validity of instruments. Accordingly, the Hansen (Sargan) test is robust (not robust) but weakened (not weakened) by instruments. Hence, the modelling approach limits instrument proliferation and/or restricts over-identification by ensuring that in every specification the number of instruments is less than the corresponding number of cross sections. Fourth, the study also employs the Difference in Hansen Test (DHT) for exogeneity of instruments to further examine the validity of the Hansen OIR test.

In Table 3, while financial depth is in the perspective of 'overall money supply' on the left-hand-side (LHS), it is represented as financial system deposits or liquid liabilities on the right-hand-side (RHS). On the computation of threshold and net effects from significant marginal impacts, if 0.181 and -0.008 respectively correspond to estimated parameters from FDI and 'FDI×FDI', the potential FDI threshold at which the unconditional positive impact is overwhelmed by the growing conditional negative impact for an overall negative effect is 11.312 (0.181/ [2×0.008]) whereas the net effect is 0.096 (2×[-0.008×5.268] +0.181)[5]. The following findings can be established. First, on the LHS, whereas the net effect of financial globalisation is higher in the post-crisis period compared to the full sample, it is 'not applicable' (na) for the pre-crisis era because the corresponding marginal impact is not significant. Second, on the RHS, while there is a positive net effect for the full sample, it is na for the pre- and post-crisis periods due to the insignificance of associated marginal impacts.

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[5] 5.268 is the mean value of FDI. The leading 2 is from the quadratic derivation.

Table 3: Financial Depth and Financial Globalisation

| | Financial Depth | | | | | |
| | Economic Depth (Money Supply) | | | Financial System Depth (Deposits) | | |
	Full Sample	Pre-crisis	Post-crisis	Full Sample	Pre-crisis	Post-crisis
Constant	-1.854	0.426	**7.018*****	**-3.174****	0.307	**4.691*****
	(0.200)	(0.678)	**(0.000)**	**(0.010)**	(0.766)	**(0.000)**
Money Supply (-1)	**0.995*****	**1.009*****	**0.924*****	---	---	---
	(0.000)	**(0.000)**	**(0.000)**			
Financial System Deposits (-1)	---	---	---	**1.052*****	**1.033*****	**0.927*****
				(0.000)	**(0.000)**	**(0.000)**
Foreign Direct Investment(FDI)	0.077	**-0.152****	**0.181***	**0.138****	-0.062	0.056
	(0.113)	**(0.048)**	**(0.053)**	**(0.035)**	(0.197)	(0.449)
FDI × FDI	**-0.003***	0.004	**-0.008***	**-0.005****	0.0007	-0.003
	(0.072)	(0.183)	**(0.056)**	**(0.016)**	(0.829)	(0.265)
GDP growth	**-0.286*****	**-0.129*****	**-0.220*****	**-0.155*****	-0.026	**-0.192*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	(0.335)	**(0.000)**
Inflation	-0.006	**-0.022****	**0.140*****	**-0.018****	-0.013	0.024
	(0.642)	**(0.027)**	**(0.001)**	**(0.018)**	(0.118)	(0.466)
Public Investment	-0.029	0.056	**-0.050**	**0.035***	**0.064***	0.025
	(0.271)	(0.252)	**(0.119)**	**(0.092)**	**(0.067)**	(0.246)
Foreign Aid	0.068	0.055	**-0.233*****	**0.069*****	-0.0003	-0.008
	(0.115)	(0.260)	**(0.000)**	**(0.005)**	(0.992)	(0.850)
Trade	**0.043*****	0.012	**0.027*****	**0.018****	0.0024	**0.024*****
	(0.000)	(0.223)	**(0.007)**	**(0.027)**	(0.733)	**(0.000)**
Thresholds	12.83	na	11.31	13.80	na	na
Net Effects	0.045	na	0.096	0.085	na	na
AR(1)	(0.001)	**(0.142)**	(0.003)	(0.001)	**(0.128)**	(0.007)
AR(2)	**(0.354)**	**(0.280)**	**(0.350)**	**(0.394)**	**(0.120)**	**(0.197)**
Sargan OIR	(0.034)	**(0.276)**	(0.001)	(0.002)	(0.003)	(0.001)
Hansen OIR	(0.052)	**(0.172)**	**(0.270)**	**(0.166)**	**(0.119)**	**(0.254)**
DHT for instruments						
(a)Instruments in levels						
H excluding group	(0.051)	**(0.312)**	**(0.123)**	(0.033)	**(0.618)**	**(0.155)**
Dif(null, H=exogenous)	**(0.181)**	**(0.178)**	**(0.510)**	**(0.596)**	(0.055)	**(0.431)**
(b) IV (years, eq(diff))						
H excluding group	**(0.106)**	**(0.127)**	**(0.208)**	**(0.106)**	**(0.190)**	**(0.173)**
Dif(null, H=exogenous)	**(0.105)**	**(0.573)**	**(0.556)**	**(0.544)**	**(0.121)**	**(0.650)**
Fisher	**788.19*****	**1429.77*****	**1167.35*****	**1578.43*****	**1460.48*****	**2057.04*****
Instruments	37	34	35	37	34	35
Countries	46	46	42	46	46	42
Observations	272	168	147	272	168	147

*,**,***: significance levels of 10%, 5% and 1% respectively. Full sample: 2004-2011. Pre-crisis: 2004-2008. Post-crisis: 2007-2011. DHT: Difference in Hansen Test for Exogeneity of Instruments' Subsets. Dif: Difference. OIR: Over-identifying Restrictions Test. The significance of bold values is twofold. 1) The significance of estimated coefficients, Hausman test and the Fisher statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(1) and AR(2) tests and; b) the validity of the instruments in the Sargan OIR test. na: not applicable because of insignificant marginal effects. 5.268 is the mean value of FDI.

Third, the negative thresholds corresponding to the significant marginal effects are not within the FDI range (-4.578 to 84.942) provided by the summary statistics. Fourth, with the exception of GDP growth, significant control variables have expected signs. The negative effect of GDP growth may be traceable to the absence of broad-based growth in the African continent. Accordingly, in spite of over two decades of growth resurgence that began in the

mid 1990s (Tchamyou *et al*., 2019), the continent has been married with immiserizing growth, as evident from an April 2015 World Bank report which has revealed that extreme poverty has been decreasing in all regions of the world with the exception of Africa (Tchamyou *et al*., 2019).

Table 4: Banking Efficiency and Financial Globalisation

	Financial Efficiency					
	Banking System Efficiency (BcBd)			**Financial System Efficiency (FcFd)**		
	Full Sample	Pre-crisis	Post-crisis	Full Sample	Pre-crisis	Post-crisis
Constant	**19.231*****	4.305	**23.514*****	2.429	-3.599	**13.751*****
	(0.000)	(0.298)	**(0.000)**	(0.249)	(0.315)	**(0.000)**
Banking System Efficiency (-1)	**0.848*****	**0.863*****	**0.816*****	---	---	---
	(0.000)	**(0.000)**	**(0.000)**			
Financial System Efficiency (-1)	---	---	---	**0.912*****	**0.928*****	**0.866*****
				(0.000)	**(0.000)**	**(0.000)**
Foreign Direct Investment (FDI)	**0.281****	-0.171	**0.526***	**0.356*****	0.253	-0.098
	(0.034)	(0.539)	**(0.052)**	**(0.000)**	(0.101)	(0.671)
FDI × FDI	**-0.018*****	0.0003	**-0.026****	**-0.016*****	**-0.016*****	0.005
	(0.005)	(0.964)	**(0.033)**	**(0.000)**	**(0.001)**	(0.615)
GDP growth	**0.547*****	**0.711*****	**0.425*****	**0.633*****	**0.927*****	**0.273*****
	(0.000)	**(0.000)**	**(0.009)**	**(0.000)**	**(0.000)**	**(0.002)**
Inflation	**0.0006*****	**0.0006*****	-0.162	0.002	0.041	-0.021
	(0.000)	**(0.000)**	(0.317)	(0.959)	(0.537)	(0.807)
Public Investment	**-0.429*****	**-0.525*****	0.142	0.005	-0.138	0.118
	(0.000)	**(0.000)**	(0.198)	(0.909)	(0.235)	(0.194)
Foreign Aid	**-0.480*****	0.074	-0.305	-0.033	-0.066	**-0.278****
	(0.000)	(0.579)	(0.141)	(0.654)	(0.346)	**(0.033)**
Trade	-0.010	**0.078***	**-0.102*****	0.028	**0.045***	**-0.032***
	(0.791)	**(0.091)**	**(0.001)**	(0.219)	**(0.093)**	**(0.085)**
Thresholds	7.80	na	10.11	11.12	7.90	na
Net Effects	0.091	na	0.252	0.187	0.084	na
AR(1)	(0.002)	(0.001)	(0.045)	**(0.156)**	**(0.221)**	**(0.235)**
AR(2)	**(0.103)**	**(0.175)**	**(0.726)**	(0.034)	**(0.824)**	(0.036)
Sargan OIR	**(0.259)**	(0.011)	**(0.326)**	(0.000)	(0.000)	(0.001)
Hansen OIR	**(0.745)**	**(0.700)**	**(0.428)**	**(0.110)**	**(0.140)**	**(0.415)**
DHT for instruments						
(a)Instruments in levels						
H excluding group	**(0.758)**	**(0.511)**	**(0.362)**	**(0.370)**	**(0.240)**	**(0.265)**
Dif(null, H=exogenous)	**(0.592)**	**(0.691)**	**(0.461)**	**(0.089)**	**(0.173)**	**(0.528)**
(b) IV (years, eq(diff))						
H excluding group	**(0.635)**	**(0.696)**	**(0.603)**	**(0.210)**	**(0.159)**	**(0.422)**
Dif(null, H=exogenous)	**(0.702)**	**(0.443)**	**(0.153)**	**(0.120)**	**(0.251)**	**(0.375)**
Fisher	**1139.41*****	**8975.46*****	**305.04*****	**1019.84*****	**1156.22*****	**638.54*****
Instruments	37	34	35	37	34	35
Countries	46	46	42	46	46	42
Observations	279	173	149	272	168	147

*,**,***: significance levels of 10%, 5% and 1% respectively. FDI: Foreign Direct Investment. Full sample: 2004-2011. Pre-crisis: 2004-2008. Post-crisis: 2007-2011. DHT: Difference in Hansen Test for Exogeneity of Instruments' Subsets. Dif: Difference. OIR: Over-identifying Restrictions Test. The significance of bold values is twofold. 1) The significance of estimated coefficients, Hausman test and the Fisher statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(1) and AR(2) tests and; b) the validity of the instruments in the Sargan OIR test. na: not applicable because of insignificant marginal effects. 5.268 is the mean value of FDI.

Table 5: Financial Activity, Financial Size and Financial Globalisation

	Financial Activity						Financial Size		
	Banking System Activity (Pcrb)			**Financial System Activity (Pcrbof)**					
	Full Sample	Pre-crisis	Post-crisis	Full Sample	Pre-crisis	Post-crisis	Full Sample	Pre-crisis	Post-crisis
Constant	-1.393	0.311	0.416	-1.39	**2.507***	0.386	**15.387***	**22.879***	**53.563***
	(0.348)	(0.734)	(0.718)	(0.317)	**(0.056)**	(0.674)	**(0.000)**	**(0.000)**	**(0.000)**
Banking Sys. Activity (-1)	**1.102***	**1.059***	**1.037***	---	---	---	---	---	---
	(0.000)	**(0.000)**	**(0.000)**						
Financial Sys. Activity (-1)	---	---	---	**1.120***	**1.090***	**1.025***	---	---	---
				(0.000)	**(0.000)**	**(0.000)**			
Financial Size (-1)	---	---	---	---	---	---	**0.793***	**0.770***	**0.400***
							(0.000)	**(0.000)**	**(0.000)**
FDI	-0.009	-0.068	**0.157***	-0.057	**-0.218****	-0.112	**-0.275***	-0.064	**-1.948***
	(0.834)	(0.256)	**(0.057)**	(0.408)	**(0.012)**	(0.113)	**(0.002)**	(0.615)	**(0.000)**
FDI × FDI	0.001	0.002	-0.005	0.004	**0.011****	0.005	**0.013***	0.002	**0.070***
	(0.409)	(0.135)	(0.179)	(0.201)	**(0.012)**	(0.172)	**(0.003)**	(0.659)	**(0.000)**
GDP growth	0.032	**0.104****	-0.041	0.045	**0.093***	**-0.088***	0.060	**-0.197***	**-0.382***
	(0.309)	**(0.038)**	(0.112)	(0.165)	**(0.004)**	**(0.005)**	(0.155)	**(0.000)**	**(0.000)**
Inflation	-0.014	**-0.023***	-0.027	-0.011	**-0.034***	**-0.117***	**-0.099***	**-0.178***	**-0.358***
	(0.177)	**(0.000)**	(0.413)	(0.479)	**(0.076)**	**(0.004)**	**(0.000)**	**(0.004)**	**(0.001)**
Public Investment	**0.102***	-0.044	**0.077***	**0.111***	**-0.105****	**0.136***	**0.144****	0.104	**0.562***
	(0.006)	(0.179)	**(0.007)**	**(0.000)**	**(0.021)**	**(0.000)**	**(0.013)**	(0.452)	**(0.000)**
Foreign Aid	-0.048	**-0.061****	0.074	**-0.069***	**-0.081****	**0.235***	-0.018	0.201	0.089
	(0.176)	**(0.011)**	(0.296)	**(0.077)**	**(0.010)**	**(0.000)**	(0.805)	(0.119)	(0.406)
Trade	-0.004	0.0005	-0.0003	-0.011	-0.019	0.004	**0.028***	-0.006	**0.080****
	(0.675)	(0.956)	(0.959)	(0.363)	(0.111)	(0.619)	**(0.087)**	(0.974)	**(0.013)**
Thresholds	na	na	na	na	9.90	na	10.57	na	13.91
Net Effects	na	na	na	na	-0.102	na	-0.138	na	-1.210
AR(1)	(0.013)	(0.050)	**(0.224)**	(0.041)	**(0.343)**	(0.039)	(0.060)	(0.037)	(0.021)
AR(2)	**(0.192)**	**(0.356)**	**(0.123)**	(0.080)	**(0.427)**	**(0.154)**	**(0.445)**	**(0.206)**	**(0.164)**
Sargan OIR	(0.005)	(0.000)	(0.001)	(0.005)	**(0.425)**	(0.001)	(0.020)	(0.000)	(0.000)
Hansen OIR	**(0.489)**	**(0.257)**	**(0.206)**	**(0.462)**	**(0.201)**	**(0.205)**	**(0.580)**	**(0.519)**	**(0.412)**
DHT for instruments (a)Instruments in levels									
H excluding group	(0.059)	**(0.158)**	**(0.102)**	(0.061)	**(0.278)**	(0.097)	**(0.171)**	**(0.239)**	**(0.161)**
Dif(null, H=exogenous) (b) IV (years, eq(diff))	**(0.926)**	**(0.431)**	**(0.438)**	**(0.904)**	**(0.232)**	**(0.446)**	**(0.837)**	**(0.692)**	**(0.655)**
H excluding group	**(0.269)**	**(0.370)**	**(0.125)**	**(0.228)**	**(0.220)**	**(0.142)**	**(0.596)**	**(0.485)**	**(0.388)**
Dif(null, H=exogenous)	**(0.865)**	**(0.140)**	**(0.712)**	**(0.906)**	**(0.277)**	**(0.596)**	**(0.422)**	**(0.483)**	**(0.439)**
Fisher	**1206***	**1856.2***	**3515.5***	**1369.16***	**4330.6***	**2159.8***	**353.78***	**235.33 ***	**819.58***
Instruments	37	34	35	37	34	35	37	34	35
Countries	46	46	42	46	46	42	46	46	42
Observations	272	168	147	274	168	149	274	168	148

*,**,***: significance levels of 10%, 5% and 1% respectively. FDI: Foreign Direct Investment. Syst: System. Full sample: 2004-2011. Pre-crisis: 2004-2008. Post-crisis: 2007-2011. DHT: Difference in Hansen Test for Exogeneity of Instruments' Subsets. Dif: Difference. OIR: Over-identifying Restrictions Test. The significance of bold values is twofold. 1) The significance of estimated coefficients, Hausman test and the Fisher statistics. 2) The failure to reject the null hypotheses of: a) no autocorrelation in the AR(1) and AR(2) tests and; b) the validity of the instruments in the Sargan OIR test. na: not applicable because of insignificant marginal effects. 5.268 is the mean value of FDI.

The following findings can be established from Table 4. First, on the LHS for banking system efficiency, while the net effect of financial globalisation is higher in the post-crisis era compared to the full sample, it is 'not applicable' (na) for the pre-crisis period. Second, on the RHS, the net effect of the full sample is higher than that of the pre-crisis period, whereas that corresponding to the post-crisis period is na. Third, corresponding negative thresholds are not within range. Fourth, most of the significant control variables have signs that are opposite to those established in Table 3. This is essentially because the financial development indicators

are conflicting by conception and measurement. Accordingly, financial allocation efficiency improves to the detriment of financial deposits because the former is conceived and measured as the ability of financial institutions to transform mobilised deposits into credit for economic operators.

Table 5 presents findings corresponding to financial activity and financial size. The first two main partition columns are related to financial activity regressions whereas the last partition is concerned with financial size. First, the pre-crisis specification in the partition on financial system activity is associated with significant positive marginal effects, a positive threshold and a corresponding negative net effect. Net effects related to other specifications in the first-two partitions are not applicable (na) for the most part. Second, with regard to the last partition on financial size, whereas the net negative effect is higher in the full sample compared to the post-crisis era, it is na in the pre-crisis period. Third, the significant control variables have expected signs for the most part.

4. Conclusion and further research

This study has assessed pre- and post-crisis dynamics of financial globalisation for financial development in Africa with data for the period 2004-2011. The underlying dynamics have been investigated from marginal, threshold and net effects. We have employed all financial dimensions identified by the Financial Development and Structure Database of the World Bank. These include financial depth (overall money supply and financial system deposits), financial efficiency (at banking and financial system levels), financial activity (from banking and financial system perspectives) and financial size. Financial globalisation is measured in terms of Net Foreign Direct Investment inflows. The empirical evidence is based on Generalised Method of Moments (GMM) with forward orthogonal deviations.

The following findings have been established. First, whereas marginal effects from financial globalisation are positive on financial dynamics of activity and size, corresponding net effects (positive thresholds) are negative (within range). Second, while decreasing financial globalisation returns are apparent to financial dynamics of depth and efficiency, corresponding net effects (negative thresholds) are positive (not within range). Third, based on a direct comparison, financial development dynamics are more weakly stationary and strongly convergent in the pre-crisis era, compared to the post-crisis period. Fourth, from an indirect comparison, the net effect from the: pre-crisis period is lower on money supply and banking system efficiency; post-crisis period is positive on financial system efficiency and pre-crisis period is positive on financial size. Policy implications have been discussed. Future

inquiries of the same scope would improve the extant literature by focusing on country-specific studies.

The study has contributed to the literature by uniting two streams of research. Accordingly, it has simultaneously focused on the: impact of financial globalisation on financial development and pre- and post-crisis dynamics of the investigated relationship.

References

1. Alagidede, P., Panagiotidis, T., and Zhang, X., (2011). "Why a diversified portfolio should include African assets,", *Applied Economic Letters*, 18(14), pp. 1333-1340.

2. Allen, F., and Giovannetti, G., (2010). "The effects of the financial crisis on Sub-Saharan Africa", *Review of Development Finance*, 1(1), pp. 1-27.

3. Arieff A., Weis M. A., and Jones V.C., (2010), "The Global Economic Crisis: Impact on Sub-Saharan Africa and Global Policy Responses" Congressional Research Service Report for Congress, Washington, https://www.fas.org/sgp/crs/row/R40778.pdf (Accessed: 13/11/2015).

4. Asongu, S. A., (2014a). "Correcting inflation with financial dynamic fundamentals: which adjustments matter in Africa?", *Journal of African Business*, 15(1), pp. 64-73.

5. Asongu, S. A., (2014b). "Financial development dynamic thresholds of financial globalisation: evidence from Africa", *Journal of Economics Studies*, 41(2), pp. 166-195.

6. Asongu, S. A., and De Moor, L., (2017). "Financial globalisation dynamic thresholds for financial development: evidence from Africa", *The European Journal of Development Research*, 29(1), pp 192–212.

7. Asongu, S. A., and Odhiambo, N. M., (2019). "Challenges of Doing Business in Africa: A Systematic Review", Journal of African Business, 20(2), pp. 259-268.

8. Brambila-Macias, J., and Massa, I., (2010). "The Global Financial Crisis and Sub-Saharan Africa: The Effects of Slowing Private Capital Inflows on Growth", *African Development Review*, 22(3), pp. 366-377.

9. Brambor, T., Clark, W. M., and Golder, M., (2006). "Understanding Interaction Models:Improving Empirical Analyses", *Political Analysis*, 14 (1), pp. 63-82.

10. Chauvin, S., and Geis, A., (2011). "Who has been affected, how and why? The spillover of the global financial crisis to Sub-Saharan Africa and ways to recovery", *Occasional Paper Series*, No. 124, Frankfurt.

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

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

13. Massa, I., and te Velde, D. W., (2008). "The Global Financial Crisis: will successful African countries be affected?", Overseas Development Institute, http://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/3486.pdf (Accessed: 12/11/2015).

14. Motelle, S., and Biekpe, N., (2015). "Financial integration and stability in the Southern African development community", *Journal of Economics and Business*, 79(May-June, 2015), pp. 100-117.

15. Price, G. N., and Elu, J. U., (2014). "Does regional currency integration ameliorate macroeconomic shocks in sub-Saharan Africa? The case of the 2008-2009 global financial crisis", *Journal of Economic Studies*, 41(5), pp. 737-750.

16. Roodman, D., (2009). "How to do xtabond2: An introduction to difference and system GMM in Stata", *Stata Journal*, 9(1), pp. 86-136.

17. Tchamyou, V. S., (2019)."The Role of Information Sharing in Modulating the Effect of Financial Access on Inequality". *Journal of African Business*, 20(3), pp. 317-338.

18. Tchamyou, V. S., & Asongu, S. A., (2017)."Information Sharing and Financial Sector Development in Africa", *Journal of African Business*, 18(7), pp. 24-49.

19. Tchamyou, V. S., Erreygers, G., & Cassimon, D., (2019). "Inequality, ICT and Financial Access in Africa", *Technological Forecasting and Social Change*, 139(February), pp. 169- 184.