PSVAR
Analysis of
Stability of
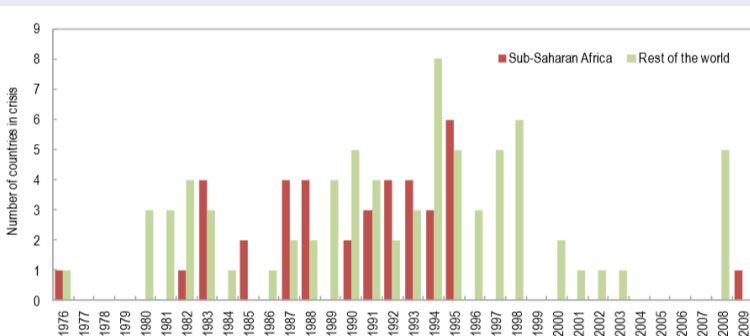Sub-Saharan
African
Commercial
Banks

JO Akande

PSVAR Analysis of Stability of Sub-Saharan African Commercial Banks

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August 17, 2017

Bank systemic crisis, across the globe

Source: Laeven and Valencia 2012.

In brief.....

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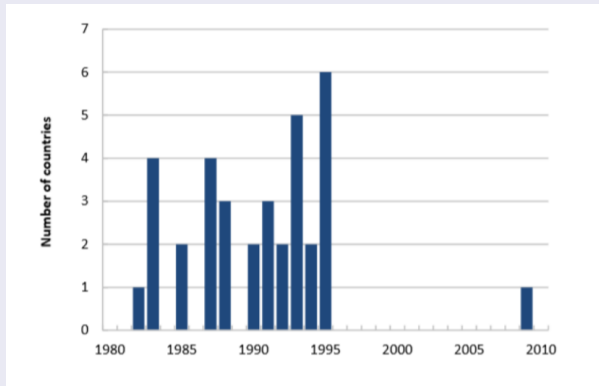
Bank systemic crisis, across the SSA

Figure: SSA Banking Crisis, 1980-2010; Source: Mlachila, Dykes, et al. (2013),Pg.19

- Banks has such importance that modern monetary economy stop if it stop functioning.

- Bank stability presumes the absence of absence of fragility....

- Quite a number of theories...disaster myopia (Knight, 1985), herd behaviour (Davis, 1995), perverse incentive (Ross, 1973), agency theory...among others.

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- Various theoretical reviews have considered the effects of capital requirements (Hakenes & Schnabel, 2011; Kim & Santomero, 1988), competition (see Freixas & Ma, 2014; Matutes & Vives, 1996, among others), moral hazards (Niinimaki, 2004), financial liberalisation (Chang & Velasco, 2001), liquidity management arising from selection problems (DellAriccia & Marquez, 2006) among others.

- Empirical works – capital and stability (Agoraki, Delis, & Pasiouras, 2011; Bolt and Tieman, 2004; among others); competition and stability (Akande & Kwenda, 2017; Vives, 2016; Schaeck & Cihak, 2014; among others); etc...

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Problem of the Study

- Managing the banking banking system to reduce the cost of failure (Vives, 2016).

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Differ in Method

Employed PSVAR (Kutu & Ngalawa, 2016)

Summary of PSVAR Model

- The reduced form of the PSVAR is given as;

$$Y_{it} = J_i + L(B)Y_{it} + \mu_{it} \qquad (2.1)$$

- Where Y_{it} is (nxk) vector variable such that

$$Y_{it} = (ECR, LQTY, AQLTY, LERNERI, IRS, EFF, ZSCORE) \qquad (2.2)$$

Model summary cont'd

- Where ZSCORE is stability measure, IRS is interest rate spread and LERNERI is competition index. Others are ECR, representing regulatory capital; LQTY is liquidity; AQLTY is asset quality; and EFF is efficiency measure.

- J_i is the vector of constants denoting country intercept terms, $L(B)$ is the matrix of polynomial in the lag operator that captures the relationship between the banks endogenous variables and their lags, and μ_{it} is a vector of random disturbance.

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Model summary cont'd

$$
\begin{pmatrix}
1 & 0 & 0 & 0 & 0 & 0 & 0 \\
\omega_{21} & 1 & 0 & \omega_{24} & 0 & 0 & 0 \\
0 & \omega_{32} & 1 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & 1 & 0 & 0 & 0 \\
0 & \omega_{52} & \omega_{53} & \omega_{54} & 1 & \omega_{56} & 0 \\
\omega_{61} & 0 & 0 & 0 & 0 & 1 & 0 \\
\omega_{71} & \omega_{72} & \omega_{73} & \omega_{74} & \omega_{75} & \omega_{76} & 1
\end{pmatrix}
\begin{pmatrix}
\epsilon_{it}^a \\
\epsilon_{it}^b \\
\epsilon_{it}^c \\
\epsilon_{it}^d \\
\epsilon_{it}^e \\
\epsilon_{it}^f \\
\epsilon_{it}^g
\end{pmatrix}
=
\begin{pmatrix}
\eta_1 & 0 & 0 & 0 & 0 & 0 & 0 \\
0 & \eta_2 & 0 & 0 & 0 & 0 & 0 \\
0 & 0 & \eta_3 & 0 & 0 & 0 & 0 \\
0 & 0 & 0 & \eta_4 & 0 & 0 & 0 \\
0 & 0 & 0 & 0 & \eta_5 & 0 & 0 \\
0 & 0 & 0 & 0 & 0 & \eta_6 & 0 \\
0 & 0 & 0 & 0 & 0 & 0 & \eta_7
\end{pmatrix}
\begin{pmatrix}
\mu_{it}^a \\
\mu_{it}^b \\
\mu_{it}^c \\
\mu_{it}^d \\
\mu_{it}^e \\
\mu_{it}^f \\
\mu_{it}^g
\end{pmatrix}
$$

$$(2.3)$$

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Variable Description and Data

- Variables include, ECR, LQTY, AQLTY, LERNERI, IRS, EFF, ZSCORE.

- Data for variable estimation sourced from Bankscope.

- Panel of 440 banks for the Period 2006–2015.

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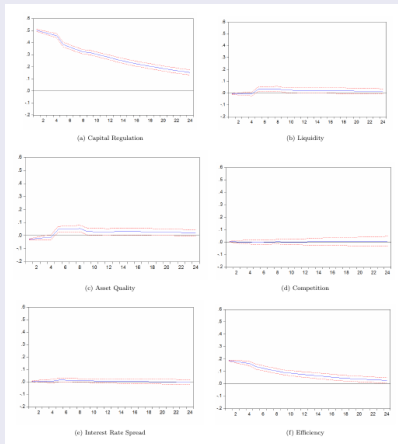Stability of
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impulse Response Analysis

Figure: Response of Stability

What we are doing differently.......

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Variance Decomposition

Table: Variance Decomposition of Stability

Period	S.E.	Capital	Liquidity	Asset Quality	Lerner Index	Interest RS	Efficiency	Stability
4	1.046061	84.34058	0.018223	0.163104	0.002261	0.014259	11.32617	4.135404
8	1.293435	85.14309	0.303692	0.746914	0.002325	0.055910	10.89870	2.849366
12	1.437686	86.06973	0.352647	0.775919	0.002776	0.057704	10.16140	2.579824
16	1.525033	86.62596	0.401873	0.868822	0.006062	0.054816	9.696503	2.345965
20	1.581024	87.02667	0.432162	0.928954	0.010347	0.052107	9.329244	2.220520
24	1.617507	87.31053	0.451480	0.970396	0.017677	0.049881	9.066356	2.133677

Figure: Stability Variance Decomposition Bar Chart

Conclusions

- All variables considered have varied degree of influence on bank stability in the region.

- Capital regulation has the most influence.

- suggestive of indirect relationship from competition through efficiency.

Policy implication

- More attention to capital regulation...regulators must expedite efforts at implementing the Basel Accords.

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Thank you......