Monetary policy and inequality nexus: Does liquidity matter?

Inaugural Lecture

By
Prof. Godfrey Marozva

Define tomorrow.

UNISA university of south africa

Outline

- My academic journey
- Overview and background
- Contribution
- Literature review
-
- Methodology
- Results and analysis
- Conclusions and recommendations

- Honourable Vice Chancellor –Prof. Puleng LenkaBula
- The Vice Principal: Strategy, Risk and Advisory Services- Prof. SK Ndlovu
- The executive dean: College of Economics and Management Sciences – Prof. MT Mogale
- The COD: Department of Risk Management and Banking – Dr Jethro N Godi
- My respondent: Prof. Johan Marx
- My Parents – Kefasi and Alice Marozva
- My Wife – Rudo Rachel, my Kids Godfrey Jnr, Abigail and Reuel
- Colleagues, family and friends it is with deep gratitude that I present my inaugural lecture this evening
- Prof Mogale, thank you very much for the lovely and inspiring introduction.
- That was the story of my academic and professional life. A story that started at Mudzara primary school, Zaka, Zimbabwe.

My academic journey

My Academic journey started with my parents, Kefasi and Alice. They sacrificed everything paying my school fees. I remember vividly how my parents in 1998 sold their most valuable and loved Ox called **“Experience”** to pay my examination fees. I then proceeded to the University of Zimbabwe in 1999 where I studied Finance and Banking, then enrolled with the National University of Science and Technology in 2004 for a Masters degree in Finance and Banking. In 2008 I enrolled as a Chartered Financial Analyst candidate with the CFA institute – USA. After graduating with my first degree I was recruited in the banking sector, were I was a Treasury manager cum Fixed Income portfolio manager for 7 years before joining the academia.

I was recruited at UNISA – Department of Finance, Risk Management and Banking as a lecturer responsible for Investment courses in 2010 when Prof. Johan Marx was the Chair of the department and Prof. Raphael Mpofu was the director of the School. These two gentlemen were part of the interview, and over the past 13 years have been my mentors and influencers. Under their leadership I was promoted to Senior Lecturer in 2015, Associate professor in 2019, and Full Professor in 2021. I am forever indebted to these gentlemen.

My real academic/ research journey started when I enrolled for a PhD in 2014 under the tutelage and mentorship of Prof. Daniel Makina. My research focused on LIQUIDITY.

My academic journey…

- My research journey in research begins with the challenge of the underlying economic and financial principle of frictionless markets. After the 2007/9 financial crisis, liquidity risk became the most dreaded financial risk of all times. However, our modern finance theories are modelled on the premises that markets are frictionless and hence liquidity plays no role, yet there is a plethora of literature that attest to the fact that liquidity is a cost that needs to be priced.
-
- This confirms the fact that markets are indeed full of friction and therefore, liquidity needs to be modelled accordingly. Nevertheless, the correct measure and definition of liquidity in finance literature remains an unresolved empirical issue.

My academic journey…

- This motivated me to contribute in this space specifically in emerging markets focusing on African financial markets. The focus of my research is on emerging markets. Bank liquidity, bond liquidity and stock liquidity has been widely researched in the context of relatively liquid well-developed markets. These results may not necessarily be generalised in emerging markets as emerging markets are structurally, fundamentally, and technically different from developed markets. Moreover, the level of efficiency is totally different and hence need to understand the microstructure dynamics in these secluded markets.
- Emerging markets are also not entirely integrated into world capital markets, therefore, they must be treated as a distinct asset class. As liquidity affects all financial markets, the focus should transcend local markets.

My academic journey…

- My research aims to correct the current wrong notion that markets are efficient and hence liquidity has no role to play in finance models. Financial frictions like liquidity have always invalidated the standard finance models, such as the dynamic stochastic general equilibrium models.
-
- I hope to provide a more realistic direction on the importance of accounting for market microstructures and liquidity in DSGE models.
-
- In my research the dynamics of market microstructures, stock returns and liquidity are put into perspective within the context of emerging markets, financial crisis and pandemics like the COVID-19.

My academic journey…

- Previously pandemics and natural disasters have been found to have spill-over effects on the global financial markets. Foreign investors' flight to safety further result in significant portfolio reversals in emerging markets during times of pandemics.

- The persistence and uncertainty of a pandemic generates a new episode of international financial stress and a need to rethink the issue of financial market microstructures within the context of a pandemic.

- I have written 16 peer reviewed articles that are published in accredited international and local journals on the subject of liquidity.

My academic journey…

- Nevertheless, my research could not have been complete if I forgot my roots and upbringing. I grew up in a country where we have appreciated poverty so much that the name “Nhamo” a shona name that can be translated to mean “poverty” is party of our legacy.

- My research had to diversify to include finance , poverty and inequality. Where I have published 10 articles on the subject.

My academic journey…

- The growing income inequality gap is a global concern, but does it really matter to have an unequal society?

- The gap between the rich and the poor is widening. The Oxfam Global inequality report suggest that since 2015, the richest one percent of people in the world own more wealth than the rest of the planet.

- Skewed access to funding and financial services by firms and households play a role in income redistribution outcomes.

- The level of income inequality is persistent with little to no intergenerational mobility of income and this has shaped the composition of access and use of financial services.

My academic journey…

- Understanding the linkages between financial dimensions and income inequality is essential for any meaningful intervention to reduce the income inequality gap using the financial sector.

- Other factors that can shape the distribution of income outside the financial sector, are some technological innovations, the political will to tackle unemployment and progressive tax policies.
-
- While some economists argue that widening inequality is a result of shrinking opportunities and monopoly power that affects the efficiency of the economy, others argue that the size of the pie matters more than how the pie is divided.

- I believe distribution matters more than the size.

- As a finance and banking scholar, I am wondering if central banks are concerned about inequality given that it is not one of their main mandates.

Monetary policy and inequality nexus: Does liquidity matter?

- I will take this opportunity to discuss my little research on the nexus between Monetary policy and inequality with the aim of putting liquidity into perspective. Therefore, the title of this lecture:

- Monetary policy and inequality nexus: Does liquidity matter?

Overview & background

Liquidity = M2 a measure of money supply. In general, this refers to all of the liquid assets and cash that are in circulation in a nation's economy to date. This amount of money is crucial to a country's economic and financial health.

In this lecture, the links between interest rates, liquidity and inequality are investigated using the generalized method of moments GMM Approach and Vector Auto Regression (VAR) based impulse response functions.

Although Goal #10 of reducing income inequality is a priority under the United Nations' sustainable development goals (SDGs), wealth and income inequality in developing countries remain a challenge (UN, 2022).

- The study was motivated by persistently high income inequality in Africa
- Moreover, the Covid-19 pandemic has renewed the debate on the link between monetary policy on inequality.

UNISA university of south africa

Overview & background…

The African continent as new frontier inhabited by 18% of the world population boosts of over 60% of arable land and 30% in top 10 global strategic minerals (Gold, 2015).

Quantity x Price =Sales value

Non Processed Quantity x low price = Low sales value – **Africa**

Processed Quantity x High prices = High sales value – **Developed world**

- Unfortunately, the African continent is arguably lagging behind in terms of beneficiation of its resources.
- The African tragedy is that we have relegated beneficiation to the developed word, and worse still the prices are determined and controlled by the countries with well developed and robust financial institutions.

UNISA university of south africa

Overview & background…

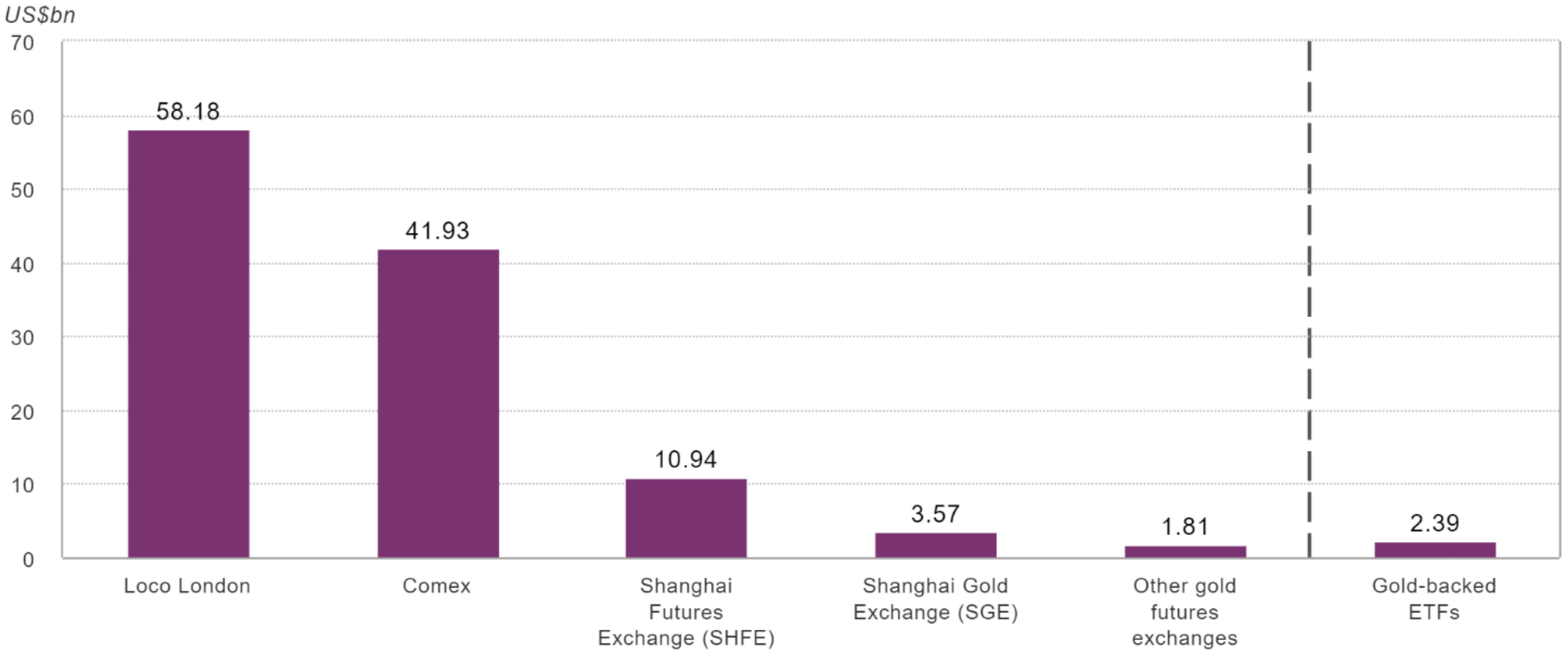
The three most important gold trading centres are the London OTC market, the US futures market and the Shanghai Gold Exchange (SGE). These markets comprise more than 90% of global trading volumes

Global gold production reached approximately 3,000 tons in 2021, with Africa accounting for nearly a quarter with total gold mine production in the continent amounting to 680.3 tons that year.

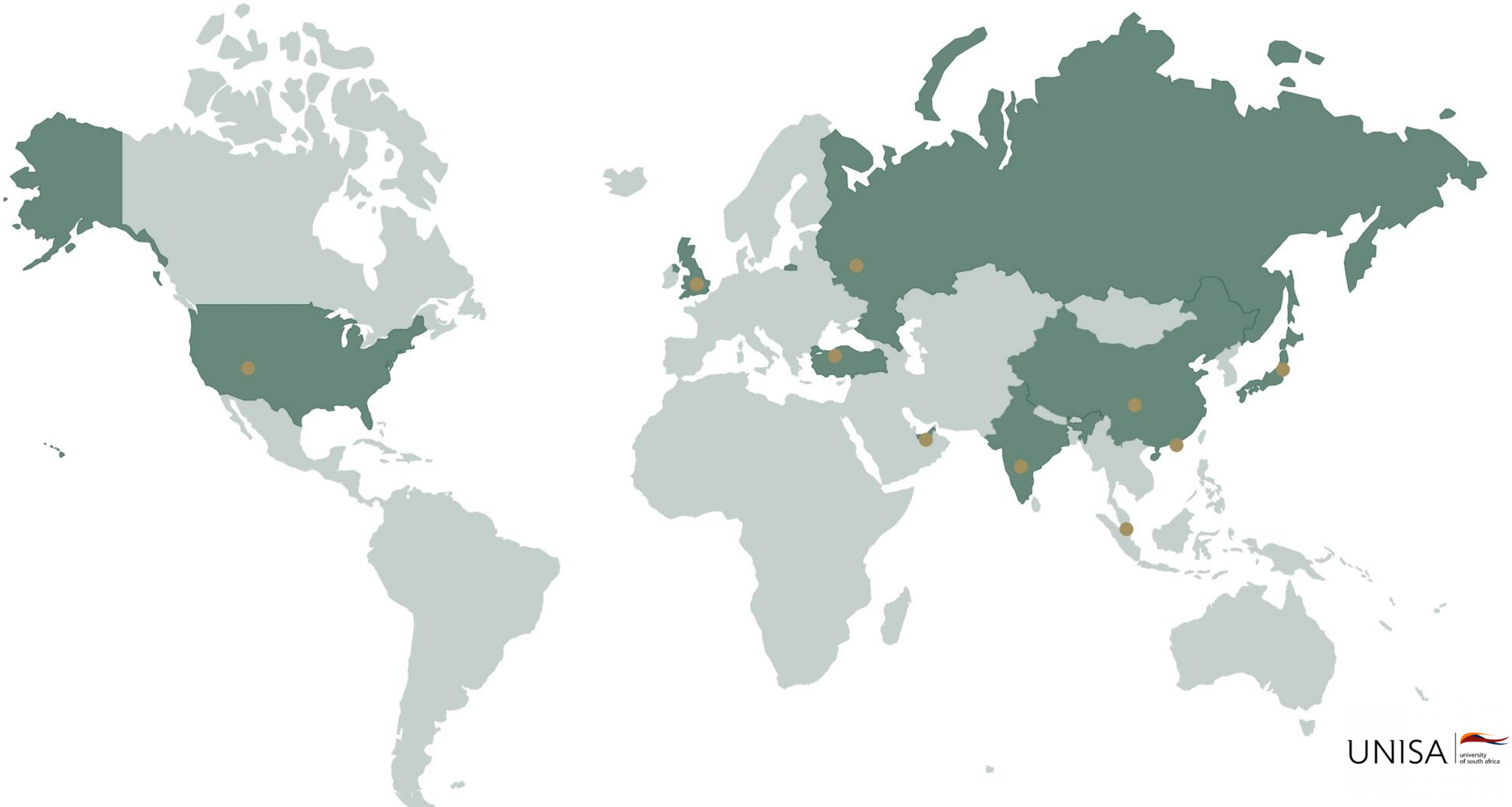
Is this translating to poverty reduction or reduction in inequality?

UNISA university of south africa

Daily notional gold volumes in US-dollar billions*



Market centres map



UNISA university of south africa

Overview & background…

- We need to develop our capital markets.
  - ❑ Africa agenda 2063 Goal #20 aims for Africa to takes full responsibility for financing her development through development of its capital markets.
- We need structural transformation in Africa- Well diversified economies always lead the pack.
- We need to transform our raw materials to a more finished product, which has a higher export sales value.
- Otherwise the status quo will remain.

UNISA university of south africa

Overview & background…

- Africans have become so aloof, detached, disinterested, incurious, and indifferent when it comes issues of national interest and economic development.
- Often we hide behind phrase : I am not good enough, they know better, they wont accept a different opinion, does it really matter, I am good with my family.
- Africans seem content with the status quo, we have accepted our fate.
- Consensual inequality and poverty is painful to fathom.
- I a small way I want my voice to be heard on issues of inequality and poverty

UNISA university of south africa

Overview & background…

- Just as such endowments in natural resources triggered the occupation of the continent by foreign powers in the 1800s, and more recent China's presence and obsession with natural resources extraction in Africa regardless of the environmental impacts.

- Covid-19 has laid bare and exacerbated global inequalities between and within countries with severe economic and social consequences (International Monetary Fund, 2020).

- Distributional issues on income and income are increasingly becoming topics of discussion in central banks as we notice pronounced inequality levels.

- Unfortunately, most income is held by private individuals than governments. Therefore, government can help in the redistribution of income by fostering robust monetary and fiscal policies

Overview & background …

- Over 100 million people were thrown into poverty due to the Covid-19 pandemic with excessive financial gain of $3.7 trillion for the global billionaires who constitute only 0.1 percent of the world's population (World Inequality Report, 2022).

- During the Covid-19 pandemic central banks globally put in place measures to support economic recovery (see International Monetary Fund (IMF), 2020; Marozva & Magwedere, 2021).

- This was achieved by lowering benchmark interest rates to support credit flow (IMF, 2020).

- However, low interest rates and extensive use of balance sheets to support economic activity and lower unemployment has been argued to benefit the rich more than the poor (BIS, 2021).

Overview & background…

- The pandemic resulted in liquidity injection in the economy as government benefits were rolled out to support the poor and unconventional monetary policies were followed to support liquidity availabilities in the market and keep companies afloat.
  - ❑ It is argued that the liquidity injected by the sovereign states offers a liquidity ladder to save poor households from declining incomes (IMF, 2020).

- Theoretically, liquidity injection should naturally suppress interest rates, ceteris paribus. Latane (1954) showed that liquidity is inversely related to interest rates.

- However, Meltzer (1963) argues that it is the interest rate changes that influence liquidity and the relationship is more complex than previously assumed.

- This could be the reason why many countries despite the liquidity support went on to reduce interest rates to stimulate the economy and create employment.

Overview & background…

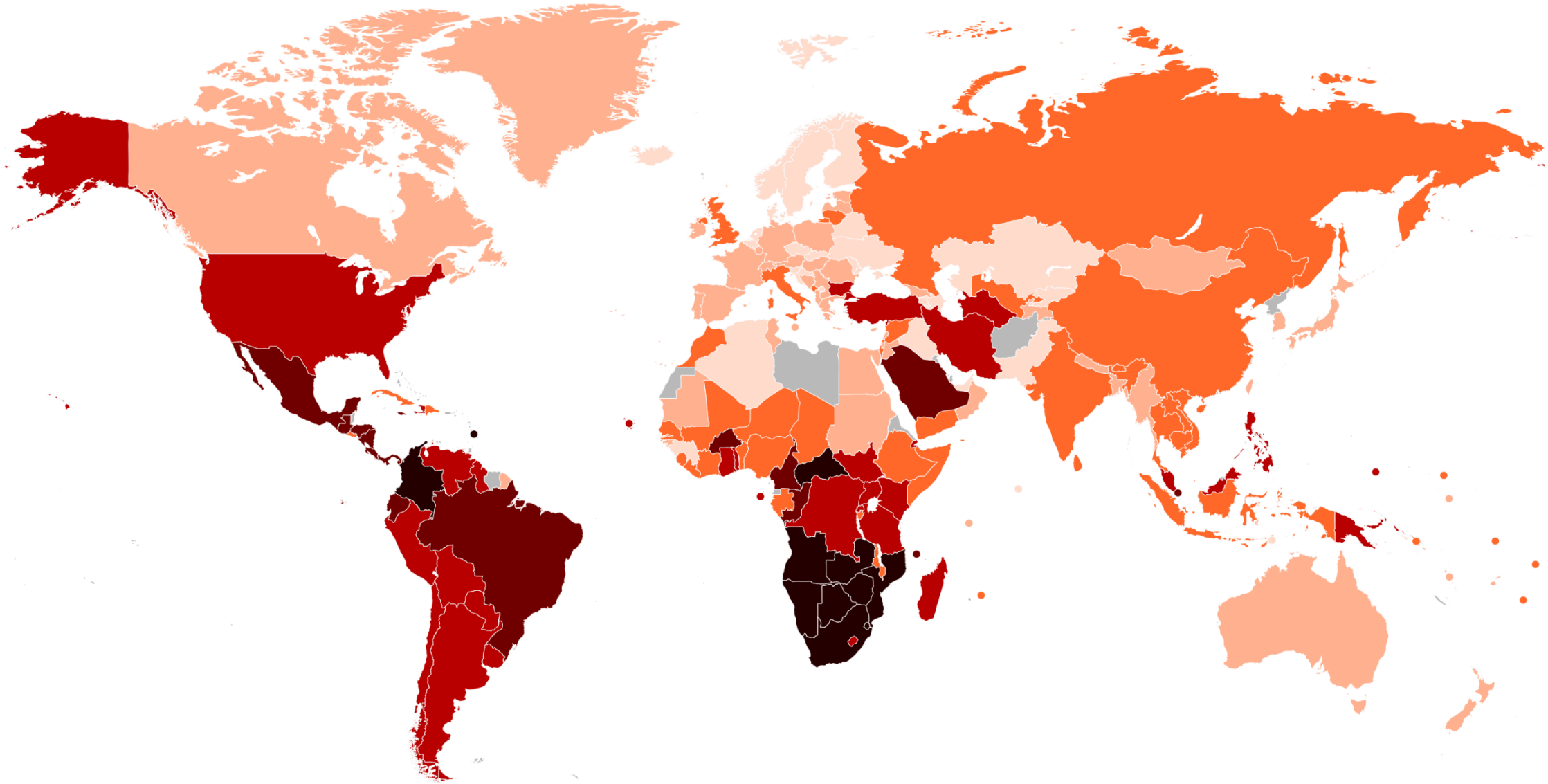
- Regardless of policy interventions aimed at reducing inequality, high levels of inequality have persisted in Africa (Leibbrandt & Díaz Pabón, 2021).

- Take for example, South Africa has been battling structural inequality since post-apartheid and is one of the most unequal society in the world with a Gini coefficient of 0,63 (World Bank, 2020).

- The legacy of exclusion during Apartheid has contributed to structural inequality with bare mobility of intergenerational income. Thus, inequality in South Africa has prominently remained a vital social-economic and policy challenge.

- Another example include Zimbabwe which is mainly rural and agrarian. Rural areas are four to five times poorer than urban areas, accounting for about 90% of the poor.

- These income disparities are observed in many African countries.



World map of income inequality Gini coefficients by country (as %). Based on World Bank data ranging from 1992 to 2020.

UNISA university of south africa

Overview & background…

- Despite adopting persistent expansionary monetary policies, income inequality in Africa remain unreasonably high.

- Is it liquidity or interest rates that matter when it comes to economic growth and addressing inequality in society?

- It is necessary to relook at the nexus between liquidity, interest rates and inequality as it remains an unresolved empirical issue.

Overview & background…

- In line with **Aghion, Farhi, and Kharroubi (2015)** the effects of the interaction between liquidity and interest rates are put into perspective within the context of its effects on inequality.

- Theoretically, if endogenously determined, liquidity is inversely related to interest rates. However, in reality interest rates and liquidity are to an extent independent as they are both autonomously determined.

- Though we are cautious of open market operations (OMO) and their aim to influence interest rates, in this study we hold constant this aspect as liquidity trap has been a reality for almost a century now (see for example **Keynes, 1936; Fellner, 1948; Villard, 1948; Shaw, 1950; Brunner & Meltzer, 1968; Geromichalos & Herrenbrueck, 2022; Chen, 2022; Ragot, 2023).**

- Could there be an optimal mix of liquidity level and interest rates that can result in reduction of inequality?

Research Gap and contribution

- Inequality remains a global concern and questions have been raised if central banks have a role in addressing inequality challenges **(BIS, 2021).**
- Nonetheless, monetary policy seem not directly used in Africa as a tool to tackle inequality.
- Albeit, in developed economies, quantitative easing has been blamed for deteriorating inequality levels **(Saiki & Frost 2014; Mumtaz & Theophilopoulou 2017, BIS, 2021b).**

Research Gap and contribution…

- Rate cuts in an economy with a larger poor population tend to increase consumption expenditure than building wealth and it is argued that lower interest rate increases inequality **(Mumtaz & Theophilopoulou, 2017).**

- In the endogenous growth model **Jin (2009)** opined that money growth increases inequality despite frictionless markets.

- Furthermore, interest rate cuts contribute to capital gains in long term assets increasing inequality as assets holders gain more by interest rate cuts as compared to non-asset holders **(Saiki & Frost 2014).**

Research Gap and contribution …

- According to the World Inequality **Lab (2021)** asset allocation in countries like Africa continues to shape income disparities.
- **Piketty (2018)** argued that the return on capital that is greater than economic growth is the main driver of inequality and discontent towards democratic values.
- There are several factors that a argued to perpetuate inequality but liquidity and interest rate adjustments are rarely mentioned.
- Income redistribution in emerging and developing markets is essential not only for equality but for faster economic growth and poverty reduction **(IMF, 2018)**

Research Gap and contribution …

- It remains unclear among researchers whether monetary policy decisions by central bank:
  - *Should include income distribution.*
  - *or play a role in addressing or amplifying inequality.*
- **Bernanke (2015)** opined that direct distributional policies in an economy should be done through the fiscal policy than monetary policy.
- Literature is inconclusive on the link between monetary policy and inequality as there are different channels of transmission.
- This study contributes to the debate on the nexus between monetary policy and inequality.
- The results of the study provide an understanding to policymakers on the ways in which its policies affect inequality.

Literature review

Several channels on the effects of monetary policy on equality which includes inflation, employment, assets prices and borrowing costs channels are suggested in literature (see Coibion et al. 2017).

The employment channel suggested that looser monetary policy increases employment (Draghi, 2016; Coibionet al., 2017).

The asset price channel argues that looser monetary policy benefits richer households more as they hold riskier and more cyclical assets than the lower income households (see, Bernanke, 2015). Lower interest rate boosts the prices of assets such that it benefits more the household who own assets already.

In the income composition channel if changes in monetary policy increase business profit more than wages, income is accumulated by the already richer households (Coibion et al., 2017).

Tightening monetary policy increases income and consumption inequality (Coibion et al., 2017; Mumtaz & Theophilopoulou, 2017; 2020).

UNISA university of south africa

Literature review …

- Ample evidence suggests that financial development tightens income distribution directly or indirectly by boosting the incomes of the poor (de Haan and Sturm 2017; Chang et al. 2020; Levine 2021).

- It is natural to expect that the easing of credit constraints might result in a greater benefit for the poor given that the poor are more likely to use credit more than the rich (Galor and Zeira 1993; Levine 2021).

- A better financial system augments the creation and management of liquidity (Iacopetta and Minetti 2019; Phiri and Ngeendepi, 2021; Levine 2021). Thus, the availability of liquidity can shape the income inequality gap and the persistence of that gap across generations.

- Additionally, the availability of liquidity and who can have access to that liquidity has ramifications on income distribution as it can shape savings and investment decisions (Blau 2018).

- Furthermore, Blau (2018) argued that the effect of liquidity on inequality depends on the level of a country's financial development and gross domestic product per capita.

Methodology

- For the empirical estimations, annual panel dataset of 37 African countries over the period 2005–2021 from the Standardized World Income Inequality Database (SWIID) and the World Bank database was used.

- The coverage of the data was restricted to the specified period due to the unavailability of longer historical data on the interest variable used for some of the countries.

Variables

Variable	Definition of variables	Data Source	Expected Sign
GINI coefficient (INEQ)	Uneven distribution of income across the entire household. The measure of inequality is derived from the Lorenz curve.	SWIID (2022)	
Liquidity (LIQ)	Broad money (% of GDP)	World Development Indicators (WDI)	Negative (-)
Interest rate (INT)	Lending rates	World Development Indicators (WDI)	Positive/Negative (+/-)
Inflation (INF)	Changes in prices of goods and services that households consume	World Economic Outlook (2022)	Positive (+/-)
Economic growth (all three GDP indicators are using the US$	Gross domestic product per capita (GDPPC) (constant 2015 US$) Real Gross domestic product growth (GDPG) (constant 2015) US$). Gross domestic product (GDP) (constant 2015 US$).	World Development Indicators (WDI)	Negative (-)
Unemployment (UNEMP)	The total number of the unemployed labour force is a percentage of the total labour force.	World Economic Outlook (2022).	Positive (+)

Model specification

Two step System GMM approach

$$\Delta \mathrm{INEQ}_{it} = \beta_0 + \Delta\beta_1 \mathrm{INEQ}_{it-1} + \beta_2 \Delta \mathrm{LIQ}_{it} + \beta_3 \Delta \mathrm{INT}_{it} + \beta_4 \Delta \mathrm{INT\_LIQ}_{it} + \sum_{i-1}^{n} \beta_{iq} \Delta \mathrm{X}_{q,it} + \Delta \varepsilon_{it}$$

Results and Discussion

The study used the Arellano and Bond (1991) and Arellano and Bover (1995) endogeneity robust generalised method of moments (GMM) to ascertain the impact of liquidity and interest rate on inequality. The system-GMM was motivated by its ability to account for the persistence of inequality, simultaneity, and time-invariant omitted variables.

Consistent with time series and cross-sectional studies, diagnostic estimation was employed to test for the stationarity of the series and correlation analysis.

The validity of the instruments was confirmed using Sargan (1958) and Hansen (1982); Blundell and Bond (2000) were employed to check for over-identifying restrictions.

The tests for joint validity of cross-sectional individual effects, Breusch Pagan's (1980: 239) LM test for random effects, the Hausman (1978: 1251) specification test and the test for heteroscedasticity were all employed in this study.

	2-Step System GMM	2-Step System GMM	2-Step System GMM
Variable	INEQ	INEQ	INEQ
L.INEQ	0.310***	0.286***	0.378***
	(0.0482)	(0.0294)	(0.0350)
LIQ	-0.00453***	-0.00741***	-0.00419***
	(0.000537)	(0.000877)	(0.000492)
INT	-0.0387***	-0.0292***	-0.0706***
	(0.00595)	(0.00374)	(0.00562)
LIQ-INT	-0.000388*	-0.000494*	-0.00114**
	(0.000217)	(0.000187)	(0.000320)
UNEMP	-0.0445***	0.0162**	-0.0389***
	(0.00869)	(0.00563)	(0.00562)
INFL	-0.00586	-0.00904***	-0.00591*
	(0.00293)	(0.00159)	(0.00268)
GDPPC	-0.0104***		
	(0.00143)		
GDPG		-0.00137	
		(0.000918)	
LGDP_US			-0.452**
			(0.127)
N	555	555	555
Groups	37	37	37
Instruments	33	33	33
AR(1)	-0.285	-0.753	-0.161
AR(2)	--0.192	-0.118	-0.208
Sargan test	14.59	12.70	15.67
Hansen test	24.43	27.18	29.73

Discussion

LIQUIDITY

- Results showed that liquidity reduces inequality. This is in line with the proponents of the financial development theories where the intuition is liquidity is a panacea for improving income distribution in an economy.
- The findings of a negative relationship between liquidity and inequality concur with the previous finding of Levine and Zervos (1998), Blau (2018), Hansen, Lin, and Mano (2020), and Levine (2021).
- However, on the contrary Jin (2009) suggested that money growth increases inequality.
- International Monetary Fund suggested that the liquidity stimulus packages which were implemented during the Covid-19 period cushioned low-income households from the detrimental effects of the pandemic.

Discussion…

INTEREST RATES

- This study found a negative relationship between inequality and interest rate is in line with Mumtaz and **Theophilopoulou (2020)** as low-interest rate tends to increase consumption than building wealth in low-income earners.

- The lower interest rate in an economy with a larger population of low-income earners is thought to increase inequality **(Greenwood and Jovanovic 1990; Saiki and Frost 2014; Magwedere and Marozva 2022b)**

- However, **Blau's (2018)** findings suggested that the net effect is contingent on financial development and the gross domestic product per capita.

- Ceteris paribus, increase in interest rates will negatively impact the rich and the disparities between the affluent and the poor is minimised

Discussion…

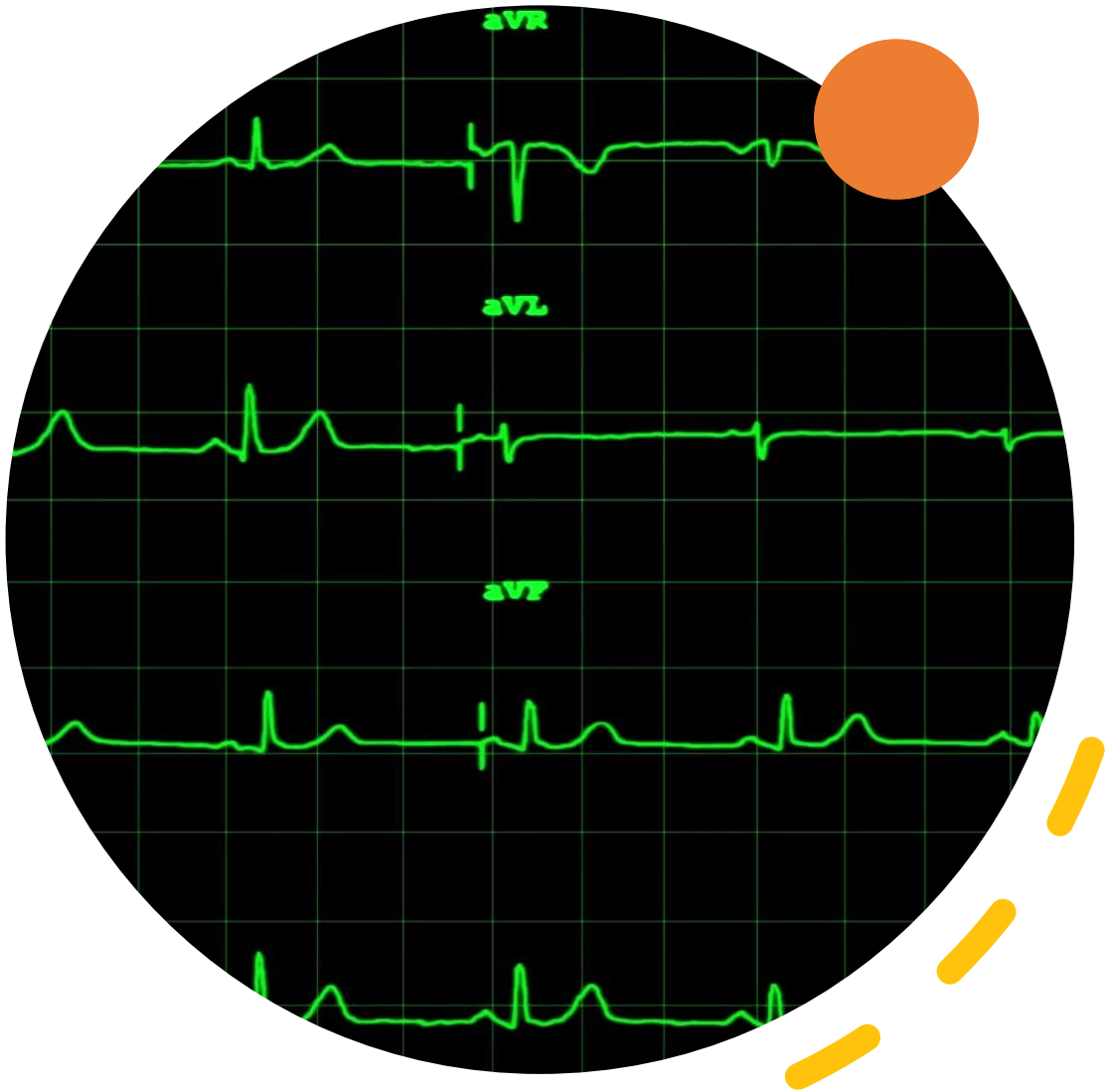
The a priori relationship between the interaction term (LIQ_INT) and inequality is ambiguous as it can either increase or decrease relative to the individual variables.

In line with expectations, inequality decreased with an increase in the interaction term.

Therefore, central banks are recommended to find an optimal mix between interest rate and liquidity.

Further Analysis

- **Variance decompositions** measure the contribution of each type of shock to the forecast error variance.
- **Impulse response functions** show the effects of shocks on the adjustment path of the variables.
- These computations are useful in assessing how shocks to economic variables reverberate through a system.



Model specification

- The VAR (vector autoregressive models) based impulse response functions were estimated.

$$\mathrm{INEQ}_{it} = \alpha_1 + \sum_{j=1}^{k} \beta_j \mathrm{INEQ}_{it-j} + \sum_{j=1}^{k} \gamma_j \mathrm{INT}_{it-j} + \sum_{j=1}^{k} \boldsymbol{\Omega}_j \mathrm{LIQ}_{it-j} + \sum_{j=1}^{k} \boldsymbol{\varpi}_j \mathrm{GDPPC}_{it-j} + \sum_{j=1}^{k} \psi_j \mathrm{INF}_{it-j} + \sum_{j=1}^{k} \phi_j \mathrm{UNEMP}_{it-j} + \mu_{1it}$$

$$\mathrm{LIQ}_{t} = \alpha_2 + \sum_{j=1}^{k} \beta_j \mathrm{LIQ}_{it-j} + \sum_{j=1}^{k} \gamma_j \mathrm{INEQ}_{t-j} + \sum_{j=1}^{k} \boldsymbol{\Omega}_j \mathrm{INit}_{t-j} + \sum_{j=1}^{k} \boldsymbol{\varpi}_j \mathrm{GDPPC}_{it-j} + \sum_{j=1}^{k} \phi_j \mathrm{INF}_{it-j} + \sum_{j=1}^{k} \psi_j \mathrm{UNEMP}_{t-j} + \mu_{2it}$$

$$INT_{it} = \alpha_3 + \sum_{j=1}^{k} \beta_j \mathrm{INT}_{it-j} + \sum_{j=1}^{k} \gamma_j \mathrm{INEQ}_{t-j} + \sum_{j=1}^{k} \boldsymbol{\Omega}_j \mathrm{LIQ}_{it-j} + \sum_{j=1}^{k} \boldsymbol{\varpi}_j \mathrm{GDPPC}_{it-j} + \sum_{j=1}^{k} \psi_j INF_{t-j} + \sum_{j=1}^{k} \phi_j \mathrm{UNEMP}_{it-j} + \mu_{3it}$$

$$\mathrm{GDPPC}_{it} = \alpha_1 + \sum_{j=1}^{k} \beta_j \mathrm{GDPPC}_{it-j} + \sum_{j=1}^{k} \gamma_j \mathrm{INT}_{it-j} + \sum_{j=1}^{k} \boldsymbol{\Omega}_j \mathrm{LIQ}_{it-j} + \sum_{j=1}^{k} \boldsymbol{\varpi}_j \mathrm{INEQ}_{it-j} + \sum_{j=1}^{k} \psi_j \mathrm{INF}_{it-j} + \sum_{j=1}^{k} \phi_j \mathrm{UNEMP}_{it-j} + \mu_{1it}$$

$$\mathrm{INF}_{t} = \alpha_3 + \sum_{j=1}^{k} \beta_j \mathrm{INF}_{it-j} + \sum_{j=1}^{k} \gamma_j \mathrm{INEQ}_{t-j} + \sum_{j=1}^{k} \boldsymbol{\Omega}_j \mathrm{LIQ}_{it-j} + \sum_{j=1}^{k} \boldsymbol{\varpi}_j \mathrm{GDPPC}_{it-j} + \sum_{j=1}^{k} \psi_j \mathrm{INT}_{it-j} + \sum_{j=1}^{k} \phi_j \mathrm{UNEMP}_{t-j} + \mu_{4it}$$

$$\mathrm{UNEMP}_{it} = \alpha_4 + \sum_{j=1}^{k} \beta_j \mathrm{INF}_{t-j} + \sum_{j=1}^{k} \gamma_j \mathrm{INEQ}_{it-j} + \sum_{j=1}^{k} \boldsymbol{\Omega}_j \mathrm{LIQ}_{t-j} + \sum_{j=1}^{k} \boldsymbol{\varpi}_j \mathrm{GDPPC}_{it-j} + \sum_{j=1}^{k} \phi_j \mathrm{INit}_{t-j} + \sum_{j=1}^{k} \psi_j \mathrm{UNEMP}_{it-j} + \mu_{5it}$$

Results and Discussion…

The results from unit root test confirmed that all variables included in the examination of the linkage between these variables were integrated of order one, the next step was to test for the existence of a cointegration relationship.

The VAR model was run, all the diagnostics were tested and were in order.

Variance decompositions and impulse response functions were run and presented.

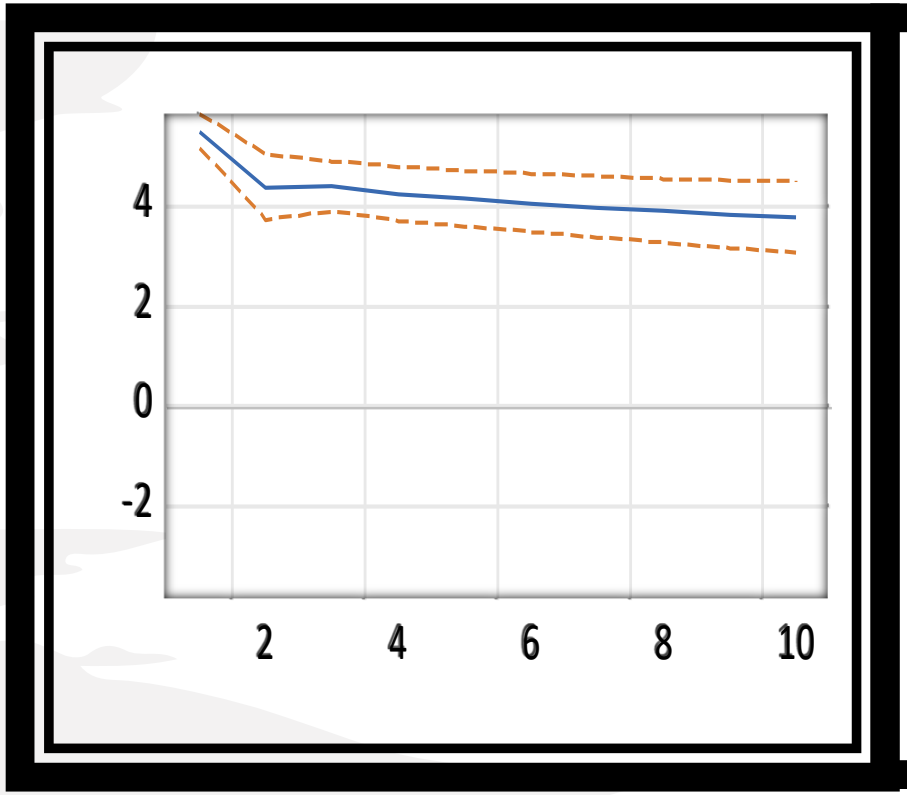
Results

Variance Decomposition of INEQ

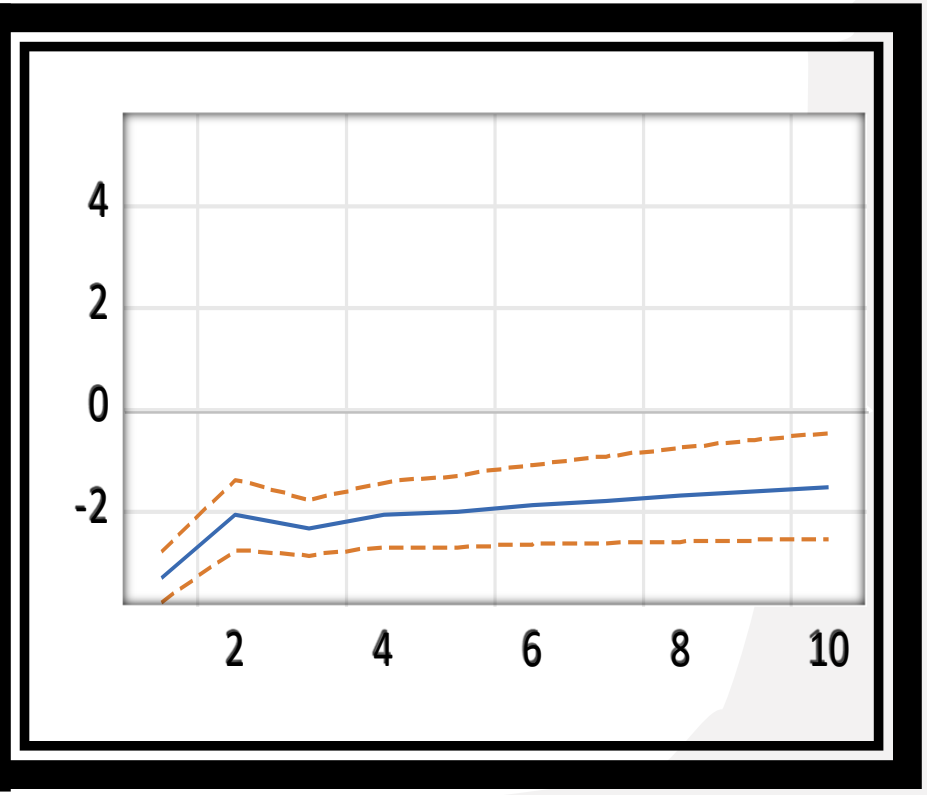
Period	INEQ	LIQ	INT	UNEMPL	GDPPC	INFL
1	72.23591	26.07207	0.944027	0.747708	0.000285	0.000000
2	75.10109	23.05439	1.329004	0.505257	0.001008	0.009250
3	75.54583	22.54595	1.447931	0.396648	0.001205	0.062436
4	76.25881	21.76140	1.494606	0.333120	0.001389	0.150677
5	76.78095	21.17967	1.512315	0.291493	0.001900	0.233680
6	77.28897	20.61903	1.518037	0.261159	0.002575	0.310233
7	77.76125	20.10499	1.518520	0.237723	0.003432	0.374087
8	78.21448	19.61939	1.516676	0.218746	0.004438	0.426269
9	78.64866	19.16124	1.513863	0.202892	0.005577	0.467760
10	79.06591	18.72690	1.510715	0.189344	0.006828	0.500304

Response to Cholesky One S.D. Innovations ± 2 S.E.

Response of INEQ to INEQ

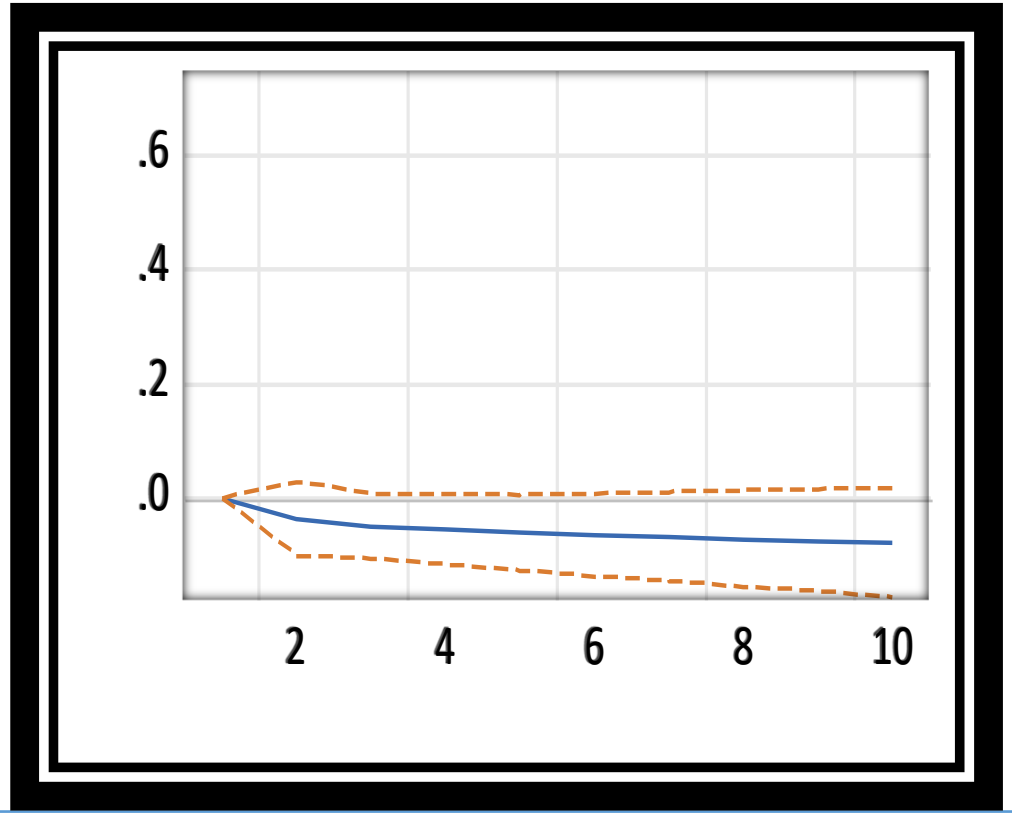


Response of INEQ to LIQ

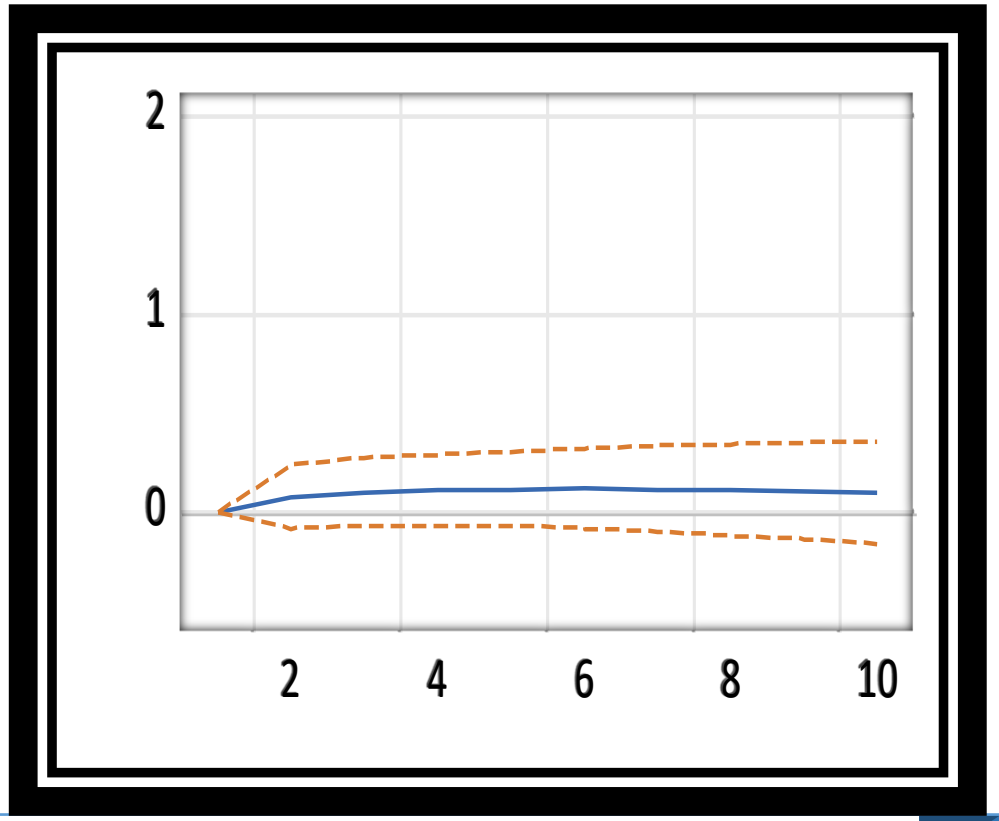


Response to Cholesky One S.D. Innovations ± 2 S.E.

Response of INEQ to INT

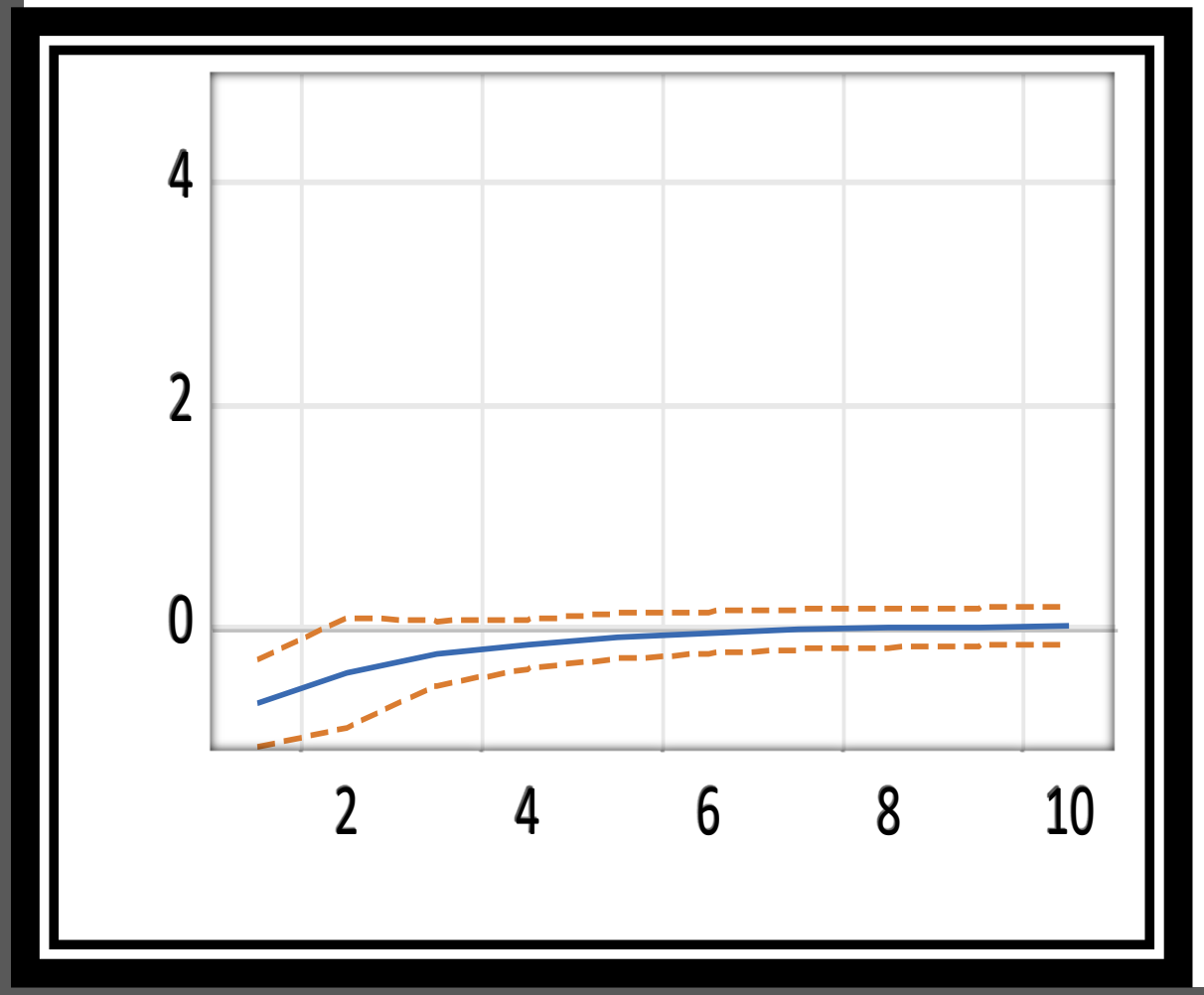


Response of INEQ to UNEMPL

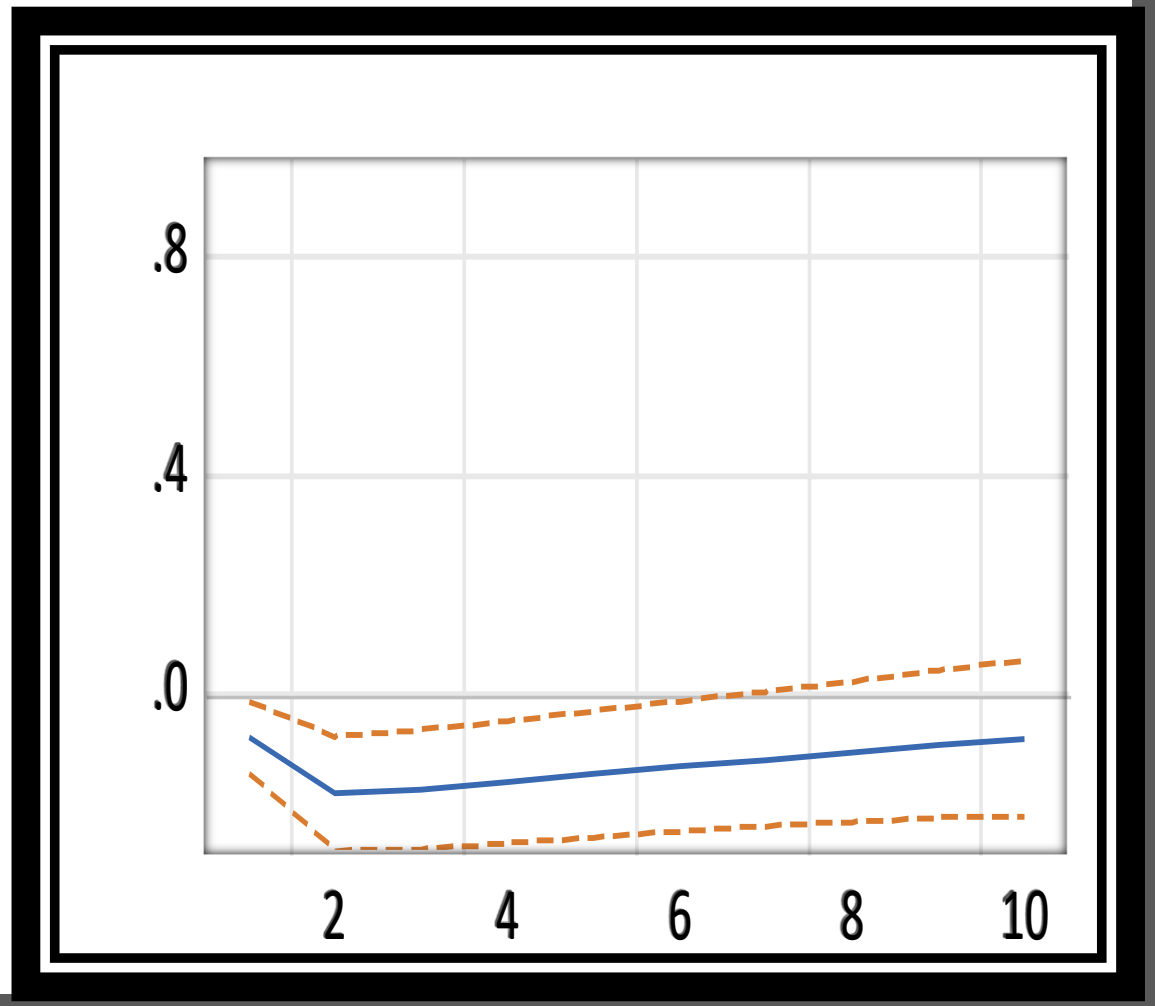


Response to Cholesky One S.D. Innovations ± 2 S.E.

Response of INEQ to GDPPC



Response of INEQ to INFL



Discussion and implications of results

- Findings confirm that inequality is persistent amongst the African countries, more pronounced in the short run and slightly eases to a stead state in the long run.

- The results suggest that a one standard deviation shock (innovation) to liquidity has noticeable impact in the short run in period 1 to 3. From the 3rd period, the response gradually increases until the 10th period. In both periods, the response in in the negative region. This implies that shocks in liquidity will have a negative impact on inequality both in the short run and in the long run.

- The findings suggest a **slightly responsive** inequality to interest rate shocks in the first 2 periods and a more **non-responsive** inequality in the long run as inequality reaches a stable state after period 2. Also the response is in the negative region. This supports the composition of debt in African Countries where the majority of the households' debts are from microlenders where the interest rate in the microlending sector is not tied to the monetary policy rate.

Conclusion

- In the short run the results shows that inequality negatively respond to liquidity and interest rate shocks . Thus, inequality in Africa is propagated by these factors which can be controlled within the realms of monetary policy.

- I am cognisant of the fact that it remains a challenging initiative for monetary policy alone to be used a tool to overcome Africa's structural constraints.

- Therefore, central banks in Africa should choose a set of policy tools that safeguard their mandate whilst abating the potential income distributional effects of monetary policy.

- Moreover, Policymakers need to undertake a coordinated view in reducing inequality than piecemeal approach.
- Regarding future research, it is recommended to examine the effect of interest differentials on income distribution.
- Also, an analysis of African countries' fiscal and monetary policy coordination in a bid to tackle inequality is recommended.

Does LIQUIDITY MATTER?

Yes it DOES!!

Thank you

Define tomorrow.

UNISA university of south africa