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***Financial Sector Reforms and
Innovations and their
Implications on Monetary Policy
Transmission in Tanzania***

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Financial Sector Reforms and Innovations and their Implications on Monetary Policy Transmission in Tanzania

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Glossary of Terms

ATM – Automated Teller Machine
BFIA - Banking and Financial Institution Act
BOT – Bank of Tanzania
BRELA - Business Registration and Licensing Agency
CBOs - Community Based Organizations
CC – Currency in Circulation
CMSE - Capital Markets and Securities Authority
CPI - Consumer Price Index
DFI - Development Finance Institution
DFS - Digital Financial Services
DIB - Deposit Insurance Board
DSE - Dar es Salaam Stock Exchange
EAC - East African Community
EAMU - East African Monetary Unit
EAPS - East African Payment System
EFT - Electronic Fund Transfer
FGFSR - First Generation Financial Sector Reforms
FIU - Financial Intelligence Unit
FSAP - Financial Sector Assessment Program
FSP - Financial Sector Support Project
GDP – Gross Domestic Product
HMFF - Housing Micro Finance Fund
HMFF - Housing Micro Finance Fund
IBCM – Inter-bank Cash Market
ICT – Information and Communication Technology
IFC - International Finance Corporation
IFEM - Inter Bank Foreign Exchange Market
LART - Loan and Assets Realization Trust
MFS - Mobile Financial Services
MNOs - Mobile Network Operators
MTM - Monetary Transmission Mechanism
NEER - Nominal Effective Exchange Rate
NPLs - Non-Performing Loans
REPOs - Repurchase Agreements
RM – Reserve money
ROA – Return on Assets
SACAs - Savings and Credit Associations
SGFSR – Second Generation Financial Sector Reforms
SIRESS - Integrated Regional Electronic Settlement System
SMEs - Small and Medium Enterprises
SSRA – Social Securities Regulatory Authority
SVAR – Structural Vector Auto Regression
TACH - Tanzania Automated Clearing House
TCDC - Tanzania Cooperative Development Commission
TIB - Tanzania Investment Bank
TIRA – Tanzania Insurance Regulatory Authority
TISS - Tanzania Interbank Settlement System
TMRC - Tanzania Mortgage Refinance Company Limited
URT – United Republic of Tanzania
VECM - Vector Error Correction Model

Abstract

Tanzania embarked on a series of financial reforms starting 1991 as an effort to promote the development of a market-based financial sector. The reforms were implemented in two major phases: The First Generation Financial Sector Reforms which started in 1991 targeting legal reforms to create competitive environment, modernization of the National Payment Systems, strengthening of BOT's regulatory and supervisory capacity, restructuring and privatization of state owned banks and financial institutions. The Second Generation Financial Sector Reforms followed in 2003 aiming at strengthening the banking sector, developing financial markets, facilitating the provision of long term development finance, land reforms, creation of credit registry and strengthening of micro and rural finance. Using descriptive analysis and model-based approaches, this study assesses the impact of the reforms and innovations in the financial sector on the development of the banking sector in Tanzania and evaluates the implications of the banking sector development on the effectiveness of monetary policy.

On the banking sector, the findings suggest that considerable achievements have been recorded, particularly in the structural change of the sector, as well as the quantity and quality of the financial services provided. Notably, the following achievements are worth mentioning:

Firstly, increase in both the number of licensed banks and financial institutions and the expansion of bank branch network and market determined interest and exchange rates that respond to macroeconomic fundamentals. The number of banking institutions for example increased from 29 in 2000 to 59 in 2016 while the number of bank branches increased from 328 in 2007 to 810 in 2016.

Secondly, modernization of payments, clearing and settlement systems have led to improvement in the revenue collection and government payments; reduction in risks associated with usage of high value cheques; reduction in operational costs; simplified reconciliation processes; efficiency in funds transfer; increased efficiency in cheque clearing from more than thirty days to T+1 clearing across the country; facilitation of direct deposit of salaries to beneficiaries' accounts for government employees and settlement of other government's recurrent low value payments.

Thirdly, the transformation of Tanzania Investment Bank (TIB) and establishment of Tanzania Agricultural Development Bank (TADB), Tanzania Mortgage Refinance Company (TMRC) Limited and Housing Micro Finance Fund (HMFF) have led to increase in availability and access to long term financing for enterprises, infrastructure, and housing development.

Fourthly, promotion of innovations for delivery of financial services using the digital financial services and agent banking has significantly increased access to financial services as evidenced by findings of Finscope Surveys. The Finscope survey of 2017 shows that 86% of Tanzanian adults

live within a 5km radius of financial access point. Further, the introduction of credit reference system and its accompanied regulations have improved credit risk management in the economy, thus assisting in lowering the cost of borrowing.

Fifthly, financial depth and efficiency of the banking sector has improved overtime as indicated by both the indicators of financial depth (i.e. bank credit to private sector and deposits as a percentage of GDP) and by indicators of efficiency (i.e. interest rate spread, return on assets and access to finance). Credit to private sector went up from below 5% in 2000 to around 15% in 2016, interest rate spread decreased from above 10% in 2005 to around 6% in 2017, and return on assets increased slightly from below 1.5% to around 2.0% on average in 2016.

Development of the banking sector is expected to provide a conducive environment important for enhancing effectiveness of the monetary policy. Although some studies provide evidence of the lending channel of monetary policy transmission in Tanzania, other studies point to a limited transmission of monetary policy through other channels such as the interest rate channel. An analysis on the interest channel using most current data and SVAR approach suggests a weak pass-through to inflation, partly pointing to remaining structural constraints in the financial sector. However, descriptive analysis suggests for some better monetary transmission outcomes going forward. This is evidenced by the declining trend of currency in circulation outside the banking system (CC/RM); increasing efficiency as reflected by declining interest rate spread and increasing return on assets; and increasing access to financial services by adult population. Monetization of the economy has also been increasing. Further, on-going or/and planned specific interventions in the banking sector are likely to contribute to this. These include: -

- Increasing transparency in the inter-bank cash market -- in a bid to do away with bilateral lending and borrowing relationship among commercial banks while increasing transparency in the inter-bank cash market, BOT is implementing a project that will put in place a bidding platform for all commercial banks which are willing to borrow and lend. This transparency will create an environment for determination of competitive rates in the inter-bank cash market, bringing with it efficiency in the financial markets. The project is expected to be completed by December 2017.
- Widening the acceptable collateral for lender of last resort - in extending the range of assets that commercial banks can pledge and request for financial assistance to improve liquidity, BOT is working towards widening the acceptable collateral for lender of last resort to include longer term maturity instruments, while applying the necessary adjustments (decent haircuts) to the longer term instruments. This aims at increasing liquidity and efficiency in the financial markets.

- Introduction of a platform for micro-investment in government securities which aims at extending the securities market for participation of low income investors through the use of mobile bidding, taking the advantage of extensive mobile payment system in the country.
- Putting in place a legal and regulatory framework for Islamic banking - the banking sector in Tanzania is characterized by some commercial banks fully practicing Islamic banking; while many more others have developed financial products that are sharia compliant. While the conventional regulatory and supervisory frameworks for commercial banks do not fully apply to Islamic banking; it is necessary to put in place a legal and regulatory framework for Islamic banking with the aim of ensuring a sound and safe financial system in the county.
- Establishment of the fully-fledged Office of the Banking Ombudsman, which aims at putting in place an alternative cost effective and efficient mechanism for resolving complaints between banking institutions and their customers. BOT is currently operating a Complaints Resolution Desk which resolves complaints for small claims, not more than TZS 15,000,000 in respect of both the claim amount and remedy awarded.

1.0 Introduction

As a follow up to the recommendations of the Presidential Commission of Enquiry, Tanzania commenced a series of financial reforms in 1991 with a view to build a market-based financial sector. This was done as a strategy to accelerate economic growth. The strategy was kicked off by the Banking and Financial Institutions Act of 1991, which paved the way for entrance in the financial sector of private foreign and domestic investors and development of money markets.

The reforms were implemented in two major phases: The First Generation Financial Sector Reforms (FGFSR) which started in 1991 targeting legal reforms to create competitive environment, modernization of the National Payment Systems, strengthening BOT's regulatory and supervisory capacity, restructuring and privatization of state owned banks and financial institutions. In consolidating and scaling up the gains, the second round of reforms called the Second Generation Financial Sector Reforms (SGFSR) were implemented from 2003. The objectives were to: strengthen the banking sector, develop financial markets, facilitate the provision of long term development finance, implement land reforms, create credit registry, and strengthen micro and rural finance. In-tandem with the reforms, financial innovations have taken place, bringing with them major changes in the products and ways financial services are delivered.

The reforms and innovations have had far reaching implications on the development of the financial sector and effectiveness of the monetary policy. The objectives of this study are to: first, assess the impact of the reforms and innovations in the financial sector on the development of the banking sector in Tanzania. Secondly, evaluate the implications of the banking sector development on the effectiveness of the monetary policy. Two approaches are employed: desk review and descriptive analysis to account for the key reforms and gauge their effects on the banking sector development, while model-based estimations are conducted to inform the extent to which developments in the banking sector have enhanced the effectiveness of the monetary policy.

After the introduction, section two traces the evolution of key reforms and innovations in the banking sector. Since the reforms and innovations are ongoing from 1991, the study has attempted to describe the key activities sequentially under the main two reform generations; and the subsequent new developments in the sector. Section three covers the impact of reforms and innovations on the financial sector in terms of structural and institutional changes. It details the outcomes of the reforms and innovations in terms of quantity and quality of financial services, enhancement of financial stability and financial depth as well as efficiency of the system. Section four hinges on the implied efficiency gains from the reforms and innovations in the banking sector and assesses whether they have improved the effectiveness of the monetary policy. Conclusion and policy recommendations are in section five.

2.0 The Evolution of Reforms and Innovations in the Banking Sector

In the late 1980's the financial sector was in crisis. State owned banks and financial institutions faced a number of challenges characterized by non-performing loans (about 65% of loan portfolio), inadequate and inefficient payment system, inappropriate regulatory system, monopolistic and uncompetitive financial institutions, government controlled prices (interest rates, exchange rate, and credit), ineffective instruments of monetary policy, undercapitalized financial institutions, absence of legal framework for harmonizing operations of the financial institutions and lack of regulatory and supervisory body for enforcing adherence to prudential standards. In response to these challenges, the Tanzania Presidential Commission on Financial Sector Reforms, 1988 (Nyirabu Commission) was formed to analyze and recommend solutions to the challenges.

The implementation of the recommendations of the Nyirabu Commission from 1991 to 2003 gave rise to the so called the First Generation Financial Sector Reforms (FGFSR). FGFSR aimed at creating an enabling environment for free market to operate; modernize the country's payment, clearing and settlement systems; and establish a regulatory and supervisory framework for the financial system. A number of legislations were enacted including the Banking and Financial Institution Act (BFIA) of 1991 which paved the way for the licensing of new banks and financial institutions and thus introduced competition in the financial sector. The reforms envisaged to bring about a new financial landscape in Tanzania.

The implementation of the FGFSR was reviewed by the Government in 2001. The review results showed that more was still needed to improve efficiency of financial resources mobilization and allocation. In particular, there was still a need to expand access to financial services by the majority of Tanzanians, most of whom operated outside the formal financial system. In order to boost economic development in the country, there was also a need to develop medium and long-term lending instruments and to bring financial services within the reach of the Small and Medium Enterprises (SMEs) Sector.

The assessment of the implementation of the FGFSR carried out under the Financial Sector Assessment Program (FSAP) in 2003 observed that the Tanzanian financial system was dominated by a liquid banking system, which was well-capitalized and resilient to most shocks. However, it had limited role in the economy, with limited depth and efficiency relative to the needs to support economic growth. The economy was characterized by limited and mostly short term credit to the private sector; declining but high interest rate spreads, banks accumulated extensive holdings of government papers and sizeable offshore dollar placements; incomplete privatization; a number of structural impediments to lending, including poor credit culture, difficult and slow enforcement of creditor rights and lack of suitable collateral; as well as presence of underdeveloped payment systems.

From the FSAP mission's observations, the major recommendations were adopted as agenda for implementation under the Second Generation of Financial Sector Reforms (SGFSR). These included:

- Reform of the government owned financial institutions, including finalization of privatization process of financial institutions still under government ownership,
- Legal and judicial reforms to remove the main obstacles to lending,
- Enhancing access to financial services, including the promotion of microfinance and creation of credit registry,
- Liberalization and development of long-term investment by insurance companies and pension funds,
- Improvement of banks regulation and supervision and crisis preparedness,
- Developing Financial Markets through creating vibrant primary and secondary markets,
- Facilitating the provision of Long-Term Development Finance by addressing the gap in the provision of long-term credit in the productive sectors, and
- Develop a payment system infrastructure to facilitate retail payments.

In addressing the FSAP mission findings, a number of legal, judicial and institutional reforms to remove the main obstacles to lending, deepening financial intermediation and helping develop the financial system were implemented from 2003. The Financial Sector Support Project (FSP) supported the continuation of the financial sector reforms in specific activities. Some of the targeted areas included the strengthening the banking sector which aimed at enhancing its soundness and efficiency; developing financial markets focusing on promoting vibrant primary and secondary markets; strengthening the insurance industry to promote an efficient, sound, and competitive insurance industry with a wider outreach and market-based investment policies; facilitating the provision of long term development finance to support improvement in the availability and access to long term financing for enterprises, infrastructure, and housing; transformation of Tanzania Investment Bank Ltd (TIB) into an effective and sustainable Development Finance Institution (DFI); and strengthening of micro and rural finance focusing on promoting a viable and sustainable microfinance industry with a wide outreach, operating under an enabling legal and regulatory framework.

Reforms in the financial sector went hand in hand with promotion of innovations necessary for delivery of financial services in the country¹. The entry of private sector in the banking sector supported by the policy approach of allowing fintechs to offer financial services as well as adoption of agent banking increased presence of innovative financial products and delivery channels

¹ Appendix 5 contains more details on the chronological order of the reform measures and innovations in the Tanzanian financial system.

responsive to the market needs hence increasing accessibility of the adult population to financial services.

Innovations in digital finance² brought a potential to revolutionize financial services, improved data visibility for supply chain efficiency, created alternative payment instruments, increased productivity, lowered costs of distribution and reduced risks. Digital Financial Services (DFS), including credit, savings, insurance, transfers and payments, which are provided through alternative delivery channels such as e-vouchers, debit cards, biometric readers and point of sale devices made distribution more efficient while requiring accessible networks of service points. Since the adoption of digital financial services and specifically introduction of mobile money, over half of the Tanzanian adult population can now access formal financial services. This has facilitated increase in financial inclusion from 11.2% in 2006 to 65.3% in 2017³. Further in 2013, BOT introduced agent banking as an alternative delivery channel for offering banking services in a cost effective way. It is expected that agent banking will unlock the potential of the lower income markets and facilitate the participation of a significant proportion of the population.

The reform effort has not yet come to an end as there are remaining gaps. In October 2016, BOT carried out an assessment on implementation of the recommendations of Financial Sector Assessment Programmes (FSAP 2003 & 2009) and noted that, despite remarkable achievements recorded in implementation of the recommendations, some gaps still exist in the banking sector, long-term development finance, micro and rural finance, land reforms and legal and judicial reforms, among others. The gaps in various areas are as follows:

- a) Banking sector: tax treatment for financial leasing and establishment of secured credit transactions legal and regulatory framework as well as collateral registry, transformation of Deposit Insurance Board (DIB), preparation of the Banking Sector Development Policy and its implementation strategy, development of Financial Sector Crisis Management Framework and development of a comprehensive dataset for financial stability assessment.
- b) Long-term development finance: finalization of transformation of Credit Guarantee Schemes, putting in place a Development Finance Guarantee Facility and developing a long-term Development Finance Policy.
- c) Micro and rural finance: implementation of Rural Financial Services Strategy, development of a broad-based Financial Consumer Protection framework covering all subsectors of the financial sector, development of a regulatory framework for credit-only microfinance institutions, establishment of Registrar for informal financial institutions, development of

² Defined as access to electronic/digital financial services through non-traditional banking infrastructure that entails the use of alternative delivery channels that are largely driven by mobile technology through mobile money and agency banking models.

³ FinScope Surveys, 2006, 2009, 2013 and 2017

regulatory and supervisory framework for Savings and Credit Associations (SACAs) and Community Based Organizations (CBOs) as well as strengthening of Tanzania Cooperative Development Commission (TCDC).

- d) Land reforms: formalization of land titling process, computerization of land registries, and adoption of measures to strengthen housing market infrastructure, availability of office space for land and housing tribunals at district level, absence of land registries at district and village levels as well as absence of land registry for Zanzibar.
- e) Legal and judicial reforms: granting of exclusive jurisdiction over credit enforcement to the commercial courts, formulation of insolvency regulations for the Companies Act and establishment of a Commercial Court in Zanzibar.

It is worthy to note that Tanzania has requested for another round of FSAP which is expected to take place in 2018. This will shed more light on areas of the financial sector that need further reforms so as to have a financial sector with the required level of depth and efficiency adequate to support economic growth.

3.0 Impact of Reforms and Innovations on the Banking Sector Development

The reforms and innovations in the banking and financial sector have had impact on the banking and financial sector. These outcomes can be grouped in two categories, specifically structural and institutional changes and outcomes on the banking sector efficiency and financial products and services.

3.1 Structural and Institutional Changes

3.1.1 Legal Reforms

The enactment of the Banking and Financial Institutions Act (BFIA), 1991 allowed free entry and exist of private banks and financial institutions, both domestic and foreign, liberalized interest rates and lifted restriction on branch network by allowing banks and financial institutions to freely expand or reduce their branch network. The Act also gave powers to the Bank of Tanzania (BOT) to license, regulate and supervise banks and financial institutions. Moreover, enactment of the Foreign Exchange Act, 1992 led to the liberalization of exchange rates and gave BOT mandate to license and regulate foreign exchange bureaux. Other legislations were also enacted to support financial sector reforms⁴. These reforms created an enabling legal environment for growth and expansion of the banking sector.

⁴The Loans and Advances Realization Trust Act, 1991 and the Bank of Tanzania Act, 1995 which was later amended to grant statutory powers to the Bank to regulate, monitor and supervise the National Payment Systems. Other legislations

3.1.2 Restructuring and Privatization of State Owned Banks and Financial Institutions

The restructuring process involved transferring of Non-Performing Loans (NPLs) of the State owned banks to the Loan and Assets Realization Trust (LART) and re-capitalization. The restructuring of NBC was completed in 1997 by splitting it into NBC (1997) Ltd, NMB Ltd and NBC Holdings. In August 1998, both banks were offered for sale. ABSA purchased 70% of the shares of NBC (1997) Ltd and took over management of the bank in 2000, while NMB entered into a management contract with Development Alternatives Inc. In 2005, a consortium led by Rabobank acquired 49% of NMB shares and assumed management of the bank. The Corporative Rural Development Bank (CRDB) was privatized in July 1996 and renamed into CRDB Bank (1996) Ltd. The People's Bank of Zanzibar (PBZ) was also restructured with the aim to improve performance and service delivery.

3.1.3 Strengthening Regulatory and Supervisory Capacity

The BFIA, 1991 gave BOT powers to make regulations and guidelines for effective regulation and supervision of banks and financial institutions. Further, the Foreign Exchange Act 1992 and the BOT Act 1995 strengthened Bank of Tanzania's regulatory and supervisory powers. Internally, BOT Banking Supervision Unit was elevated to the level of a Directorate in 1992.

Further, the regulatory and supervisory capacity of BOT has been strengthened through: provision of training, working tools and technical assistances in various areas; putting in place various legal and regulatory frameworks for the banking sector, adoption of the Risk-Based Supervision methodology, automation of both on-site and off-site surveillance processes and strengthening⁵ the legal and regulatory framework for payment systems. These changes have enhanced BOT's capacity to regulate and supervise banks, financial institutions and other payment systems providers, which has contributed to increased safety and soundness of the banking sector.

3.1.4 Development of the Financial Markets

One of the impacts of financial sector reforms was the establishment of financial markets with a focus on promoting vibrant primary and secondary markets.

were the Banking and Financial Institutions Act, 2006 and the Bank of Tanzania Act, 2006, the National Payment Systems, which was further enhanced by enactment of the National Payment Systems Act, 2015 and the Electronic Transactions Act 2015 and the Cyber Crimes Act 2015.

⁵ The National Payment Systems Act 2015, the Electronic Transactions Act 2015, and the Cyber Crimes Act 2015 were enacted and Payment Systems Licensing and Approval Regulations 2015 and the Electronic Money Regulations 2015 issued.

3.1.4.1 Money Market

In 1993, BOT established the daily Inter Bank Foreign Exchange Market (IFEM) in which banks and financial institutions freely trade foreign currencies as well as a bureau de change market which enabled bureau de change to carry out spot buying and selling of foreign currencies. Auctioning of Treasury Bills and Repurchase Agreements (REPOs) were also introduced in 1997. The Interbank Cash Market (IBCM) was established in 1998. Furthermore, in 2003 BOT introduced Intraday and Lombard standby credit facilities to provide overnight-collateralized advances to commercial banks.

3.1.4.2 Bond Market

The bond market was established in 1997 with the introduction of 2-years bond, later on with the development of the market, bonds with maturities of 5-years, 7-years and 10-years were introduced in 2002. BOT issues the bonds in the primary market on behalf of the Government, through auctions that take place once every month. In order to enable market participants to issue new bonds (the primary market) or buy and sell already issues bonds (the secondary market), the bonds are listed at the Dar es Salaam Stock Exchange (DSE).

3.1.4.3 Capital Market

The Capital Markets and Securities Authority (CMSA) was established in 1996 to promote and develop efficient and sustainable capital markets and securities business in Tanzania. Further, in 1998, the Dar es Salaam Stock Exchange (DSE) was incorporated as a private company limited by guarantee and not having a share capital under the Companies Ordinance in order to facilitate mobilization and allocation of savings for medium and long-term investments. DSE was later demutualized and its shares are now listed on the exchange.

3.1.5 Key Payment Systems Infrastructure

Building from the National Payment Vision and Systems Strategic Framework (2000–2005), BOT designed and implemented the following payments, clearing and settlement systems: Tanzania Interbank Settlement System (TISS), East African Payment System (EAPS) and SADC Integrated Regional Electronic Settlement System (SIRESS) for large value payments and real-time settlements, clearing systems for cheques and Electronic Fund Transfer (EFT) and card switches, as well as other retail payment systems and infrastructure.

3.1.5.1 Tanzania Interbank Settlement System (TISS)

Since its deployment in 2004, TISS has offered a backbone for other payment systems and became instrumental in facilitating government payments, government revenue collections, and interbank

fund transfers where it transacts in both TZS and USD currencies. The benefits from using the system include: increased efficiency in revenue collection and government payments as they can be effected in real time; reduced usage of cheques which are normally risky; reduced operational costs; and simplified reconciliation processes. Further, the system has been connected and extended to the Government Securities System to enhance and facilitate payment and settlement of government securities.

3.1.5.2 East African Cross Border Payment System (EAPS)⁶

In 2015, TISS was later enhanced to accommodate the regional cross border payments aiming at promoting trade in the region where the three central banks in the region linked their real time gross settlement to form the East African Cross Border Payment System. The system mandated to facilitate funds transfer within the region.

3.1.5.3 SADC Integrated Regional Electronic Settlement System (SIRESS)

In April 2014 Tanzania joined the Integrated Regional Electronic Settlement System for SADC countries (SADC-SIRESS) which is an automated real time, gross cross-border payment, clearing and settlement system. The modernization of the payment and clearance systems has led to simplified processing of payment transactions, so leading to safe, secure and cost-effective way of making payments, both domestically and across borders within SADC. Where transactions previously took two to three days to clear, with SIRESS now they are settled in real-time, subject to availability of funding at the paying bank.

3.1.5.4 Tanzania Automated Clearing House (TACH) System

Modernization of the clearing house system which started in 2002 further strengthened the country's financial infrastructure in addition to deployment of TISS. From the bilateral arrangement clearing which normally would have taken thirty days to clear instruments, the system was improved to achieve a T+1 clearing across the country. As TISS, the system clears cheques both US and TZS currencies.

3.1.5.5 Electronic Funds Transfer (EFT) System

EFT system was introduced in 2004 to cater for recurrent low value payments such as payment of salaries and other government payments such as pensions. With modernization of the TACH, the system has three windows per day which has greatly increased efficiency. The recent decision by Government to pay its employees directly through EFT system has reduced costs to the

⁶ Bank of Tanzania, Central Bank of Uganda and Central Bank of Kenya initially formed EAPS, at a later stage, the National Bank of Rwanda joined the system. Burundi is yet to join as they are still carrying out modernization of their NPS.

Government and increased efficiency as the payments are effected direct to beneficiaries' accounts at commercial banks.

3.1.6 Reforms in Long-Term Finance

Reforms under long-term finance had the main objective of improving availability and access to long term financing for enterprises, infrastructure, and housing. To achieve this objective, a number of legislations were enacted, amended and regulations were developed under BFIA⁷. Moreover, Tanzania Investment Bank (TIB) was transformed into TIB Development Bank Ltd and TIB Corporate Bank. Further, Tanzania Agricultural Development Bank was established to provide longer term loans for agriculture. Furthermore, Tanzania Mortgage Refinance Company (TMRC) Limited and Housing Micro Finance Fund (HMFF) were established for the purpose of providing long-term loans to financial institutions for onward lending to the target groups for housing purposes. Establishment of TMRC and HMFF were initiatives under the Housing Finance Project (HFP) whose main development objective is to expand access to affordable housing finance under market-based conditions for the purchase, construction, or improvement of housing.

3.1.7 Strengthening Micro and Rural Finance

Reforms under this component aimed at promoting a viable and sustainable microfinance industry with wide outreach and operating under an enabling legal and regulatory framework⁸. The regulatory framework for SACCOs⁹ and the capacity of the then Cooperative Development Department at the Ministry of Agriculture, Food Security and Cooperatives were strengthened. In addition, the Microfinance Policies¹⁰ were developed and reviewed and a framework for Supervisory Function of Microfinance banks at BOT was established. These were aimed at creating a more effective supervision of the licensed microfinance banks and SACCOs¹¹, promotion of a viable and sustainable microfinance industry with wide outreach, and creating public confidence on these institutions. Further, the National Financial Inclusion Framework and National Financial Literacy Framework were developed to promote financial inclusion and consumer protection.

⁷ Enactments include: The Financial Leasing Act 2008, Mortgage Financing (Special Provisions) Act, 2008 and the Unit Titles Act 2008. Amendments were made in: The Land Act 1999; the Land Registration Act; the Civil Procedure Act; and the Magistrate Court Act. Regulations involved: The Banking and Financial Institutions (Mortgage Finance) Regulations 2015, the Banking and Financial Institutions (TMRC) Regulations 2011, the Banking and Financial Institutions (Development Finance) Regulations 2011, and the Banking and the Financial Institutions (Financial Leasing) Regulations 2011.

⁸ The reforms complemented initiatives under existing initiatives by the Financial Sector Deepening Trust and Private Sector Competitive Project

⁹ The Cooperative Societies Act 2013 was reviewed and the regulations developed.

¹⁰ The Zanzibar Microfinance Policy was developed while the National Microfinance Policy was reviewed in 2016

¹¹ Tanzania Cooperative Development Commission (TCDC) was formed and strengthened to supervise SACCOs.

3.1.8 Financial Leasing Reforms

Efforts to develop financial leasing¹² in Tanzania were pioneered by Tanzania Leasing Project, which was the initiative by the Government of Tanzania in collaboration with the International Finance Corporation (IFC) to empower Tanzanians to participate in the economy by having more possibilities of financing. The Financial Leasing Act 2008 and Financial Institutions (Financial Leasing) Regulations, 2011 were formulated to put in place the leasing legal and regulatory framework and the connected issues of enforcement of lease contracts and repossession of leased assets. In addition, public awareness campaigns were carried out through media. By end of September 2017, BOT had licensed three financial leasing companies.

3.1.9 Reforms in the Credit Registries

Credit registries are the depositories of data about history of individuals and businesses on their behavior regarding borrowing and repaying. They are also powerful tools of assessing, supervising and monitoring credit risk in the economy. Credit bureaus also offer fraud detection, debt collection, marketing services and credit scoring.

The Credit Reference Databank Regulations and Credit Reference Bureaus Regulations were gazetted in May 2010 and reviewed in December 2012, while installation of credit reference databank was completed in September 2012. Since then, two credit reference bureaus have been licensed and are operational.

3.1.10 Land Reforms

Land reforms in this context focused on addressing legal impediments to the growth and efficiency of the financial sector especially on collateral related issues. The main challenges were absence of adequate capacity for adjudication of land disputes, presence of conflicting legislations related to land issues, and absence of land registries at district levels. The reforms carried out to address these challenges included: the review of land cases adjudication process structure and introduction of new land cases adjudication system; establishment of the Land court division of the High Court to all High Court Centres in Mainland Tanzania; enactment and amendments¹³ of the legislation governing land registration and land disputes resolution systems; computerization of the company

¹² Leasing is a medium-term financing technique for the procurement of machinery, equipment, vehicles and properties. It is a complementary form of financing, alternative to the traditional bank loans. Leasing increases firm's ability to source financing and is suitable for small and medium enterprises that lack collateral to access traditional forms of finance.

¹³ The Unit Titles Act was passed in 2008 to facilitate ownership of portions of a building property while the Marriage Act of 1971 was also reviewed to accommodate equality in relation to matrimonial home and landed property.

registry at the Business Registration and Licensing Agency (BRELA); and establishment of land registries at zonal levels to facilitate land registration process.

3.1.11 Other Financial Developments

3.1.11.1 Islamic Banking

Islamic banking has the potential to deepen financial intermediation and facilitate access to finance. It is possible that significant additional financial resources could be accessed and important segments of society could be better serviced through Islamic banking. In Tanzania Islamic banking started to emerge in the past ten years. By the end of September 2017, BOT had granted approval to Amana Bank (T) Ltd to operate as a fully-fledged Islamic bank and to three banks namely Kenya Commercial Bank (KCB) (T) Limited, NBC Limited and Peoples' Bank of Zanzibar (PBZ) Limited to open up windows for Islamic banking products and services. BOT is in the process of putting in place a legal, regulatory and supervisory framework for Islamic banking in order to provide an enabling environment for operation of such products and services in the market.

3.1.11.2 Establishment of Financial Intelligence Unit

The Financial Intelligence Unit (FIU) was established in September 2007 as a National center for the receipt and analysis of suspicious transaction reports; and other information relevant to money laundering, associated predicate offences and financing of terrorism, and for the dissemination of the results of that analysis to the responsible law enforcement agencies. Further, awareness on anti-money laundering and combating the financing of terrorism have been created among all relevant stakeholders and the public at large, thus minimizing instances of money laundering and financing of terrorism by the banking sector.

3.1.11.3 Establishment of Complaints Resolution Desk

To protect consumers of financial services, a Complaints Resolution Desk was established by BOT in April 2015 as an alternative mechanism to handle unresolved complaints between banking institutions and their customers amicably, in an informal, objective, expeditious and cost effective manner. This mechanism, which affords an opportunity for banking institutions and consumers to address complaints by means other than conventional court process, is intended to promote confidence and integrity of the banking industry in Tanzania. The service is absolutely free of charge and is completely funded by BOT. The Desk is a stop-gap arrangement pending establishment of the office of the Banking Ombudsman by the Government.

Further, to facilitate complaints resolution, BOT issued Guidelines for Banking Consumers' Complaints, 2015. The Guidelines are intended to provide for procedures for submission,

assessment and resolution of consumer complaints as well as for responsibilities of banking institutions and complainants in handling consumer complaints.

3.2 Outcomes on Banking Sector Efficiency and Financial Products and Services

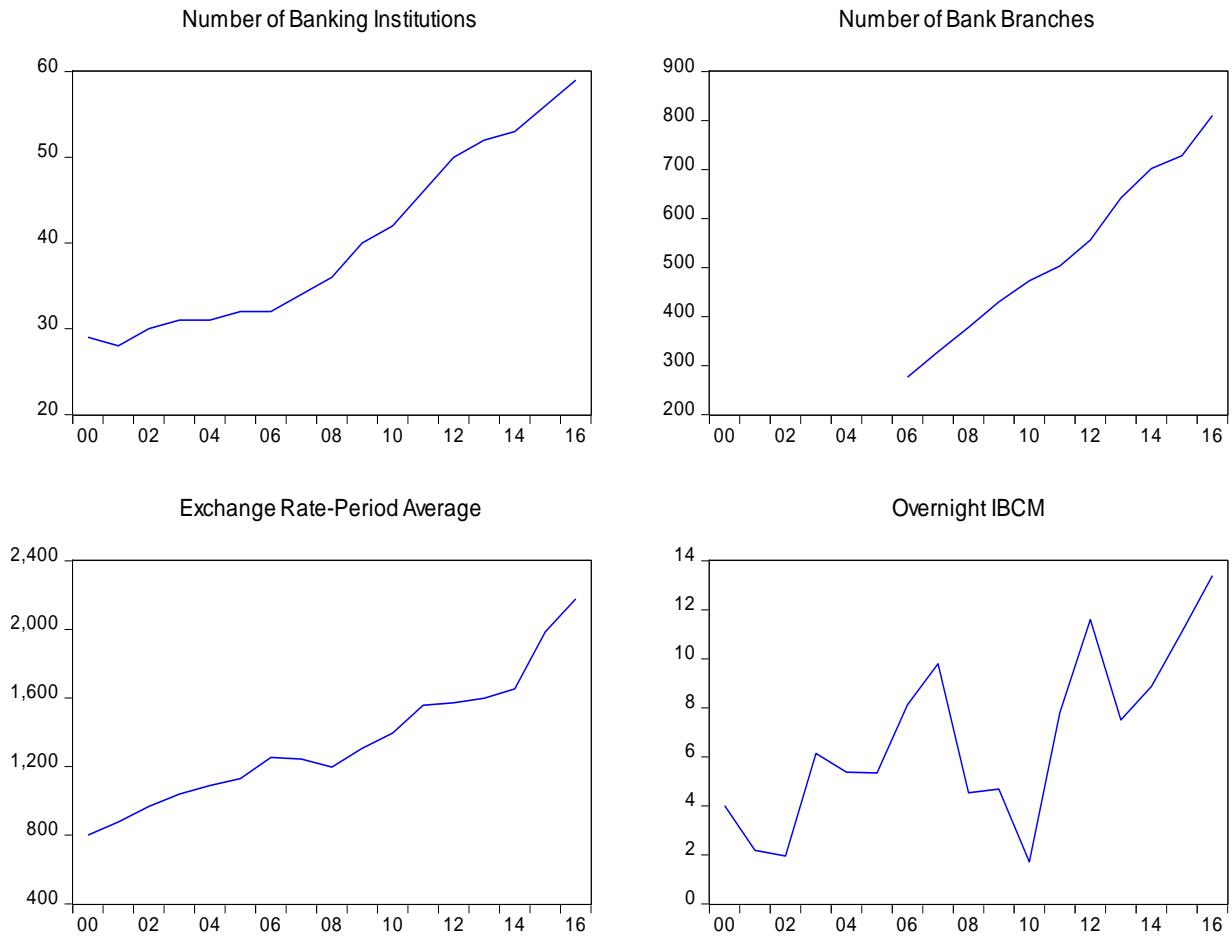
3.2.1 Increase in Quantity and Quality of Financial Services

The successful implementation of the reform and innovations in the financial sector has brought about increase in both quantity and quality of financial services.

3.2.1.1 Increase in Number of Financial Institutions and Dynamics in Prices of Financial Products

The restructuring and privatization of the state owned banks and financial institutions, the opening up of the banking sector to free entry of private banks and the lifting of restrictions on branch network resulted in the increase in both the number of licensed banks and financial institutions from 6 in 1991 to 59 in 2016 and the expansion of bank branch networks from 276 in 2006 to 810 in 2016. Further, the removal of price controls (interest rate and exchange rate) has resulted in market determined interest rate and exchange rate that respond to macroeconomic fundamentals; with interest rate spread declining from 10.8 percent in March 2005 to 6.4 percent March 2017 (**Figure 1**). Liberalization of the exchange rate has resulted to a depreciating pattern of the nominal exchange rate as shown in Figure 1, mainly to reflect the underlying economic fundamentals.

Figure 1: Number of Banking Institutions and Branches

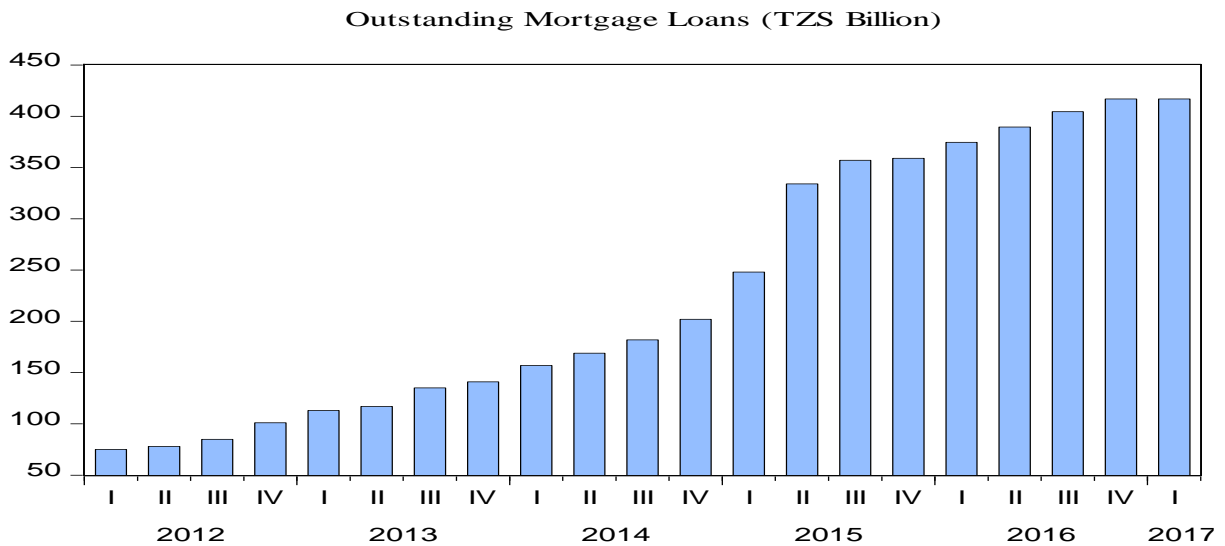


Source: Banking Supervision Annual Reports 2006-2016

3.2.1.2 Growth in Mortgage Market

As a result of the establishment of the Tanzania Mortgage Refinance Company (TMRC) Limited and Housing Micro Finance Fund (HMFF) and issuance of Mortgage Finance Regulations; mortgage market has been growing steadily as indicated by the amount of outstanding mortgage loans in **Figure 2**.

Figure 2: Outstanding Mortgage Loans

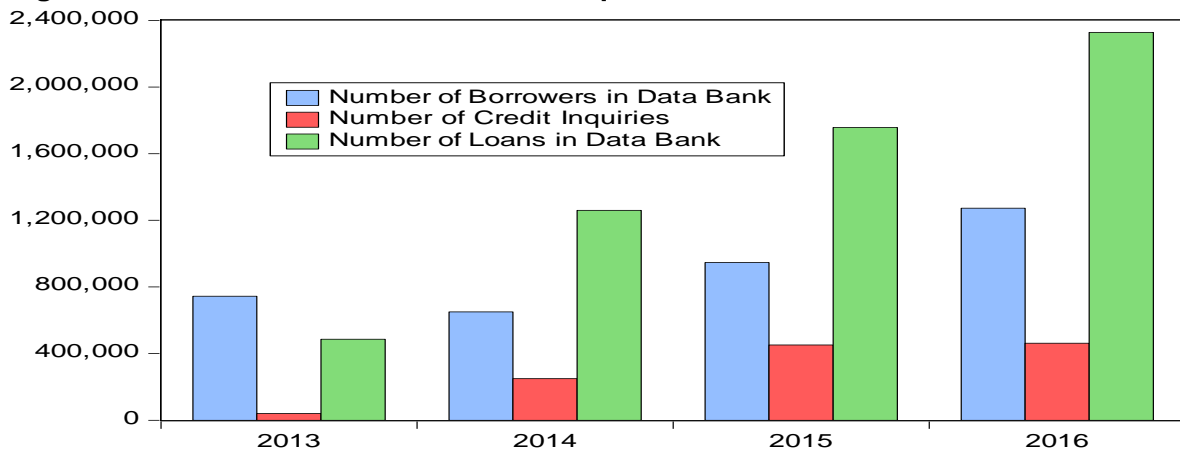


Source: BOT

3.2.1.3 Increase in Usage of the Credit Reference System

Since establishment of the credit reference system/bureau, the number of borrowers in databank has nearly doubled, loans in databank have increased by about 5 times, and a number of credit enquiries increased by more than 10 times as depicted in **Figure 3**.

Figure 3: Number of Borrowers, Credit Enquiries, and Loans in Data Bank



Source: BOT

Notwithstanding the reported encouraging trend in usage of the credit reference system, the level is still low, partly contributing to the relatively high lending rates, which include premiums to take account of default risks due to information asymmetry in the market. To improve the level of usage of the credit reference system, BOT has made usage of credit reference information mandatory for banks and financial institutions in their lending decisions.

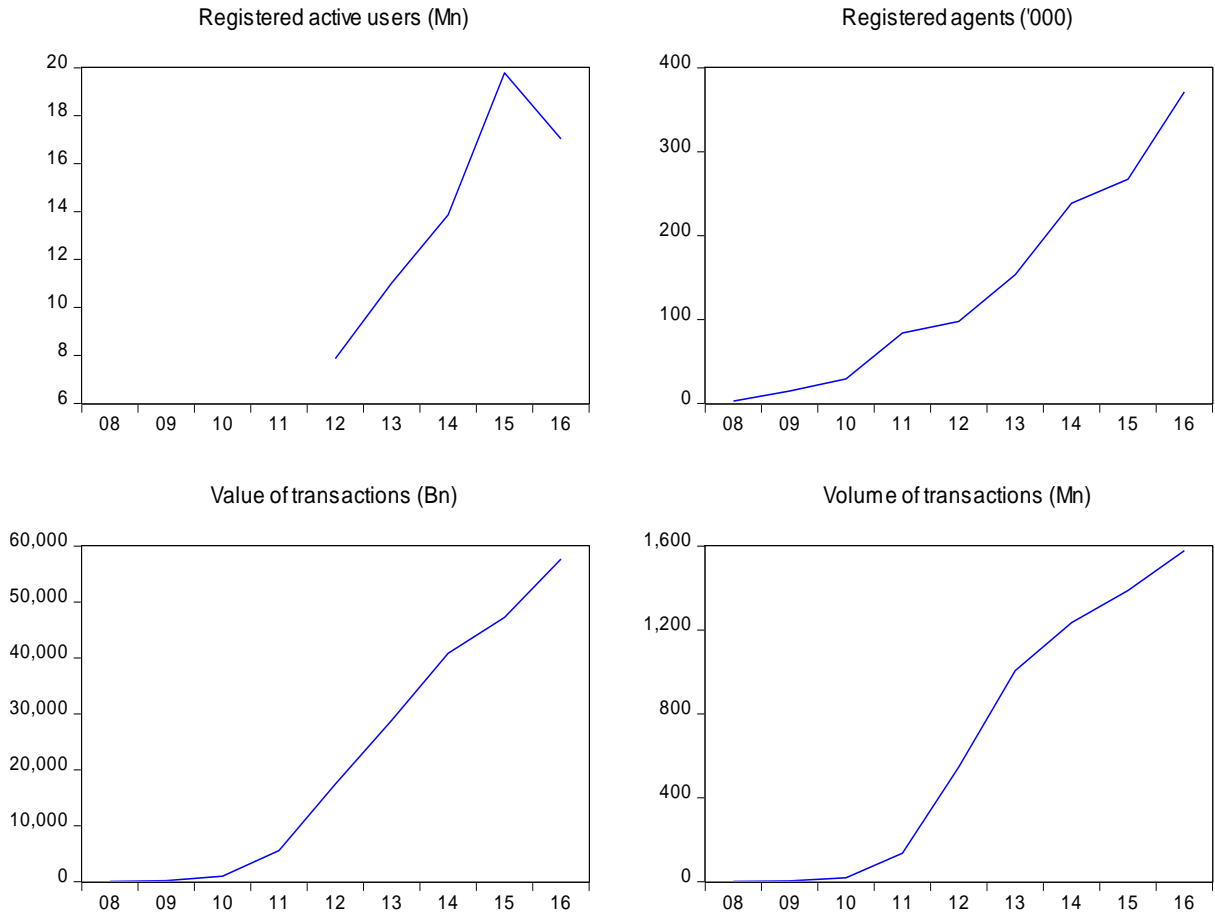
3.2.1.4 Innovations in Digital Finance and Increase in Financial Products and Services

As part of digital financial services, the innovative payment instruments which have been introduced in the market include: Mobile Financial Services (MFS); micro credit products based on mobile platform such as the Vodacom M-Pawa Services, Tigo Nivushe and Airtel Timiza; interoperability of Mobile Financial Services, MFS' cross border operations, Mobile Banking Services, card payments (ATM&POS), and internet banking.

i. Mobile Financial Services

Introduction of MFS in Tanzania in 2008 has since increased accessibility to financial services through mobile phones where the number of registered active users increased from 7.9 million in 2012 to 19.8 million in 2015. There was a slight drop in the number of active users in 2016 due to increased interoperability services as customers did not find it more appropriate having two mobile phones or accounts as costs were reduced. The trend of the number of registered agents increased from 2,760 in 2008 to 371,130 in 2016. Regarding the trend of transactions, both volume and value of transactions increased with number of transactions increasing from 0.4 million in 2008 to 1,578.2 million in 2016 and value of transactions increasing from TZS 25.2 billion to TZS 57,641.9 billion in the same period. The balances in trust accounts have also increased from TZS 7.1 billion in 2009 to TZS 665.7 billion in 2016. **Figure 4** illustrates the trends in registered active user, registered agents, and volume and value of transactions.

Figure 4: Mobile Payment Systems Statistics



Source: BOT

ii. M-Pawa Services

M-Pawa is a micro saving-lending product offered collaboratively between the Commercial Bank of Africa (CBA) and Vodacom (M-Pesa). CBA offers the product while M-Pesa on its part offers the platform for usage of the products as well as the customers who are M-Pesa registered. Services offered under the product include; deposit, loan request and disbursement, loan repayment, withdrawal, statement request and balance request. Statistics show that as at the end of 2016, the M-Pawa transactions have reached 37.33 million with value of TZS 628.63 billion being an upward trend for the product since its launch in 2014 when it had 5.66 million transactions valued at TZS 107.35 billion.

iii. Other Micro Loans Products

There are other micro loan products offered through mobile platform where credit only institutions have partnered with Mobile Network Operators (MNOs) using MNOs' customers base and

platforms. AFB Tanzania has an agreement with Airtel Tanzania to such a product known as **Airtel Timiza** product while it has agreement with Tigo Tanzania to provide **Tigo Nivushe** product. Since its inception, Airtel Timiza has shown mixed trends in volume with 5.01 million transactions recorded in 2015 while in 2016 the transactions dropped to 4.6. The value for the product increased from TZS 55.32 billion in 2015 to 138.70 billion in 2016.

On its part, Tigo Nivushe has almost increasing trend in both volume and value throughout its year of operations with volumes increasing from 48.14 thousand in January 2016 to 241.81 thousands by December 2016. During the same period, the value increased from TZS 545.40 million to TZS 10,211.87 million.

iv. Interoperability of Mobile Financial Services

MFS interoperability refers to implementation of seamless interaction and sharing of the network infrastructures among the mobile financial service providers, which enhances provision of mobile financial services and significantly reduces costs. Currently offered on bilateral basis, interoperability transactions have kept on growing from 840.04 million transactions in 2014 to 29,556.18 million in 2016. During that time, the value rose from TZS 36.71 billion to TZS 1,451.84 billion.

v. MFS Cross Border Operations

MFS Cross border money transfer services are currently available in two corridors; Tanzania-Kenya where Vodacom M-Pesa has partnered with Safaricom M-Pesa, and Tanzania-Rwanda where TigoPesa and TigoRwanda have introduced a product. Since their implementation, MFS cross border transactions, both inward and outwards, have indicated an upward trend. Specifically, the volumes for inward transactions increased from 120 in 2013 to 250,130 in 2016. The value for the inward transactions during that time have increased from TZS 2.36 million to TZS 20,057.11 million respectively.

Regarding the MFS outward transactions, the volume has increased from 3,530 in 2013 to 155,000 in 2016 while the value at that time increased from TZS 335.57 million to TZS 17,125.44 million.

The total cross border transactions (both inward and outward) during this period have increased in volume from 120 to 405,130 while the value has increased from TZS 2.36 million to TZS 37,182.55 million.

vi. Mobile Banking Services

Mobile banking services are provided by a bank or financial institution allowing the account holders to conduct financial transactions remotely using a mobile device such as a smartphone or tablet. Banks and financial institutions have increasingly partnered with fintech to allow customer access their accounts through mobile phone devices. Mobile banking transactions have reached 53.46 million in 2016 from 5.23 recorded in 2009. The value for the transactions has also increased significantly from 30.76 billion recorded in 2009 to 2,176 billion recorded in 2016.

(i) Card Payments-ATM&POS

Since when the first ATM was introduced in the country in 1995 by Standard Chartered Bank, the number of these machines as access points have kept on increasing. Total number of ATMs as at 2016 were 1,964. Total number of POS as at the end of July 2017 were 3,939, while those used by agent banking network were 4,260 hence making total of 8,199¹⁴. During this period, there were 5.2 million active cards in circulation, out of which 4.8 million were debit cards, 61,452 prepaid cards and 41,002 were credit cards. As at 2016, 68.87 million transactions were carried out in ATMs valued at TZS 9,428.17 billion in comparison with 69.57 transactions valued at TZS 5,279.00 billion transacted in 2012.

As for the POS, the volumes have increased from 805.62 million valued at TZS198.08 billion in 2012 to 3,848.31 transactions valued at TZS 2,119.43 billion in 2016.

vii. Internet Banking

Development in the ICT has allowed banks to tailor the products to meet needs of their clients. In Tanzania, internet banking is offered by 22 banks¹⁵. As at 2016 there were 2,654.86 million transactions valued at TZS 45,468.99 billion, compared to 18.15 million transactions valued at TZS 34.07 billion recorded in 2009.

3.2.1.5 Agent Banking

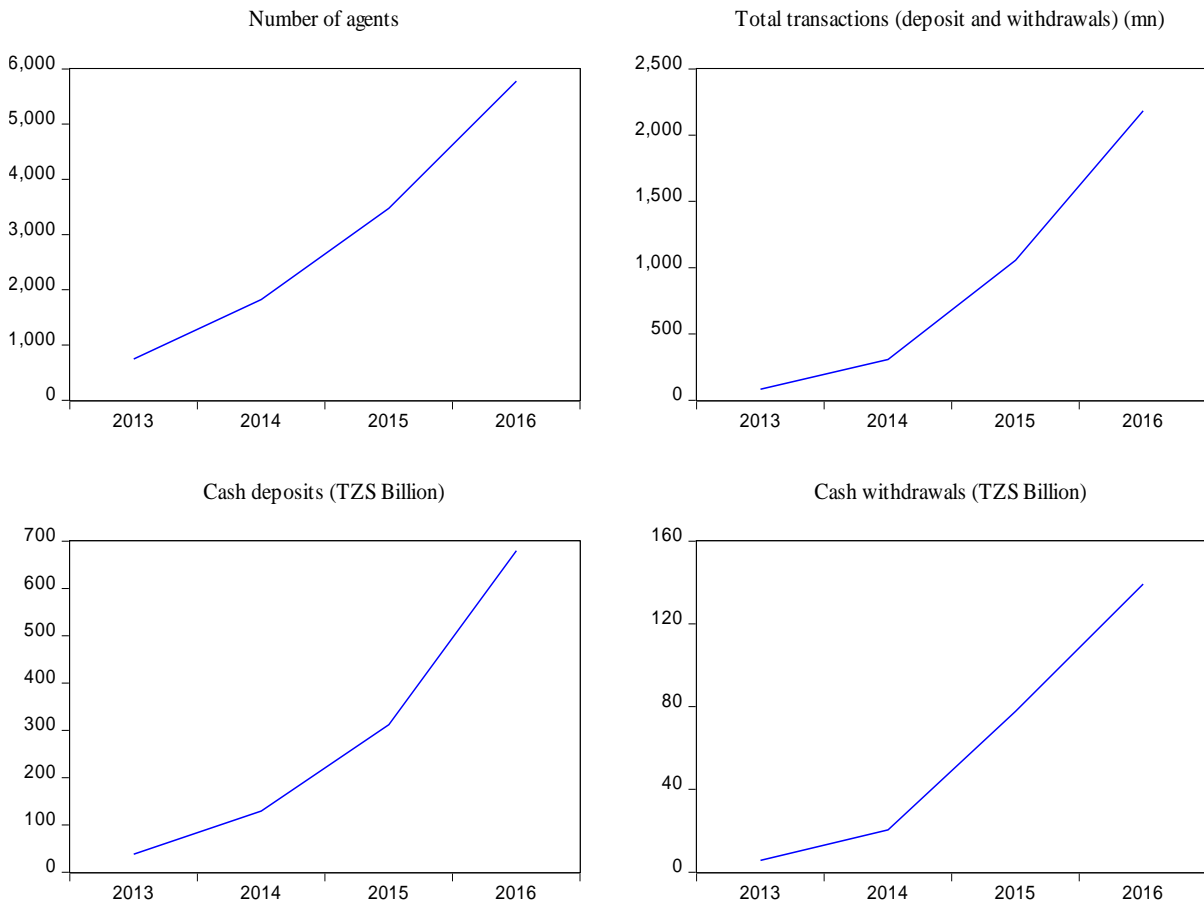
BOT introduced agent banking guidelines in 2013 that permit licensed banks and financial institutions to appoint retail agents as a delivery channel for their banking services. Introduction of

¹⁴ Currently, there are 17 banks that provide POS services in the country, namely CRDB Bank Plc; National Bank of Commerce (T) Ltd, Barclays, ECO bank, Exim bank, Njombe Community bank, United Bank for Africa, Equity Bank Tanzania Limited; Tanzania Postal Bank; DCB Commercial Bank Plc; Amana Bank Limited; Finca M.F.C Limited; National Microfinance Bank Limited; Access Bank Tanzania Limited; Advans Bank Tanzania Limited; Efatha Bank Limited, KCB Bank (Tanzania) Limited.

¹⁵ ABC (T) LTD, Amana, Azania Bank, Bank M, Barclays, Citibank, CBA, CRDB Bank Plc, DCB, Diamond Trust Bank, Ecobank, Equity Bank, FBME, FNB, KCB, NMB, NBC, NIC Bank, PBZ, Stanbic, Standard Chartered and UBA.

agent banking provides a mechanism through which banks can extend their services to previously unbanked individuals. It is expected that agent banking will unlock the potential of the lower income markets and facilitate the participation of a significant proportion of the population in the formal economy. Since its introduction in 2013, agent banking has grown considerably in terms of number of agents, total financial transactions (number of deposits and withdrawals), volume of cash deposits and cash withdrawals. Figure 5 illustrates the developments made under agent banking.

Figure 5: Development in Agent Banking



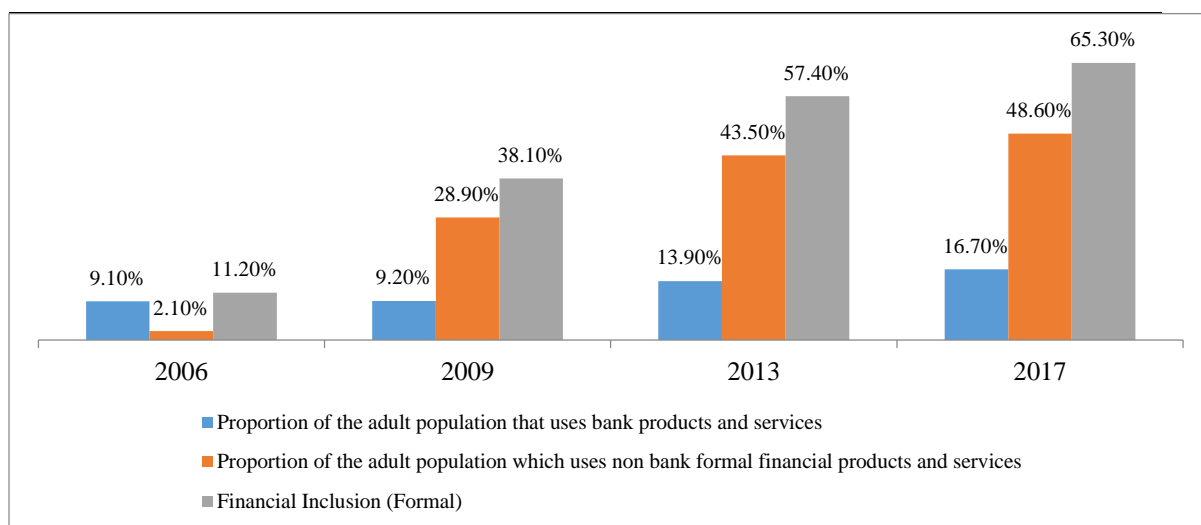
Source: BOT

3.2.1.6 Financial Inclusion

The financial reforms and innovations have contributed to increased financial inclusion in Tanzania. This is reflected by Finscope surveys conducted in 2006, 2009, 2013 and 2017 which showed significant growth in access and usage (**Figure 6**). The major driver of growth in financial inclusion was the introduction of mobile financial services in 2008. The Finscope Survey 2017 shows that 86% of Tanzanian adults live within 5km radius of a financial access point. According to the report, Tanzania ranks the sixth in Sub-Saharan Africa in terms of formal financial inclusion, with 65%.

Sub-Saharan Africa countries which rank above Tanzania and their percentages of formal financial inclusion in brackets are South Africa (86%), Kenya (75%), Zimbabwe (69%), and Botswana and Rwanda (68%).

Figure 6: Tanzania: Trends on Financial Inclusion



Source: FinScope Surveys

3.2.1.7 Enhancement of Financial Sector Stability

Financial reforms have contributed in enhancing the stability of the banking system combined with putting in place mechanisms for mitigation and management of financial crisis. The restructuring and privatization of state-owned banks enabled improvement in governance and risk management in the banking system. Introduction of prudential regulations and risk based supervision framework contributed to that end too. Additionally, to create an integrated oversight of the financial system, a financial stability function was established at BOT in 2010. This was enhanced by setting up Tanzania Financial Stability Forum in 2013, which created arrangements for inter-agency cooperation in financial stability oversight and crisis management. Members of the Forum constitute Bank of Tanzania (chair), Ministries of Finance (URT and RGZ), TIRA, SSRA, CMSA and Deposit Insurance Board.

3.2.2 Financial Depth and Efficiency of the Financial System

Assessment of key indicators of depth and efficiency show that the financial system is deepening and increasingly becoming efficient.

3.2.2.1 Financial Depth

Financial deepening is the increase in the level of financial services in a country. It is reflected in the availability of wide range of products for investors for their savings and risk management, and for borrowers for their credit needs and risk management. In the assessment of financial depth, two indicators of financial depth have been used: Credit to private sector as a percentage of the GDP and deposits as a percentage of the GDP.

(i) Credit to Private Sector to GDP

During the first decade of reforms, credit to private sector as percent of GDP exhibited a decline reaching the minimum of 4.18% in the year 2000 before increasing constantly to 17.05% in 2015. Domestic credit to the private sector as percent to GDP declined from an initial level of 13.90% in 1990 to 4.18% in 2000. The trend could be attributed to the ban on lending imposed on CRDB up to mid-1990s and restructuring of NBC which was going on during that period. Further, although the banking sector had been liberalized, entry of private banks (both local and foreign) had not yet gained momentum.

From 2000 onwards, there was a continuous increase in the level of domestic credit to the private sector as a percent of GDP which might have been attributed by increased entry of private banks (both local and foreign) and could be a reflection of increased demand.

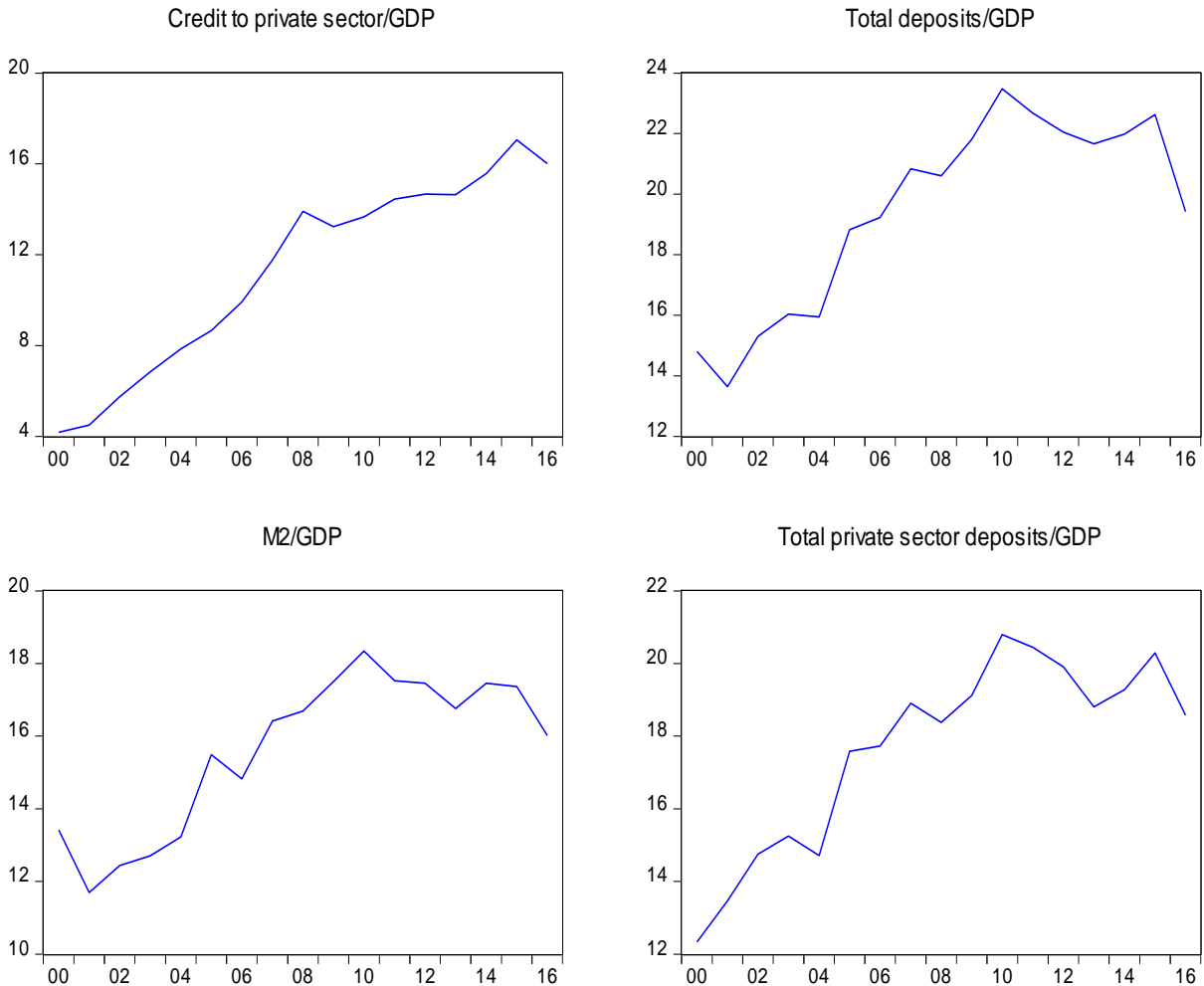
(ii) Bank Deposits to GDP and Private Sector Deposits to GDP

The main function of financial institutions is financial intermediation, which is the process of pooling together the resources from surplus spenders (savers) and channeling them to deficit spenders (borrowers) or investors. The extent to which the financial institutions in an economy can mobilize savings is both an indicator of the degree of efficiency of financial institutions and a measure of depth of the financial sector.

The general trend of this measure is characterized by an initial increase to 15.30% in 1995 followed by a decrease to 14.8% in 2000 and thereafter a continuous increase to 22.6% in 2015. The declining trend is the period when National Bank of Commerce (NBC), the largest bank in the country was being restructured. The restructuring involved the closure of loss making branches, which reduced access to the financial services in the rural areas. Otherwise, the financial reforms experienced increase in the domestic deposits as a percentage of GDP. This corresponds with the period of completion of the privatization of CRDB Bank and NBC (1997) Ltd and the increasing number of entrants into the market.

The observed increasing trends in credit (private and total) to GDP and total deposits to GDP indicate increase in financial deepening overtime. This also reflects the level of monetization in the economy as defined by the ratio of broad money supply to GDP ($M2/GDP$). As percentage of GDP, the trends in credit to private sector, total deposits, money supply and total deposits are illustrated in **Figure 7**.

Figure 7: Financial Depth Indicators



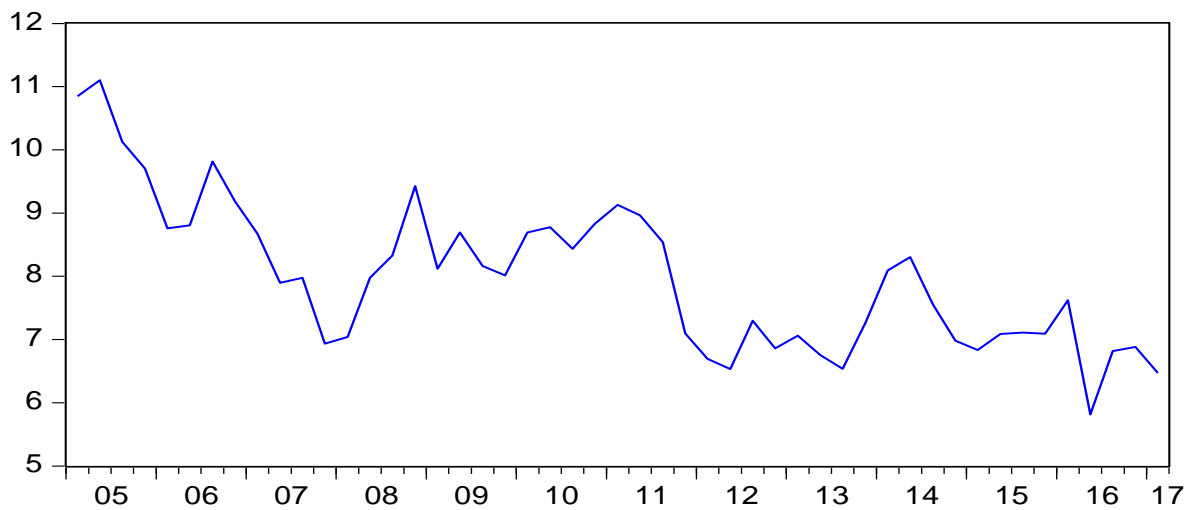
3.2.3 Efficiency of the Banking Sector

Banking efficiency refers to the extent to which the banking sector maximizes financial intermediation with minimum possible costs. Efficiency of the financial system can be measured by how the products are priced. A wide gap between lending and borrowing rates indicates inefficiency. In the assessment of efficiency of the banking sector, interest rate spread, return on assets and access to finance are used.

(i) Interest Rate Spread

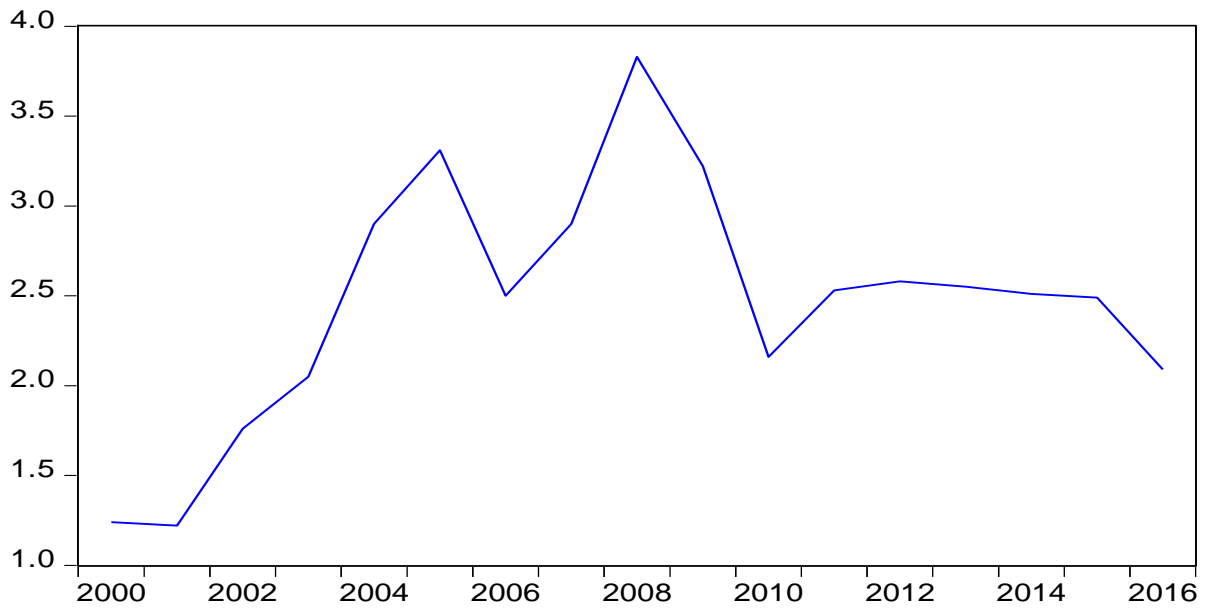
Interest rate spread, which is the difference between overall lending and overall deposit rates shows a declining trend, reaching the minimum of around 5% in 2016 (Figure 8). During the FGFSR, the spread remained higher (above 10%) until the early 2000s when it continued to decline. This continuous declining trend in interest rate spread could be explained by decrease in lending rates as well as increase in deposit rates. This outcome may be attributed to increase in competition for both lending and deposits among banks.

Figure 8: Interest Rate Spread



(ii) Return on Assets

Returns on assets (ROA) measures profitability. It is an indicator of how best the financial institution puts the assets at its disposal to a good use. Mathematically, it is the ratio of profits before tax to total assets. ROA increased to 3.31% in 2005 before declining to 2.50% in 2006. From 2006, it increased again reaching a maximum of 3.83% in 2008, before declining to 2.16% in 2010 when it increased and remained around 2.50% up to 2015 (Figure 9).

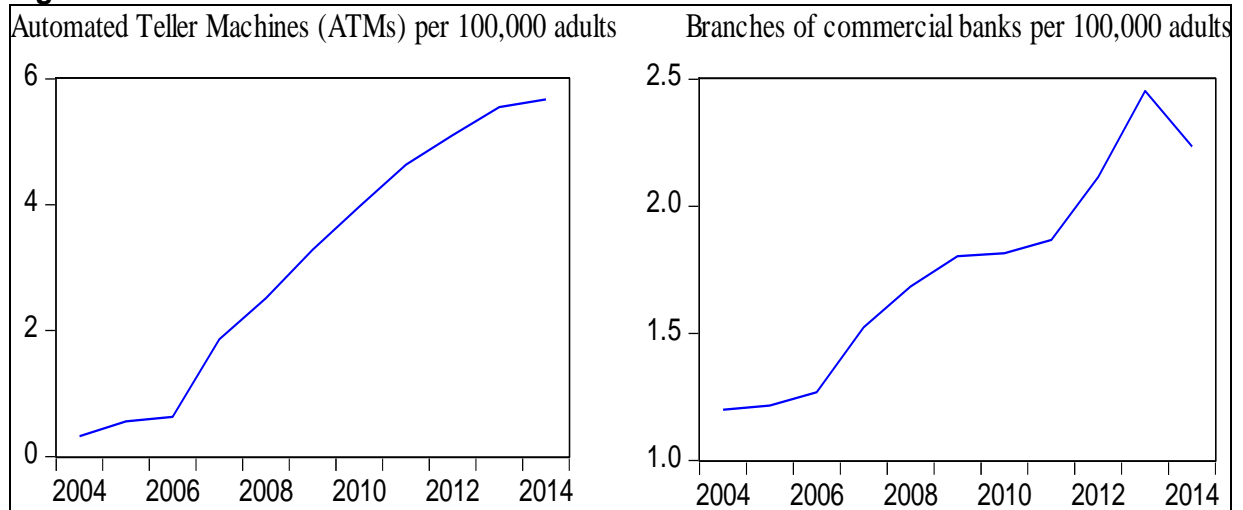
Figure 9: Return on Assets

Source: BOT

(iii) Access to Finance

We use ATM per 100,000 adults and branches of commercial banks per 100,000 adults to assess access to finance. From 2004 when ATM was introduced, the number of ATM per 100,000 adults has increased from 0.3 to 5.7 in 2014 while the number of bank branches per 100,000 adults increased from 1.2 in 2004 to 2.5 in 2013 and dropped thereafter to 2.2 in 2014. Based on these indicators, there has been a relative increase in access to finance (**Figure 10**).

Figure 10: Indicators on Access to Finance

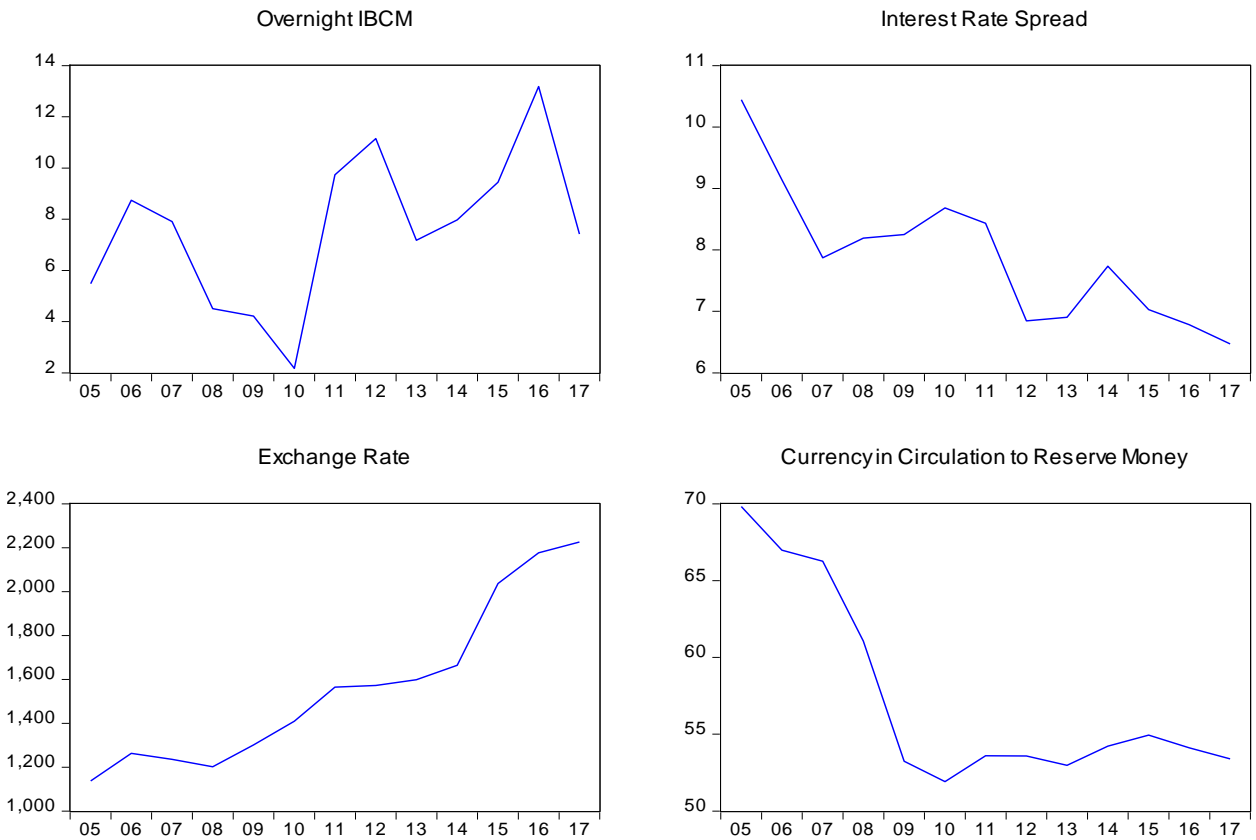


Source: WDI

3.2.4 Changes in Key Monetary Indicators

In the banking sector, efficiency has increased with interest rate spread continuously narrowing overtime, reflected by falling lending rates and rising deposit rates (**Figure 11**). The increase in competition for both bank deposits and lending products partly explain the narrowing in the interest rate spread. Further, reforms and innovations have also increased financial depth as measured by credit to private sector to GDP, bank deposits to GDP and private sector deposits to GDP. The observed increasing trends in credit (private and total) to GDP and total deposits to GDP went hand in hand with the increased level of monetization of the economy as defined by the ratio of broad money supply to GDP (M2/GDP). Financial depth and efficiency are key to the implementation of an effective market based monetary policy.

Figure 11: Interest and Exchange Rates Developments

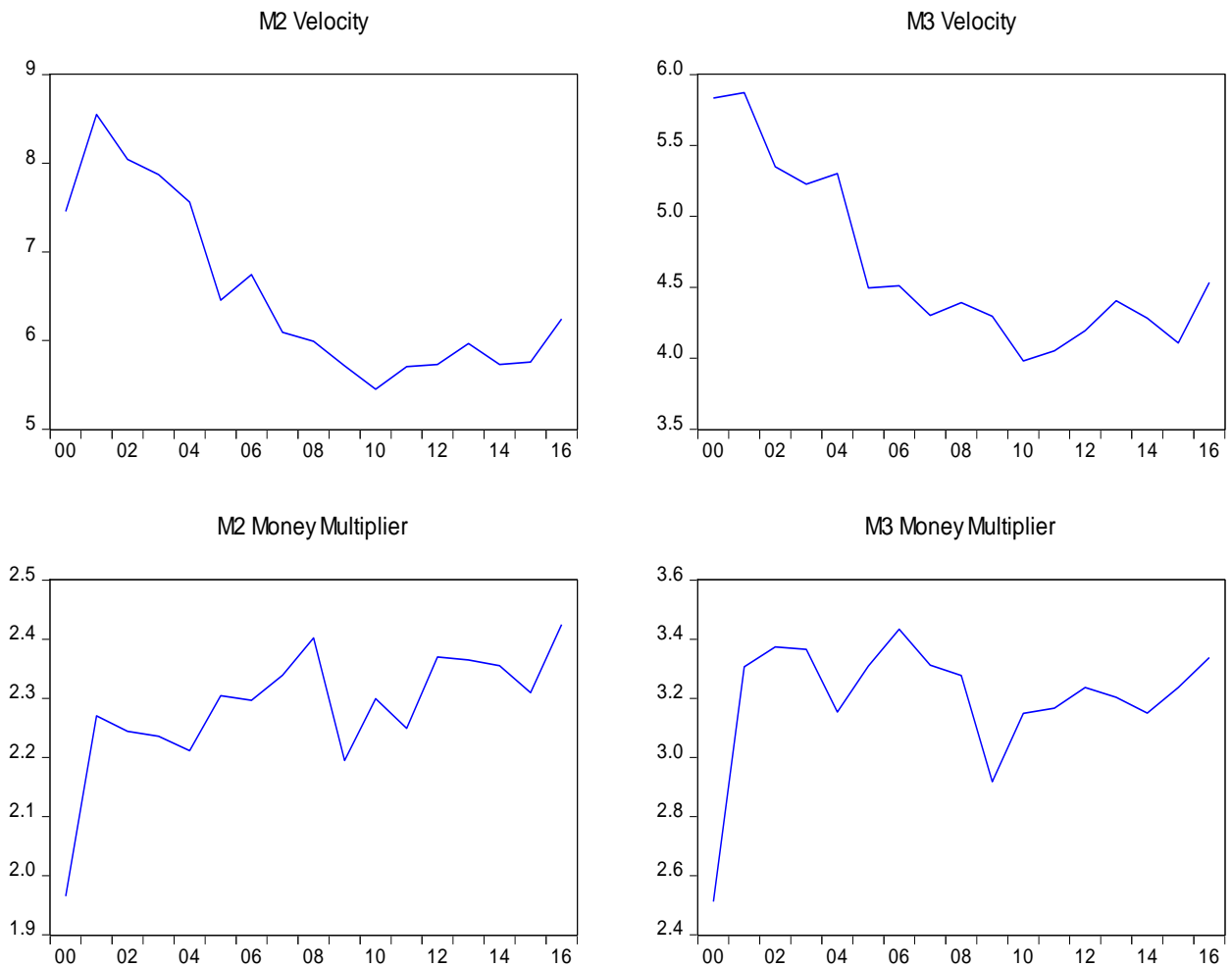


The ratio of currency to reserve money has been declining over although still above 50 percent. The declining trend can be explained by increase in commercial banks' mobilization of deposits (particularly through innovations in new deposit products) competitive deposit rates offered by banks. The current ratio of above 50 percent of currency in circulation outside the banking system to reserve money is still high, signaling existence of gaps in the financial system which contribute to less utilization of the formal financial institutions by the public.

3.2.5 Stability of Velocity and Money Multiplier

The outcome of the reforms and innovations is exhibited by the gradual decline in money velocities (both broad and extended broad) and instability in money multipliers (Figure 12). The volatility in money multiplier and the declining money velocity is a sign of improvement in the financial system, particularly through increased use of mobile banking services. The high ratios of currency to reserve money and the volatility in money multipliers and declining money velocity have implications on the conduct and effectiveness of the monetary policy, particularly through the reserve management framework.

Figure 12: Money Velocity and Money Multiplier



4.0 Implications of the Banking Sector Developments on Monetary Policy Effectiveness

The developments in the banking sector are expected to have provided a conducive environment which is key for enhancing effectiveness of monetary policy in Tanzania. However, effectiveness of monetary policy could be hampered by, among other things, remaining structural weaknesses in the financial sector which constrain competition and efficiency, as well as lag effect of structural changes. In this section, the descriptive analysis is extended to empirically evaluate implications of the of the developments in the banking sector on the effectiveness of monetary policy. In doing this, a multiple equation regression based on Structural Vector Autoregression (SVAR) technique is employed consistent with similar studies¹⁶. By using most current data and modeling technics,

¹⁶ See for example, Buigt (2009); Montiel et al (2012); Davood et al (2013) and Gitonga (2014).

this study seeks to extend on earlier studies on Tanzania whose findings point to potency of the interest channel¹⁷.

4.1 Methodology

4.1.1 Model

To assess the implications of the financial reforms and innovations on monetary policy transmission mechanism, a multiple equation approach based on SVAR technique is employed consistent with other studies in the literature (e.g. Davood et al, 2013; Buigut, 2009; Montiel et al, 2012 and Gitonga, 2014). Since BOT monetary policy framework is in transition from quantity-based (or monetary targeting) to price-based (inflation targeting), we examine the transmission mechanism using operating targets in both frameworks (i.e. reserve money and interest rate). It is worthy to note that, inflation targeting is not in use, therefore the policy rate is not active and instead we use the overnight IBCM rate and 91-days Treasury bill rate as proxies.

We consider the impact of monetary policy shock through BOT's operating target (i.e. reserve money or policy rate) as a shock which influences variables in other equations through their error terms. The impact of these shocks is measured by impulse response functions. The variables in the system of equations are the overnight IBCM rate, log of reserve money (rm), log of broad money supply (m2), log of nominal exchange rate (xr), and log of core CPI¹⁸. Detailed discussions on SVAR model specifications, assumptions, and identification requirements are in Appendix 2. Appendices 3 and 4 present results on unit root test and cointegration test.

4.2 Empirical Results

4.2.1 Response of Core Inflation to Reserve Money Shock

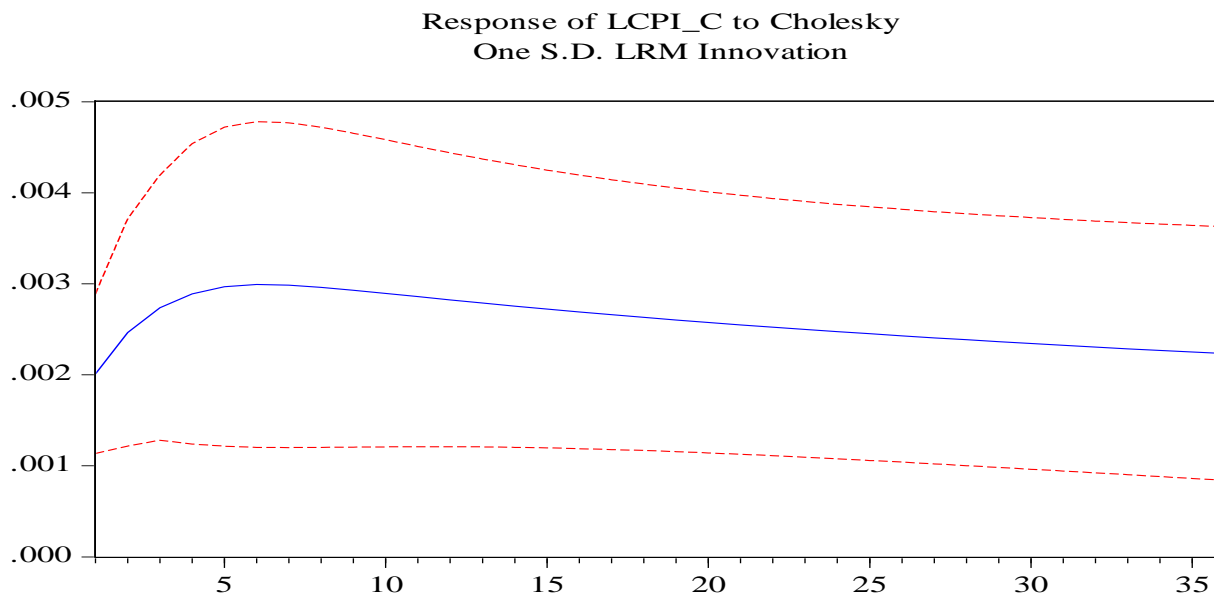
Under monetary targeting framework, a reserve money shock triggered by BOT decision to increase money supply is expected to increase core inflation (Figure 13). This outcome is consistent with Friedman's view that inflation is always and everywhere a monetary phenomenon. The impact of this shock on core inflation persists for about half a year, after which it moderates slightly at a constant pattern. The confidence intervals provide evidence that the response of core inflation to reserve money shock is statistically significant. However, the small values on the vertical

¹⁷ See for example, Montiel et al (2012) and Mbowe (2013) on potency of interest rate channel. Mbowe (2015) indicates that the lending channel operates in Tanzania. Also, see appendix 1 for the theoretical underpinnings on monetary policy transmission channels.

¹⁸ Core CPI is used instead of overall CPI inflation because BOT has control on core inflation rather than headline inflation which has other components like food and energy which are beyond the influence of BOT.

axis imply that the response of core inflation to reserve money shock is weak, hence a weak monetary transmission mechanism.

Figure 13: Response of Core Inflation to Reserve Money Shock



4.2.2 Response of Inflation to Policy Rate Shock

We examine the transmission of monetary policy (i.e. overnight IBCM and 91-days Treasury bill rates) assuming interest rate as an operating target. Assuming the Friedman's theory of inflation as a monetary phenomenon, the same outcomes could have been achieved using a different operating target (policy rate). However, it is worthy to note that the assumed policy rates (overnight IBCM and/or the 91-days Treasury bills rates) were not actually operational, instead the overnight IBCM and/or the 91-days Treasury bills rates are determined by market forces.

Figures 14 and 15 present the impulse response functions of the log of core CPI to the overnight IBCM and 91-days Treasury bills rates, respectively. The responses to the assumed policy rates are ~~neither~~ not statistically significant as indicated by confidence bands, implying an incomplete monetary transmission mechanism through the interest rate channel.

However, as hinted above, this response functions assume that inflation targeting or interest rate-based monetary policy framework is operational, which is not really what has been on ground during the sample of analysis. Therefore, the unexpected outcomes are not surprising given that the overnight IBCM and the 91-days Treasury bill rates are actually endogenous under reserve money targeting, determined by market forces and hence may not perfectly reflect monetary policy shocks which are basically surprises through central bank announcements of monetary actions.

Based on this view, more efforts are needed to ensure a well-functioning financial market which will enable price discovery to enhance monetary policy transmission mechanism.

Figure 14: Response of Core Inflation to Overnight IBCM Rate

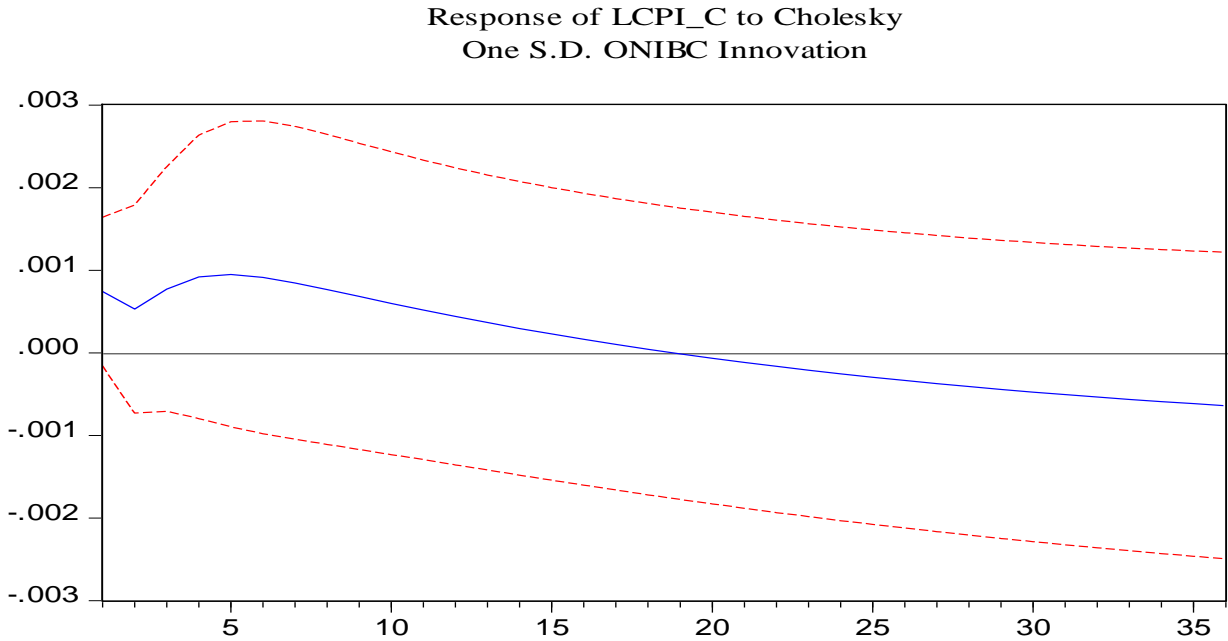
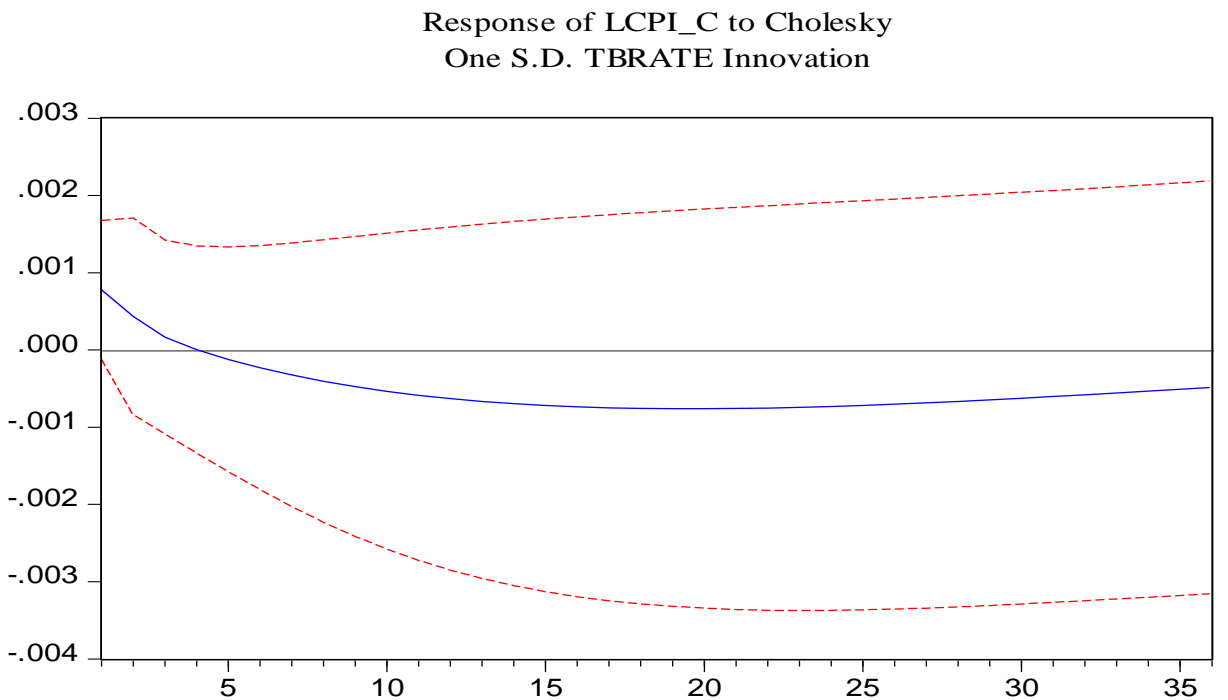


Figure 15: Response of Core Inflation to 91 Treasury bill Rate



5.0 Conclusions and Policy Recommendations

Tanzania embarked on a series of financial reforms starting 1991 as an effort to promote the development of a market-based financial sector. The reforms were implemented in two major phases: The First Generation Financial Sector Reforms which started in 1991 targeting legal reforms to create competitive environment, modernization of the National Payment Systems, strengthening of BOT's regulatory and supervisory capacity, restructuring and privatization of state owned banks and financial institutions. The Second Generation Financial Sector Reforms followed in 2003 aiming at strengthening the banking sector, developing financial markets, facilitating the provision of long term development finance, land reforms, creation of credit registry and strengthening of micro and rural finance. Using descriptive analysis and model based approaches, this study assesses the impact of the reforms and innovations in the financial sector on the development of the banking sector in Tanzania; and evaluates the implications of the banking sector development on the effectiveness of monetary policy.

On the banking sector, the findings suggest that considerable achievements have been recorded, particularly in the structural change of the sector, as well as the quantity and quality of the financial services provided. Notable achievements include:

- 1) Increase in both the number of licensed banks and financial institutions and the expansion of bank branch network and market determined interest and exchange rates that respond to macroeconomic fundamentals. The number of banking institutions for example increased from 29 in 2000 to 59 in 2016 while the number of bank branches increased from 328 in 2007 to 810 in 2016.
- 2) Modernization of payments, clearing and settlement systems have led to improvement in the revenue collection and government payments; reduction in risks associated with usage of high value cheques; reduction in operational costs; simplified reconciliation processes; efficiency in funds transfer; increased efficiency in cheque clearing from more than thirty days to T+1 clearing across the country; facilitation of direct deposit of salaries to beneficiaries' accounts for government employees and settlement of other government's recurrent low value payments.
- 3) The transformation of Tanzania Investment Bank (TIB) and establishment of Tanzania Agricultural Development Bank, Tanzania Mortgage Refinance Company (TMRC) Limited and Housing Micro Finance Fund (HMFF) have led to increase in availability and access to long term financing for enterprises, infrastructure, and housing development.
- 4) Promotion of innovations for delivery of financial services using the digital financial services and agent banking has significantly increased access to financial services as evidenced by findings of Finscope Surveys. The Finscope survey of 2017 shows that 86% of

Tanzanian adults live within a 5km radius of financial access point. Further, the introduction of credit reference system and its accompanied regulations have improved credit risk management in the economy, thus assisting in lowering the cost of borrowing.

- 5) Financial depth and efficiency of the banking sector has improved overtime as indicated by both the indicators of financial depth (i.e. bank credit to private sector and deposits both as a percentage of GDP) and by indicators of efficiency (i.e. interest rate spread, return on assets and access to finance). Credit to private sector went up from below 5% in 2000 to around 15% in 2016, interest rate spread decreased from above 10% in 2005 to around 6% in 2017, and return on assets increased slightly from below 1.5% to around 2.0% on average in 2016.

The development of the banking sector is expected to provide a conducive environment important for enhancing the effectiveness of the monetary policy. Although some studies support that the lending channel of monetary policy transmission operates in the economy, other studies point to limited transmission through other channels such as the interest rate channel. An enquiry on the interest channel using most current data and SVAR approach suggests a weak pass-through to inflation, partly pointing to remaining structural constraints in the financial sector. However, descriptive analysis suggests for some better monetary transmission outcomes going forward. This is evidenced by the declining trend of currency in circulation outside the banking system (CC/RM); increasing efficiency as reflected by declining interest rate spread and increasing return on assets; and increasing access to financial services by adult population. Monetization of the economy has also been increasing. Further, on-going or/and planned specific interventions in the banking sector likely to contribute to this. These include: -

- a) Increasing transparency in the inter-bank cash market -- in a bid to do away with bilateral lending and borrowing relationship among commercial banks while increasing transparency in the inter-bank cash market, BOT is implementing a project that will put in place a bidding platform for all commercial banks which are willing to borrow and lend. This transparency will create an environment for determination of competitive rates in the inter-bank cash market, bringing with it efficiency in the financial markets. The project is expected to be completed by December 2017.
- b) Widening the acceptable collateral for lender of last resort - in extending the range of assets that commercial banks can pledge and request for financial assistance to improve liquidity, BOT is working towards widening the acceptable collateral for lender of last resort to include longer term maturity instruments, while applying the necessary adjustments (decent haircuts) to the longer term instruments. This aims at increasing liquidity and efficiency in the financial markets.

- c) Introduction of a platform for micro-investment in government securities which aims at extending the securities market for participation of low income investors through the use of mobile bidding, taking the advantage of extensive mobile payment system in the country.
- d) Putting in place a legal and regulatory framework for Islamic banking - the banking sector in Tanzania is characterized by some commercial banks fully practicing Islamic banking; while many more others have developed financial products that are sharia compliant. While the conventional regulatory and supervisory frameworks for commercial banks do not fully apply to Islamic banking; it is necessary to put in place a legal and regulatory framework for Islamic banking with the aim of ensuring a sound and safe financial system in the county.
- e) Establishment of the full-fledged Office of the Banking Ombudsman, which aims at putting in place an alternative cost effective and efficient mechanism for resolving complaints between banking institutions and their customers. BOT is currently operating a Complaints Resolution Desk which resolves complaints for small claims, not more than TZS 15,000,000 in respect of both the claim amount and remedy awarded.

In addition, there are sector-wide reforms that BOT needs to champion their implementation. These include, the establishment of secured credit transactions legal and regulatory framework as well as collateral registry; development of Financial Sector Crisis Management Framework and a comprehensive dataset for financial stability assessment; transformation of Deposit Insurance Board (DIB); finalization of transformation of Credit Guarantee Schemes; putting in place a Development Finance Guarantee Facility; development of a long-term Development Finance Policy; implementation of Rural Financial Services Strategy; development of a regulatory framework for credit-only microfinance institutions; computerization of land registries and formulation of insolvency regulations for the Companies Act and establishment of a Commercial Court in Zanzibar.

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Appendices

Appendix 2: The SVAR

Let the structure of the economy be represented by reduced form model:

$$Y_t = A_1 Y_{t-1} + \dots + A_q Y_{t-q} + B_1 Z_{t-1} + \dots + B_q Z_{t-q} + u_t \quad (1)$$

Y_t is a vector of four variables (mp, m2, xr, cpi_c)

Where mp is the monetary policy variable (reserve money, overnight IBCM, 91-days Treasury bills rate, m2 is the log of broad money supply, xr is the log of nominal exchange rate, and cpi_c is the log of core consumer price index (CPI)

$t=1, \dots, T$, is an $M \times 1$ vector of endogenous time series variables (i.e. intercept, time trend and other deterministic terms), Z is a vector of exogenous variables, u_t is a vector of reduced form residuals, A_i and B_i are matrices of coefficients, p and q are non-negative integers representing the number of lags included in the model. The variance-covariance matrix sigma is $\Sigma = E u_t u_t'$. Consistent estimates of A , B , and Σ are obtained by using ordinary least squares. Once the estimates are obtained, the parameters can be recovered from the structural model of the form, $C_0 Y_1 = C_1 Y_{t-1} + \dots + C_q Y_{t-q} + B_1 Z_{t-1} + D Z_t + \varepsilon_t$ (2)

where C_i and D are matrices of parameters underlying the structure of the economy, ε_i is a vector of the structural economic shocks, and the corresponding variance covariance matrix is $W = E \varepsilon_i \varepsilon_i'$. The reduced form and structural form parameters in the form

$$A_i = C_0^{-1} C_i, \quad \varepsilon_t = C_0 u_t \quad (3)$$

There is a similar relationship between variance-covariance matrixes of the reduced form and the structural form model: $\Sigma = C_0 W C_0'$. The lack of information about the contemporaneous parameter matrix, C_0 , gives rise to the identification problems often encountered in the structural VAR literature. To resolve this issue while transitioning from the estimated reduced form model to the structural model-

Cholesky identification method is used whereby Cholesky decomposition is applied to the contemporaneous parameter matrix, C_0 . The ordering our assumptions listed in the text lead to system of equations in (4), rearranged in matrix equation (5).

The general systems of equations to be estimated is:

$$\begin{aligned} u_t^{mp} &= \varepsilon_t^{mp} \\ u_t^{m2} &= \alpha_{2,1} \varepsilon_t^{mp} + \varepsilon_t^{m2} \\ u_t^{xr} &= \alpha_{3,1} \varepsilon_t^{mp} + \alpha_{3,2} \varepsilon_t^{m2} + \varepsilon_t^{xr} \\ u_t^{cpi_c} &= \alpha_{4,1} \varepsilon_t^{mp} + \alpha_{4,2} \varepsilon_t^{m2} + \alpha_{4,3} \varepsilon_t^{xr} + \varepsilon_t^{cpi_c} \end{aligned} \quad (4)$$

where

ε 's are shocks, u 's are error terms, and α 's are coefficients to be estimated.

Since we are interested in the dynamics from the fact that transmission mechanism is a process over time, our focus is on the impulse response functions rather than the static coefficients.

Since we believe that monetary policy affects other variables with a lag, it is appropriate to place monetary policy variable (interest rate or reserve money) in the VAR model such that it influences other variables. Different ordering reflects different assumptions about the underlying structure of the economy being modelled. This comes from the fact that Cholesky identification is sensitive

to ordering such that the resulting impulse response functions are conditional to variable ordering.

The above assumptions and the corresponding mathematical forms in the system of equations under (4) can be represented in matrix form as.

$$\begin{bmatrix} u_t^{mp} \\ u_t^{m2} \\ u_t^{exr} \\ u_t^{pic} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ \alpha_{2,1} & 1 & 0 & 0 \\ \alpha_{3,1} & \alpha_{3,2} & 1 & 0 \\ \alpha_{4,1} & \alpha_{4,2} & \alpha_{4,3} & 1 \end{bmatrix} \begin{bmatrix} \varepsilon_t^{mp} \\ \varepsilon_t^{m2} \\ \varepsilon_t^{exr} \\ \varepsilon_t^{pic} \end{bmatrix} \quad (5)$$

Structural Identification

The monetary transmission analysis has made use of SVAR estimation method. SVAR allows predicting the effect of policy actions on economic dynamics based on already known information on the behavior of the economy. To make such a prediction, we impose restrictions to the initial VAR model, such that the changed model mimics the behavior of the economy being modeled.

In assessing the monetary transmission channel using SVAR under reserve money targeting framework, we implement the impulse responses from reserve money shock while making identifying assumptions as presented in equations (1). The four economic constraints we impose on this model are: that monetary policy, represented by changes in reserve money or policy rate, has no contemporaneous impact on price level (inflation); that money supply shocks represented by changes in money broad money, has no contemporaneous impact on price level; and that exchange rate shocks represented by changes in period average exchange rate has no contemporaneous impact on price level within the month. However, a monetary policy shock immediately affects money supply; and through it affects the exchange rate and finally the price level (core inflation through imported inflation).

Appendix 3: Summary of the Unit Root Test Results

	Augmented Dickey Fuller (ADF) Test		
	t-stat	p-value	Order of integration
log of reserve money	-2.3599	0.1547	I(1)
overnight IBCM	-3.4662**	0.0103	I(0)
log of broad money supply	-2.5413	0.1074	I(1)
log of nominal exchange rate	0.0146	0.9575	I(1)
log of core inflation	0.6951	0.9918	I(1)
91tbrate	-2.3599	0.1547	I(1)

Notes: MacKinnon (1996) one-sided p-values

***, **, * represents 1%, 5% and 10%, respectively.

Appendix 4: Johansen Cointegration Test Results

Included observations: 181 after adjustments				
Series: <i>irm, lm2, lxr, lcpi_c</i>				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.248911	92.61349	54.07904	0.0000
At most 1 *	0.153841	40.80566	35.19275	0.0112
At most 2	0.036365	10.56994	20.26184	0.5839
At most 3	0.021128	3.865181	9.164546	0.4326
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.248911	51.80783	28.58808	0.0000
At most 1 *	0.153841	30.23572	22.29962	0.0032
At most 2	0.036365	6.704761	15.89210	0.7054
At most 3	0.021128	3.865181	9.164546	0.4326
<i>Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level</i>				
Included observations: 181 after adjustments				
Series: <i>tbrate, lm2, lxr, lcpi_c</i>				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.200639	59.11632	40.17493	0.0002
At most 1	0.047552	18.58265	24.27596	0.2207
At most 2	0.031930	9.764286	12.32090	0.1292
At most 3	0.021266	3.890662	4.129906	0.0576
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.200639	40.53367	24.15921	0.0001
At most 1	0.047552	8.818361	17.79730	0.6148
At most 2	0.031930	5.873625	11.22480	0.3643
At most 3	0.021266	3.890662	4.129906	0.0576
<i>Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level</i>				

Appendix 1: Six Channels of Monetary Transmission Mechanism

- (i) The interest rate channel operates through the impact of monetary shocks on liquidity conditions and real interest rates, which in turn affect interest rate sensitive components of aggregate demand such as consumption and investment. Although the interest rate channel is the long-established mechanism of monetary transmission, it may not account for the full extent of output fluctuations, particularly in a small open economy (Taylor, 1995; and Mishkin, 1996).
- Theoretical underpinning of Interest Rate Channel is based on the standard Keynesian framework in which monetary policy is neutral in the long run but can have influence on the economy in the short run. Based on this framework, expansionary monetary policy leads to a fall in the real interest rate, thus decreasing the cost of capital and stimulating investment. This leads to an increase in aggregate demand and output. This short term effect is facilitated by price stickiness which in turn enables monetary policy rate to influence short-term real interest rates. The rational expectations hypothesis of the term structure conjectures that long-run real interest rates are determined by expectations about future short-term real interest rates.
- The crucial factor that links the monetary base with the real interest rate and ultimately determining the effectiveness of the interest rate channel is the slow adjustment of the price level. The monetary policy authority is therefore able to use short-term policy rates to influence long-run real interest rates through price stickiness and the term structure, which then affects the real economy.
- (ii) The bank lending (or credit) channel works through the response of credit aggregates to changes in interest rates and other policy instruments. Therefore, the credit channel is an extension—an enhancement mechanism—to the interest rate channel and amplifies the real effects of monetary policy through changes in the supply of bank credit (Bernanke and Blinder, 1992; and Bernanke and Gertler, 1995). The necessary condition for the credit channel to operate is the significant role of banks as a source of capital for the private sector, especially in bank-based emerging market economies (Serhan Cevik and Katerina Teksoz, 2012).
- (iii) The exchange rate channel works through the impact of monetary developments on exchange rates and aggregate demand and supply. For example, an increase in interest rates would normally lead to an appreciation of the exchange rate, which lowers the price of imported goods and services and thereby pushes down domestic inflation. The effectiveness of the exchange rate channel depends on the exchange

rate regime, the extent of exchange rate pass-through and the degree of openness to capital flows (Taylor, 1995). In a small open economy with a flexible exchange rate regime, the exchange rate channel is typically an important transmission mechanism for monetary policy actions. Alternatively, when the exchange rate is fixed, as it is the case in the Gulf Corporations Council countries, domestic interest rates track foreign interest rates, leaving little or no room for domestic monetary policy.

- (iv) The balance sheet channel operates through the impact of monetary innovations on the net wealth and credit worthiness of households and companies. In other words, like the bank lending channel, wealth effects influence consumption demand through changes in real money balances of households and firms that rely on borrowed funds (Mishkin, 1996).
- (v) The asset price channel operates through the impact of monetary shocks on yields, equity shares, real estate, and other domestic assets, operating through changes in the market value of corporate and household wealth. Changes in short-term interest rates and/or other policy instruments can alter firms' capacity for fixed investment spending through balance sheet effects, and household consumption through wealth effects (Mishkin, 1995).
- (vi) The expectations channel works through the impact of monetary shocks on the perception of households and firms about intertemporal rates of substitution. Inflation expectations, for example, play a pivotal role by influencing interest rates, exchange rate movements, wages, aggregate demand, and domestic prices (Taylor, 1995).

Monetary Transmission Mechanism - Empirical Review

Developing Countries

Davoodi et al (2013) argue that vast empirical literatures on monetary policy transmission are based on developed economies and they focus on price channel (interest rate, exchange rate and other asset prices). The reasons could be that developed economies have financial markets that are sufficiently deep and liquid. In contrast, the prevailing orthodoxy of monetary transmission mechanism in low income countries focus on quantities (money, credit, base

money, bonds, foreign assets) on arguments that they have weak institutional frameworks, oligopolistic banking structures, shallow financial markets and extensive central bank intervention in the foreign exchange markets (Davoodi et al, 2013).

Tanzania

Buigut (2009) applied a structural vector autoregression (SVAR) to assess and test the similarity of monetary transmission mechanism in the EAC. The model estimation for Tanzania was applied on annual time series data for the period 1984 – 2005. The estimation was based on three variables - real GDP, inflation and end-of-period discount rate to represent short-term interest rate. The results found evidence that interest rate shocks have weak and insignificant effects on output and inflation. One of the limitations of the estimation was too few observations and thus few degrees of freedom for which Davoodi et al (2013) observed that they could have accounted for the large confidence bounds. Further, the analysis does not provide standard diagnostics for the estimated VARs to further judge the reliability of the results; and it includes periods of substantial changes in monetary policy implementation, financial deepening, and other structural shifts which could have contributed to large uncertainty surrounding the effectiveness of monetary policy. This study uses a large with about 190 monthly observations including the most recent data and overnight interbank cash market rate.

Montiel et al (2012) examined the effectiveness of monetary policy in Tanzania by empirically establishing the extent to which an exogenous change in monetary policy induces changes in macroeconomic variables – such as prices or output – that respond to changes in aggregate demand. Using a recursive VAR on monthly data for the period from January 2002 to September 2010; they found out that reserve money has statistically significant effect on the price level, but the effect is not economically significant. However, on applying a structural VAR on the same data sample, the effect on the price level becomes statistically insignificant and monetary policy was found to have no output effects.

Mbowe (2013) using monthly data for the period from March 2003 to December 2012; employs an error correction model to assess the degree and speed of adjustment of commercial bank's interest rate to monetary policy rate change with a view to providing insight into the pass-through of monetary policy rate to the interbank rate and retail bank interest rates. The findings of the study are pass-through of monetary policy is incomplete. Both short-term and adjustment coefficients were found to have the correct sign, but only the coefficients of the policy rate pass-through to the interbank rate and the deposit rate were statistically significant. The study concluded that there is incomplete monetary policy rate pass-through to commercial banks' short-term interest rates both in the short-term and in the long-term.

Kenya

Cheng (2006) applied both recursive and non-recursive structural vector autoregression (SVAR) to monthly data in Kenya for 1997–2005 and found some evidence for the presence of the traditional transmission channels. A contractionary monetary policy—an exogenous increase in the short-term interest rate, the measure of monetary policy used in the paper—leads to an initial increase in the price level (the price puzzle) followed by a falling price level that is statistically significant for about two years following the shock. In response to a contractionary monetary policy, output rises initially (an —output puzzle) but falls eventually, though the decline is not statistically significant. Shocks to the interest rate explain a much larger fraction of inflation (30 percent) than output (10 percent), consistent with the results from the impulse response analysis (IRA). Positive shocks to interest rates lead initially to a depreciated exchange rate but the exchange rate eventually appreciates for about two years, which suggests the presence of the strong impact of exchange rate pass-through to inflation.

Maturu et al (2010) applied the same methodology as Cheng (2006) to study monetary transmission mechanism in Kenya using quarterly data from a more recent period (2000–2010). In contrast to Cheng (2006), Maturu et al (2010) regard M3 as the monetary policy instrument. They find that an exogenous shock to M3, an expansionary monetary policy, has no effect on real output, but leads to rising prices for almost 18 months, which is also statistically insignificant. A positive shock to the interest rate leads to falling prices, much like Cheng but the effect is not statistically significant, in marked contrast to Cheng's finding. A shock to M3 explains as much of inflation variability as a shock to interest rate in Cheng's. Both studies apply the non-recursive SVAR model of Kim and Roubini (2000), and find that results are the same as the recursive model. Neither study explores the relative importance of various channels of monetary transmission mechanism though Maturu et al (2010) make an attempt, but the methodology does not pin down the channels.

Buigut (2010) applied a vector error correction model (VECM) to annual data on Kenya for 1979–2008, and found evidence for the —price puzzle (Sims, 1992), that is, contractionary monetary policy leads to a rise in the consumer price index (CPI) level. In addition, the paper shows that monetary policy tightening leads to a fall in the quantity of loans and an increase in lending rates, thus confirming the presence of a positive bank-lending channel. However, one cannot conclude whether these findings are statistically significant, since no confidence bounds are shown for impulse responses.

Sichei and Njenga (2010) use annual data on 37 banks in Kenya 2001–2008 to investigate whether monetary policy has differential effects on banks of varying size and ownership structure and whether the credit channel is more operative through loan demand or loan supply. They find that demand for credit is not responsive to changes in lending rates regardless of the size and ownership structure of banks, but banks contract loan supply in response to monetary tightening, indicating the presence of credit rationing. These findings suggest that monetary policy in Kenya works primarily through quantities (credit) rather than its price (the lending rate), though the study does not explore the direct impact of changes in bank credit on either the price level or output.

The role of financial innovation in the effectiveness of monetary policy in Kenya was studied by Misati et al (2010). The paper applied single equation methods to monthly data for 1996–2007, and showed that financial innovations, proxied by ratio of M2 to M1 and bank assets to GDP, have weakened monetary policy transmission in Kenya by reducing the impact of the repo rate on output. The impact of the repo rate on inflation in the face of changing financial innovation is not investigated.

Gitonga (2014) empirically analyzed the interest rate channel of monetary transmission mechanism in Kenya by employing a VAR methodology on a set of variables – repo rate, NEER, M3, CPI, GDP, savings for quarterly data from 1993 to 2013. The findings from variance decomposition depicts that there is a long run relationship between the Nominal Effective Exchange rate (NEER) and GDP although savings, M3 and CPI are not as strong as NEER and GDP, still there exists a pass through effect from a shock in the interest rate channel. From the study, CPI has the weakest response to repo rate shock but generally, findings suggest that the interest rate channel was effective in the long run analysis.

Uganda

Peiris (2005) employed a six-variable recursive VAR model and found that a shock to M2 increases the price level, but a shock to interest rate has no effects. However, it is not possible to evaluate the statistical significance of these results because no confidence intervals are shown in this study for impulse responses.

On the other hand, Saxegaard (2006) employed threshold VAR techniques to study quarterly data on Uganda for 1990–2004 and found that contraction in the money supply has a significantly negative impact on CPI inflation, and the impact becomes bigger when involuntary excess liquidity of commercial banks is low. In contrast, Mugume (2011) applied structural VAR models to quarterly data for 1999–2009, and found all channels of monetary transmission to be

ineffective. In particular, the interest rate channel remains weak, even though there is some evidence for a transmission of treasury bill rate changes to lending interest rates.

East African Countries Combined

Davoodi et al (2013) using SVAR investigated whether changes in monetary policy affect inflation and output in the East African Community (EAC) using data for the period from 2000 to 2010. The results show that (i) Monetary Transmission Mechanism (MTM) tends to be generally weak when using standard statistical inferences, but somewhat strong when using non-standard inference methods; (ii) when MTM is present, the precise transmission channels and their importance differ across countries; and (iii) reserve money and the policy rate, two frequently used instruments of monetary policy, sometimes move in directions that exert offsetting expansionary and contractionary effects on inflation. The findings show that transmission is strong in Kenya, though only from policy rate to prices, while it is generally weak in the rest of the EAC for either output or prices.

Buigut (2009) estimated a three-variable recursive VAR for 1984–2006 for three EAC countries (Kenya, Tanzania, Uganda) separately. The VAR used annual data on real output, price level, and short-term interest rate. The main finding is that the interest rate transmission mechanism is weak in all three countries—a shock to the interest rate has no statistically significant effect on either inflation or real output. The finding of weak transmission mechanism could be due to several factors: (i) The study uses a sample that includes too few observations for empirical analyses, resulting in few degrees of freedom; (ii) it does not provide standard diagnostics for the estimated VARs to further judge the reliability of the results; and (iii) it includes periods of substantial changes in monetary policy implementation, financial deepening, and other structural shifts in each economy which may have contributed to large uncertainty surrounding the effectiveness of monetary policy.

Appendix 5: Milestones in Financial Sector Reforms and Development in Tanzania

Year	Financial Sector Reforms/Developments
1990	<ul style="list-style-type: none"> • Banking Commission (Nzirabu Commission) Report released, outlining financial sector reform policy actions.
1991	<ul style="list-style-type: none"> • The Banking and Financial Institutions Act, 1991 was passed which allowed entry of private banks and financial institutions, both domestic and foreign.
1992	<ul style="list-style-type: none"> • (March) Foreign Exchange Act 1992 was enacted, replacing the Exchange Control Ordinance. Individuals were allowed to hold foreign currency and to maintain foreign currency accounts at commercial banks in Tanzania.
1993	<ul style="list-style-type: none"> • (April) A bureau de change market was established as an effort towards foreign exchange liberalization. • (June) Bank of Tanzania issued Certificates of Deposit as an instrument of monetary policy. • (July) BOT began the auctioning of foreign exchange as a tool for both liquidity management and the determination of market-based exchange rates. • (July) BOT removed the maximum lending rate of 31.0% for commercial banks as a step towards the liberalization of interest rates. • (August) Bureaux and official exchange rates were unified. Thereafter, forex auctions extended to include commercial banks. • (August) The exchange rate system was tied to the official exchange rate set at the level of the weighted average Bureaux rate. • (August) BOT commenced Treasury bill auctions with 91-day bills as a tool for financing short-term government debts. • (September) 35-day Treasury bill was introduced for Treasury bill auctions. • (December) In order to restrain credit expansion, the BOT raised the minimum reserve requirement from 4% to 10% during the same year. • Interbank Exchange Market (IFEM) was introduced. • Bank interest rates were completely liberalized.
1994	<ul style="list-style-type: none"> • (January) Capital Market and Securities Act, 1994 was enacted to promote and facilitate the development of an orderly, fair, efficient capital and securities market in Tanzania. • (January) The discount rate, the rate at which the BOT accommodates commercial banks on a short-term basis, was increased from 27% to 50%. Thereafter, the discount rate was adjusted bi-weekly, and benchmarked on the marginal yields of the 91-day Treasury bill auctions. • (February) The 182-day Treasury bill was introduced.

	<ul style="list-style-type: none"> • (April) Minimum reserve requirement was decreased from 10% to 8%. • (June) The daily interbank foreign exchange market auction was introduced to replace the weekly foreign exchange auctions. • (August) The minimum interest rate on 12-month fixed deposits was abolished. Initially, the rate had to be positive in real terms. • (September) The minimum reserve requirement was increased from 8% to 12%. • (October) Computation of the discount rate was determined by the weighted average of Treasury bill auction yields for all maturities. • (December) The 35-day Treasury bill was discontinued from the Treasury bill auction. • (December) A 364-day Treasury bill was introduced in the Treasury bill auction. • A fully-fledged Directorate of Financial Markets was established in BOT to develop and supervise the functioning of the markets.
1995	<ul style="list-style-type: none"> • (January) Minimum reserve requirement was increased from 12% to 15%. • (March) Capital Markets and Securities Authority was inaugurated. • (June) The minimum reserve requirement was increased from 15% to 18%. • (August) The requirement that banks and financial institutions should maintain liquidity assets not less than 20% of the shillings deposit liabilities and borrowing from the public was lifted. • (September) The commercial banks were allowed to hold up to 50% of their statutory minimum reserve requirements in Treasury bills. The measure was aimed at enhancing financial intermediation in the economy and improving the liquidity position of commercial banks. • (October) The minimum reserve requirement was reduced from 18% to 12%. • The Bank of Tanzania Act, 1965 was repealed and replaced by the Bank of Tanzania Act, 1995. • First ATM was deployed in Tanzania by Standard Chartered Bank Tanzania
1996	<ul style="list-style-type: none"> • (April) The entitlement of commercial banks to hold up to 50% of their statutory minimum reserve in Treasury bills was abolished. • (July) The credit ceiling on commercial banks' lending was abolished. • (July) The 10% withholding tax on income from Treasury bills was abolished. • The Co-operative and Rural Development Bank (CRDB) was fully restructured and privatized. • The Capital Markets and Securities Authority was established in order to facilitate establishment of stock exchange for mobilizing and allocating savings for medium and long-term investments.

	<ul style="list-style-type: none"> • The Dar es Salaam Stock Exchange was incorporated as a private company limited by guarantee and not having a share capital under the Companies Ordinance. • National Payment Systems Project was established in BOT with an objective to spearhead modernization of the National Payment Systems.
1997	<ul style="list-style-type: none"> • (January) Minimum cash reserve ratio was reduced from 12% to 6% - whereby cash in vaults was excluded from available reserves. • (March) Minimum cash reserve ratio was raised from 6% to 12% and included cash in vaults as part of the available reserve. • (April) New banking and financial institutions regulations were gazetted, following a review of the licensing procedures. • Repurchase agreements were introduced to complement Treasury bills and bonds in the conduct of open market operations.
1998	<ul style="list-style-type: none"> • Interbank Money (Cash) Market was established. • The Dar es Salaam Stock Exchange was established. • NPS incorporated as a Directorate within the Bank's institutional framework mandated to carry out modernization of the National Payment Systems. • Trading activities at the Dar-es-Salaam Stock Exchange commenced after two years of preparatory work. • NPS Stock Taking Exercise/Report
1999	<ul style="list-style-type: none"> • (April) The Foreign Exchange (Bureau de Change) Regulations, 1999 were effected. • Bank of Tanzania introduced a computerized book entry system and a Central Depository System for Treasury Bills.
2000	<ul style="list-style-type: none"> • (March) The privatization of National Bank of Commerce (NBC) was completed. • (July) The BOT shifted from targeting M3 as intermediate indicator of domestic liquidity to M2. • NPS Vision and Strategic Framework 2000 was released. • Paper Instruments Standards in cheque clearing system were introduced.
2001	<ul style="list-style-type: none"> • (February) National Microfinance Policy 2000 was launched.
2002	<ul style="list-style-type: none"> • (February) Launching of a 5-year Treasury bond. • (March) Bank of Tanzania Electronic Clearing House (BOTECH) system was established reducing the number of clearing days to a maximum of 28 days. • (April) Bank of Tanzania changed the 2-year Treasury bond auctions from uniform prices to multiple prices.

	<ul style="list-style-type: none"> • (May) Bank of Tanzania re-introduced the 35-days Treasury bill to cater for liquidity management. • (July) Bank of Tanzania launched a 7-year Treasury bond. • (August) Bank of Tanzania launched a 10-year Treasury bond.
2003	<ul style="list-style-type: none"> • (February) Bank of Tanzania Act, 1995 was amended to give the Bank regulatory powers over the national payment, clearing and settlement systems matters. • (April) Amendment of BFIA of 1991 to give powers to BOT to prescribe lower threshold for the establishment of regional community banks. (May) Foreign investors allowed to trade at the Dar es Salaam Stock Exchange. • (December) The Bank of Tanzania introduced Intraday and Lombard standby credit facilities to provide overnight-collateralized advances to commercial banks.
2004	<ul style="list-style-type: none"> • (April) The Tanzania Inter-bank Settlement System (TISS) became operational. • (October) The Electronic Fund Transfer (EFT) system, which is used to transfer low value high volume interbank payments, went live. • Government Securities System (GSS) was implemented.
2005	<ul style="list-style-type: none"> • (March) Bank of Tanzania issued Microfinance Regulations. • (October) Tanzania Net Settlement Services system (TNNSS) which is a system used to facilitate settlement of transactions arising from VISA member banks obligations went live. • (December) Introduction of the Two-way quote system in the Interbank Foreign Exchange Market (IFEM).
2006	<ul style="list-style-type: none"> • (June) Enactment of the Bank of Tanzania Act, 2006 and the Banking and Financial Institutions Act, (BFIA) 2006 to replace the Bank of Tanzania Act, 1995 and Banking and Financial Institutions Act, 1991 respectively.
2007	<ul style="list-style-type: none"> • Electronic Payment Schemes Guidelines 2007 were issued. • UmojaSwitch, a consortium of local banks became operational as a switch. • The first Mobile Money Operator known as E-Fulusi introduced their Mobipawa product.
2008	<ul style="list-style-type: none"> • Financial Leasing Act 2008, Mortgage Financing (Special Provisions) Act, 2008, the Unit Titles Act 2008 were enacted. • The Bank revised the core set of banking prudential regulations. • Vodacom Tanzania Ltd introduced M Pesa in the market. • The auction frequency of Treasury bills was changed from weekly to once fortnightly while that of Treasury bonds was changed to once every month.

	<ul style="list-style-type: none"> • Harmonization of redemption and settlement of Government securities to T+1.
2009	<ul style="list-style-type: none"> • TISS connectivity extended to Government (TRA). • Entrance of Tigo Pesa and Airtel Money as Mobile Money providers.
2010	<ul style="list-style-type: none"> • Z Pesa (Eazy Money) becomes the 4th Mobile Money provider
2011	<ul style="list-style-type: none"> • Bank of Tanzania issued Financial leasing, Mortgage and TMRC Regulations. • TMRC was established.
2012	<ul style="list-style-type: none"> • Credit Reference Bureaux and Credit Reference Databank Regulations were issued. • Credit Reference Databank was established.
2013	<ul style="list-style-type: none"> • Credit Reference Bureaux were licensed and started operations. • Bank of Tanzania issued Agent Banking Guidelines; banks and financial institutions started carrying out business using agents. • CSS was implemented. • MasterCard Settlement System was introduced.
2014	<ul style="list-style-type: none"> • The Bank revised the core set of banking prudential regulations.
2015	<ul style="list-style-type: none"> • (January) Bank of Tanzania lowered SMR from 10% to 8%. • (April) Bank of Tanzania raised SMR from 8% to 10% • (August) TIB transformed into a Development Finance Institution. • East African Cross Border Payment System (EAPS) became operational. • Tanzania Automated Clearing House (TACH) went live reducing clearing days to a maximum of one day (T+1) across the country. • Enactment of the NPS Act 2015, E – Transactions Act 2015 and Cyber Crimes Act 2015 strengthening the legal and regulatory framework for the National Payment Systems. • The Payment Systems Licensing and Approval Regulations 2015 and the Electronic Money Regulations 2015 were issued. • TISS Connectivity extended to DSE.
2016	<ul style="list-style-type: none"> • Commencement of the licensing of the Payment System Providers in line with the requirements under the new regulatory framework for the National Payment Systems. • TISS connectivity extended to other Government Ministries, Departments and Agencies (MDAs)
2017	<ul style="list-style-type: none"> • (April) Lowering discount rate from 16% to 12%. • (August) Lowering discount rate from 12% to 9%. • Development of National Payment Systems Strategic Framework (2017 – 2027) commenced. • Government EFT achieved.