



# THE RWANDAN BANKER

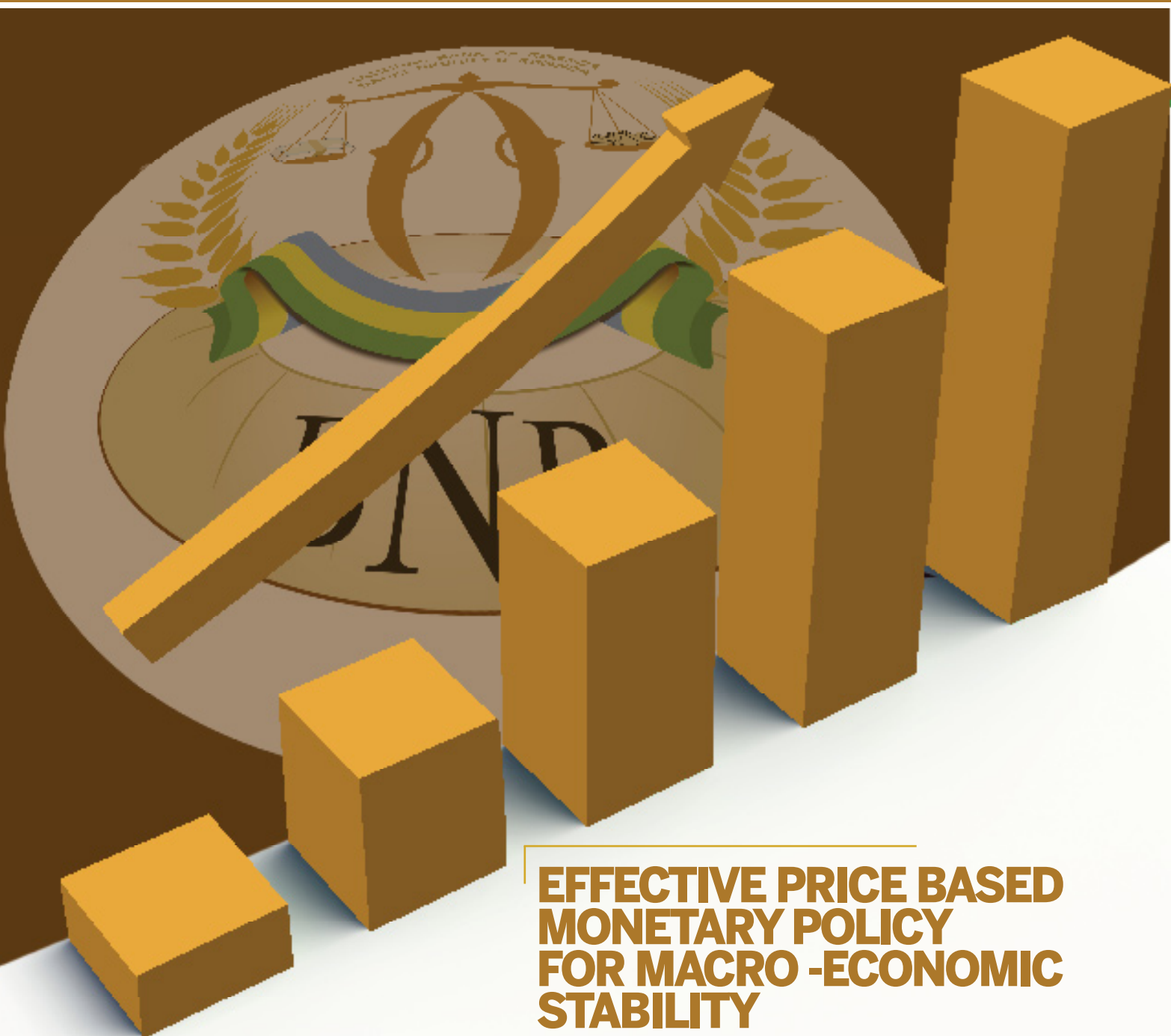
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THE ROLE OF THE  
FINANCIAL SECTOR IN  
ENABLING AN EFFECTIVE  
PRICE BASED MONETARY  
POLICY FRAMEWORK

10 YEARS OF  
ENDLESS INSURANCE  
TRANSFORMATION  
AS BNR VIES FOR A  
WORLD CLASS STATUS

A NEW DAWN FOR  
DEVELOPMENT OF  
DIVERSE SOURCES  
OF FINANCING IN  
RWANDA

THE INSUR-TECHS,  
THE NEXT GAME  
CHANGER IN RWANDA'S  
INSURANCE SECTOR



**EFFECTIVE PRICE BASED  
MONETARY POLICY  
FOR MACRO -ECONOMIC  
STABILITY**

## VISION & MISSION

### Vision

To become a World-Class Central Bank

### Mission

To ensure price stability and a sound financial system

## CORE VALUES

### Integrity

We uphold high moral, ethical and professional standards for our people, systems and data

### Accountability

We are result-focused and transparent, and we reward according to performance

### Mutual- respect and Team-work

We keep ourselves in high spirit, committed to each other for success

### Excellence

We passionately strive to deliver quality services in a timely and cost effective manner.

We continuously seek improvement by encouraging new ideas and welcome feedback that adds value to customer services

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## EFFECTIVE PRICE BASED MONETARY POLICY FOR MACRO -ECONOMIC STABILITY

Too much liquidity in circulation that is not supported by consistent real out put may cause inflationary pressures. It yields an overheating economy. Take the example of Zimbabwe in the years that followed the land reforms. The private sector response was a reluctance to produce. A significant drop in foreign investment also ensued. For the government to keep with its expenditure plans in a context of drying tax revenues, it decided to print more and more notes, of a bigger denomination value each time the inflation was fueling up. Notes of as high a facial value as 100 billion were printed. Prices were doubling from a day to the next. But the situation could not go on like that. The country was dollarized in April 2009. A much worse hyperinflation was recorded in Hungary in the years 1940s whereby prices were doubling every fifteen hours. Generally, high inflation is costly as it turns out to erode the purchasing power of money and introduces uncertainty in the economy, with adverse effects on consumption, savings, and investment.

The desired level of inflation rate has been empirically observed at around 2% for developed countries, and anything below 10% for developing ones. In EAC, countries have agreed to keep inflation at 5% plus or minus 3 percentage points [2% - 8%]. BNR therefore subscribed to this consensus, with a corridor around a benchmark inflation rate of 5%. The balancing act that a central bank performs to keep short-term interest rates within a range consistent with the desired level of prices is known as price-based monetary policy. Such policy ought to be forward looking to anchor expectations of economic agents who are increasingly relying on the direction that short-term interest rates are taking (or likely to take) to inform their decisions as to what alternative uses they can channel their disposable incomes to.

Expansionary monetary policy (loosening) means lowering short-term interest rates; this reduces the incentive of banks to invest in assets such as bonds, and leads to more credit availed by financial institutions to finance production and consumer spending. In economies like Rwanda, more credit can lead to more demand for imported goods, which reduces the value of the local currency compared to hard currencies such as the US dollar. An overdone expansionary policy can lead to unintended consequences of an excessive inflation or even a hyperinflation, and the resulting disincentive for firms to expand production and create more jobs.

Contractionary monetary policy (tightening) consists in higher than usual short-term interest rates, which slows down or even rends negative the growth of money supply. It cools down the economy, and if excessively done, can also lead to a deflation, a recession and higher rates of unemployment as it compresses borrowing and spending by individuals or firms. It can also lead to dysfunctional assets markets as an inverted yield curve kicks in.

### PRICE-BASED MONETARY POLICY POISED TO TAKE FINANCIAL MARKETS EFFICIENCY TO THE NEXT LEVEL

It can be argued that price-based monetary policy framework creates a conducive environment for increased efficiency in the allocation of financial resources while ensuring responsible behavior in financial institutions.

With increased monetary policy communication coupled with effective shaping of economic agents' expectations, these agents are in a better position to search for better financial rewards for their money, or better financial terms for the money they need.

Financial institutions becoming more sensitive to this search mindset seek to price their products accordingly, including adjusting lending rates more flexibly than before. Prior to introducing price-based monetary policy NBR was using a reference rate which it used to call Key Repo Rate (KRR), on a trial basis since 2010. Over the last few years, NBR has maintained an accommodative stance, thus signaling financial institutions to keep the momentum financing the economy. The money market rates generally responded well to the signals sent by the central bank; they all declined in alignment to the KRR, however lending rates declined marginally to just below 17%. This trend shows that time was ripe to move to a fully-fledged price-based monetary policy framework.

It is worth mentioning that the rate that central bank will be announcing from now on will be called central bank rate (CBR). Within the forward looking perspective inherent to price-based monetary policy, a generalized reference to CBR to inform financial decisions of banks, institutional investors and individuals, is expected. The central bank has intensified its communication to the public to support this. We are more likely now than before to see financial news reporters address the topic. The end result will be enhanced competition in the financial markets.

### PRICE-BASED MONETARY POLICY AND ITS SPILLOVER EFFECTS ON FINANCIAL STABILITY

It can also be argued that the effective implementation of price-based monetary policy yields more than price stability; price-based monetary policy has proven virtues as a macro-prudential tool and plays a role in ensuring the stability of the financial system, especially in times of greater financial innovations that tend to bring more and more nonbank players into the financing of the economy.

Price stability is a critical factor in financial sector stability but may not be a sufficient condition in itself. That is why world class central banks hold financial stability an important aspect of their monetary policy strategies, what is commonly referred to as "leaning against the wind", in an attempt to put brakes on sectors prone to bubbles such as mortgage while encouraging more lending to sectors that need more promotion such as agriculture and SMEs.

The price-based forward looking monetary policy framework creates the space for a diversity of tools to be used in a bid to steer the economy towards the desired end-state over the short term without jeopardizing the stability of the financial system.

The tools can be quantitative in nature, such as LTV (loan-to-value ratio) that is often called for to mitigate risk in identified sectors. This measure requires borrowers to contribute a share of the financing of an asset in terms of their own equity/savings, to complement the loan facility sought from banks. So far the National Bank of Rwanda has introduced LTV for mortgages.

The tools can also be qualitative, such as forward guidance that the central bank provides to economic agents through its oral and written communications. Again, National Bank of Rwanda is active on this ground, with its flagship "BNREngage" initiative. A point is often made that in a fast transforming economy, characterized by financial innovations and electronic payments, the amount of liquidity increases (through the velocity channel) and tend to slip out of the hands of the central bank if this one uses monetary aggregates as operating instrument. With price-based monetary policy, the monetary authority regains its power back.

This is the case in Rwanda where modernization of payments has been doubling speed. About 70% of households own a mobile phone, and 17% have access to internet, having doubled over the last four years. The value of e-payments to GDP has grown exponentially, by a multiple of 100 over the last 7 years, from 0.3% to 30% today. Moreover, in Rwanda, we have started seeing more

alternative sources of funding other than banks, although we are yet to see an active corporate bond market that is critical for financing the private sector.

For the financial sector to reap more dividends out of price-based monetary policy, NBR has taken the measures which include:

- Focus on research to better understand different aspects of the economy both in terms of its macro and micro fundamentals. This work supports modelling as well as assumptions formation;
- Enhance liquidity forecasting and close monitoring of the liquidity conditions prevailing in the market; this looks at diverse factors such as fiscal patterns, competition from the capital market, conditions in the supply side of the economy, etc.

- Deepen interbank market as well as enhance the capacity of dealers;

- Hold banks responsible and transparent about their pricing; this is enforced in three main ways. One, the Key Facts Statements (a requirement for the bank to disclose the terms and conditions of a loan or any other service in a direct and simplified manner using the language of choice of the client (Kinyarwanda, English or French) so that the client can take an informed decision). Two, moral suasion whereby the central bank requires banks to articulate their pricing models so they can be challenged where necessary. Three, a comparator website where terms and conditions of banks are displayed so people can shop around without moving around;

- Invest in financial education in a bid to empower customers of financial institutions towards demanding their rights and negotiating better terms. A full department has been created to look after conduct supervision and financial inclusion of which financial education and financial consumer protection are key pillars;

- Last but not least, strengthen the aspects of communication strategy.

### CONCLUSION

Price-based monetary policy is good news for Rwandans. It tells a story that Rwanda is modernizing and that NBR is keeping pace with an appropriate monetary policy framework. It is a sign that the economy has matured and that its fundamentals are good.

Price-based monetary policy enables everyone to contribute towards the attainment of the desired state of the economy, by taking informed decisions and forming the right expectations anchored around the central bank rate.

This requires that financial institutions act more competitively and more responsibly. It also requires that their customers style up their knowledge about existing opportunities and step up their negotiating power, taking full advantage of the mechanisms the central bank has put in place to enable them do so.

However, price-based monetary policy requires more ingredients to remain effective. These include strong economic fundamentals as well as sound demand and supply policies from the Government side. Ensuring a competitive financial sector with enhanced market conduct and financial consumer protection will also lend a supporting hand to price-based monetary policy.

Last but not least, shifting to price-based monetary policy does not mean abandoning tracking monetary aggregates as their relationship with economic performance indicators remain strong over the long term.

The National Bank of Rwanda has aligned the necessary capacity, working frameworks as well as tools that guarantee an effective price-based monetary policy, which ought to be measured in terms of its positive impact on keeping inflation at moderate levels, while ensuring stable and sustainable financing of the economy.



# THE ROLE OF THE FINANCIAL SECTOR IN ENABLING AN EFFECTIVE PRICE BASED MONETARY POLICY FRAMEWORK

**Maurice Toroitich**  
Chairman Rwanda Bankers Association

The Central Bank of Rwanda recently adopted a Price Based Monetary Policy framework in place of the monetary aggregates framework that has served Rwanda for many years. This change reflects the level of growth and sophistication that the economy has attained over the years.

The foundation of a price based monetary policy framework is the existence of an effective market mechanism that is able to transmit monetary policy actions into real prices in the market. It is founded on the age-old principles of demand and supply and the assumption that market players are rational actors who will make choices based on the dictates of the market to their best advantage.

In an efficient financial sector, banks will follow the cue set by monetary policy authority to increase or decrease interest rates hence affordability and availability of credit hence money in circulation hence inflation (as the monetary policy target). In the money markets space, banks currently account for over 65% of financial value and therefore remains as the most important player in the market. Banks are therefore expected to lead the money markets by reading the actions of the Central



Bank and taking rational decisions to transmit the actions of the monetary authority into real prices in the money market. The avenue through which banks can play this role may be summarized broadly as being in the deposit (funding) market and the loan market but there is always an interrelationship between the two broad markets as demonstrated below. Overall, it is expected that banks will be geared towards using their funds mostly for lending purposes.

**1. Repo Markets –** Banks usually have surplus cash that may be awaiting long term investment into loans or other investments. Bank's may also be short of liquidity and the Central Bank can consider availing liquidity to banks through the repo window.

If Central Bank acts to reduce or increase the rate it offers to pay for surplus funds or to make available funds in case of shortages, in pursuit of a certain monetary policy intention, it is expected that banks will act rationally by seeking alternative avenues to deploy surplus cash or acquire liquidity. In case of a surplus position, banks will usually seek to lend to individuals and businesses because, while lending carries credit risk, the returns are better.

In case of funding shortage, banks can borrow from other sources like the interbank market in case of an increase in repo rates and if funds are not available at the right price, banks may lower the supply of credit hence achieving the desired monetary policy impact of reduction in money supply.

**2. The Interbank Market –** On day to day basis, banks are either borrowers or lenders in the interbank market depending on the activities of each bank at any one day. When a bank has surplus funds, there are many options to consider in deploying the funds and lending to another bank is one of these.

When a bank has a shortage of funds, borrowing from the interbank market is a perfectly normal way to bridge the gaps until the shortfall is plugged by raising customer deposits or by borrowing from other sources. Many banks are usually faced with the choice of either relying on low cost short funds from the interbank market or taking an expensive term deposit from a customer.

Whatever action the bank takes, it is expected to act in a rational manner to achieve a good balance between risk and return. The effective functioning of the interbank market is therefore critical in smoothening price fluctuations that could arise in pricing deposits because of short term shortages or surpluses.

**3. Customer deposits market–** The customer deposits market is an important element of the money markets. Surplus cash holders usually expect banks to pay as high an interest rate as possible for deposits and in building this expectation, they are comparing what other opportunities are available in the market so as to minimize their opportunity cost.

On the other hand, banks will act rationally in determining what rates to offer depending on what other opportunities they may have for their funding including whether the interbank market can lower cost

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funding. The interest rate that will be agreed in the end will be based on the balance between the customer's opportunities and the bank's options. This is how an effective money market system is expected to operate and transmit monetary policy into real prices in the market.

**4. Government Securities –** The government is an active player in the money markets through its domestic borrowing instruments. Individuals, banks, Insurance companies, private companies and pension funds with surplus cash always consider whether an investment in a government security offers a better return for the risk undertaken compared with other investment avenues available in the market. Banks have two roles to play in this market arena. In the event that interest rates offered by Government to acquire funds from private sector increase beyond the rates offered by banks, the latter may be forced to increase their rates to retain deposits.

In this case, banks are competing with government for funding. On the other hand, banks are also investors in government securities and often have to consider whether the return on government securities as an opportunity is better than the return from a loan. Depending on the investment intention, the bank is expected to act rationally anyway.

Overall, an effective money market of which banks are key players depends on the rationality of the decisions by all the players taking into account the risks and relative returns given the portfolio of opportunities or risks that the market offers. This often depends on the market information flow and risk attitudes of the key players.

In implementing its monetary policy framework, the Central Bank will be seeking to achieve its price stability objectives by taking actions that are expected to trigger rational downstream actions by other market players which eventually result in the goal that the Central Bank intended.



# FINANCIAL MARKET DEVELOPMENT FOR AN EFFECTIVE INTEREST RATE PASS THROUGH

## OVERVIEW

The National Bank of Rwanda (BNR) adopted a price based monetary policy in January 2019 as a new framework, under which the bank will implement its monetary policy. One of the key changes is the use of the Central Bank Rate (CBR) as operating target.

In general, an operational target of monetary policy is a macroeconomic variable which is sufficiently controlled by the central bank; and has an effective influence on the ultimate goal of monetary policy, such as price stability through its influence on aggregate demand. The monetary transmission is the process under which a monetary policy decision, say a change in CBR, affects the aggregate demand in the economy.

In the new framework adopted by BNR, the interest rate channel is expected to play an important role to ensure the effectiveness of monetary policy. The channel describes the transmission from the policy interest rate to the lending and deposit rates, then from lending rate to aggregate demand.

The objective of this article is to show that the effectiveness of the interest rate pass through, the impact from policy interest rate to lending and deposit rates through BNR interventions on money market and changes in CBR, depends on financial market development. Financial market includes money market and capital market as part of the financial system in the country.



**Beza Hoziane Amen**  
Economist - Monetary Policy Analysis

The financial system is comprised of all financial intermediaries, financial markets, and financial infrastructure. Financial intermediaries are coalitions of agents that combine to deliver financial services, this include banks, insurance companies, mutual funds, pension funds, etc. Financial market is a market where participants issue and trade securities. Financial infrastructure is the set of institutions that enables effective operation of financial intermediaries and financial markets.

### INTEREST RATE PASS THROUGH IN RWANDA

As indicated, interest rate pass through is part of the interest rate channel which describes how changes in BNR policy rates are transmitted to longer term market interest rates. The idea behind this is that a change in CBR will lead to a change in money market rates (repo rates, interest rates, treasury bills rates)

starting from short maturities to longer maturities. Next, the change in money market rates will lead to a change in lending and deposit rates, which in the final phase of monetary transmission affect savings, investments and consumption, and therefore aggregate demand and ultimately prices.

Existing research show that interest rate pass through is incomplete in Rwanda, as it is in other developing countries. In the case of Rwanda, however, important recent developments in the Rwandan money market, as part of financial market, are to be noted and are expected to improve the interest rate pass through. Interbank market has become active: Total transactions amounted to FRW 613 billion between 2013-2015 and to FRW 1,588 billion between 2016-2018, that is an increase of 159.1%. In addition, the annual average transactions increased from FRW 204.3 billion to FRW 529.3 billion in the period under review.

Developed interbank market is key for the implementation of monetary policy by central banks. Interbank market allows banks to well manage their liquidity by borrowing/lending in short time from/to their peers, in order to balance their daily liquidity fluctuations. Interbank market rate is important, as it represents the return from holding liquidity, and it influences the bank's portfolio decision for holding short-term liquid assets and long-term illiquid assets. Therefore, a well-functioning interbank market is essential for an effi-

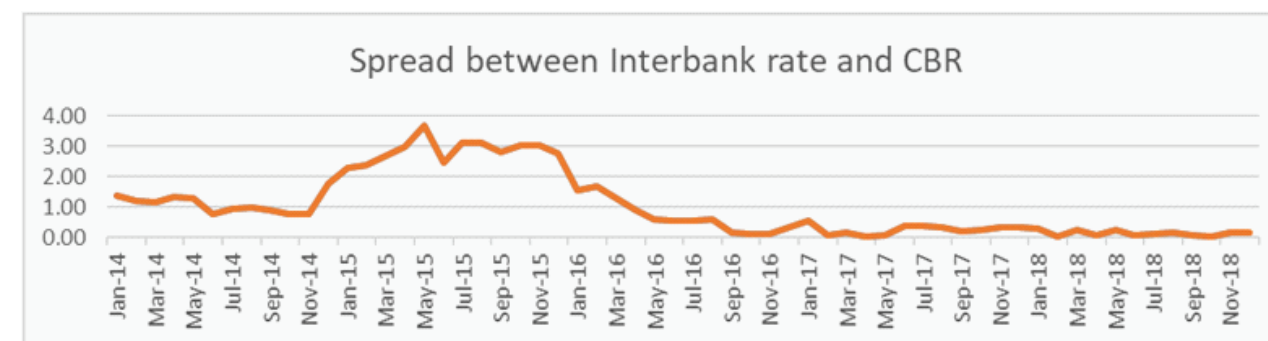
cient monetary policy, as a tool of a central bank's overall management of liquidity in the economy.

Another important development realized in the money market is the stability (less volatility) of the various money market rates. Less volatility in money market interest rates (as well as asset prices in general) is important for the development of the market itself. Indeed, because interest rates can be observed now and in the past, but it is not possible

to determine how these same interest rates will behave in the future, because they are stochastic and non-deterministic; it is important to master the dynamics and behavior of a series like interbank rate in order to have more accurate forecast.

Due to improved liquidity forecasting and management, money market rates have become less volatile in Rwanda in recent period (2015-2018). Measuring the volatility by the standard deviation, repo rates

volatility reduced by 71.4% (from 2.1 in the period 2012-2014) to 0.6 in the period 2015-2018, while it reduced by 80.8% (from 2.6 to 0.5) for interbank rates in the period under review. Furthermore, the spread between the interbank market rates and the central bank rates has been reducing significantly in recent period. These developments demonstrate and strengthen CBR's role of signaling BNR monetary policy stance.



Based on the above analysis, it is clear that the link between BNR rate and money market rates is becoming stronger. The next step is the transmission from money market rates to market rates (deposit and lending rates). To understand the role of financial system in interest rate pass through, we base our explanation on the following model (which is used in different studies on the same subject).

$$i^m = \alpha + \beta * i^p$$

Where  $i^m$  is the market rate,  $i^p$  is the policy rate,  $\alpha$  is the mark up, and  $\beta$  is the demand elasticity of market rates in regard of policy rate, the latter being the key focus of this part of the article. It indicates how commercial banks react by changing deposit and lending rates due to changes in central bank rates. The pass through is incomplete in developing countries ( $\beta$  is less than one), due to different factors including less diversified financial system (commercial banks and capital market providing different sources for investments and financing).

The financial development leads to a higher degree of interest rate pass through because of financial innovation, deepening, and more importantly financial competition. In a more competitive environment (either between banks themselves or

between banks and capital market, particularly corporate bond market), banks reduce their interest rates because consumers have access to a variety of financial providers, services, and products.

Capital market development (both market for government securities and corporate bonds) play an important role in increasing competition by encouraging economic actors to invest in the capital market and obtain funding sources. This will not only contribute to economic development, through the increased role of the private sector but also will enhance the effectiveness of monetary policy, through the strengthening of the interest rate pass through.

A rise in the degree of capital market development, financial deepening and efficiency will consequently cause a quick adjustment of the market interest rate to prevent bank customers from investing in other funding sources, resulting in a greater and faster effect of the policy interest rate on bank market rates and a strengthening of the interest rate channel.

The varied sources of finance for investors and opportunities for savers brought about by the innovation of financial market instruments will increase the demand elasticity of deposits and loans. Currently,

BNR's monetary policy decisions to lower or increase the monetary policy stance, affects immediately the money market rates starting from the short term maturities to long term maturities. Recent papers by BNR staff show that changes in money market rates are translated to the deposit rates of commercial banks but with minimal impact on lending rates.

This weak interest rate pass-through from policy rate to lending rate, is mainly attributed to the high level of bank's market power in the absence of a well-functioning corporate bond market which offer alternative to bank loans.

As indicated, BNR has immensely contributed to the development of money market and this needs to be sustained. The next step will be to develop the capital market to a level of offering additional opportunities for Rwandans to invest their money and to borrow more long term financial resources. The current participation of non-bank financial institution and retail investors in government securities is a good development to be sustained. The same development is needed in corporate bond markets to support the banking system in financing the economy, create more competition in the loan market, and improve the implementation of BNR monetary policy.

# 10 YEARS OF ENDLESS INSURANCE TRANSFORMATION AS BNR VIES FOR A WORLD CLASS STATUS



**NIYONIZEYE D. Dilme**  
Ag. Director, Insurance and  
Pension Supervision

*The number of insurance intermediaries almost doubled to reach 600 players (17 Insurance brokers, 18 insurance loss adjusters and 581 insurance agents) in the same reporting period.*

Insurance plays a very important role both in the economy and in the financial service sector. First, it is the pivotal role in risk management for both households and corporations. By providing confidence and peace of mind, insurance ensures that businesses and other activities of households go uninterrupted.

Secondly, insurance provides savings vehicles for households through life insurance products. This has in the recent past proved to be crucial in mobilising savings in both developed and developing economies as evidenced by the dominance of life insurance over non-life insurance, especially in the developed world. BNR does not relent in discharging its mandate to ensure the above roles are effectively and efficiently discharged for the greater good of the economy.

At the same time, insurance is about a business of promise whereby policyholders pay their premium in expectation that they will get compensated for loss or damages suffered on the occurrence of the insured event, and therefore there is need to ensure oversight of the sector to ensure that the interests of policyholders and beneficiaries are protected. This paper is a hindsight of the BNR's supervisory actions for the past ten years since it started regulating and supervising the insurance business in Rwanda.

As a background, insurance regulation has existed in Rwanda since the enactment of the Decree-Law n° 20/75 of 20/6/1975 governing insurances (in general), as modified to date. However, the intensity and impact of regulation was felt after the Rwandan Parliament passed an Act in July 2007, which stated that the BNR became responsible for regulating insurance activities in the Republic of Rwanda. The then National Insurance Commission (NIC) ceased to function in

its regulatory capacity and some of the NIC staff were transferred to the BNR.

Since then, a new department was established following an amendment to Central Bank law (formerly Law No 55/2007 of 30/11/2007). That law gave the BNR, in addition to its conventional roles, the mandate to regulate and supervise the Insurance and pension activities in the Republic of Rwanda. Supervision is performed through the Insurance Division of the department of insurance and pension supervision (IPSD) which is responsible for supervision of all insurance and pension institutions, as well as other types of non-bank financial institutions such as the insurance intermediaries.

## WHAT ARE THE KEY TRANSFORMATION IMPLEMENTED IN THE INSURANCE SECTOR SO FAR?

The BNR had undertaken a number of initiatives with the objective of placing insurance in its rightful position within the financial services sector. These measures are aimed at ensuring stability of industry players as well as effective and efficient delivery of insurance services.

The insurance regulatory framework in Rwanda went through modernization with the adoption of a new insurance law (Law No 52/2008 of 10/09/2008) and its implementing regulations in 2009. For instance, Insurance Regulation No 05/2009 of 29/7/2009 includes detailed regulations related to licensing requirements, fit and proper requirements, reinsurance, actuarial requirements, regulatory reporting requirements, solvency, risk management, and so on. Article 3 of this Regulation required segregation of life and non-life business and required that life and non-life insurers conduct business under separate licenses. As of early 2014, all insurers complied with this requirement.

As a result, the growth story in the life and non-life insurance following the composites split have been different: between 2014 and 2017, the Cumulative Average Growth Rate (CAGR) in the life sub sector was 17 percent while the CAGR in the non-life subsector was 9 percent. Lessons from some other economies suggest that splitting composites into separate entities can contribute to the growth in the life sub sector, and the reality in Rwanda has been in line with observations elsewhere.

The number of insurance players also continued to grow considerably from 8 in 2007, 12 in December 2014 to 17 insurers in December 2018. The number insurance intermediaries almost doubled to reach 600 players (17 Insurance brokers,

18 insurance loss adjusters and 581 insurance agents) in the same reporting period. The regulations governing mergers and acquisitions (M&A) in the industry states that the framework aims to achieve the following: promote financial performance within the insurance industry, ensure the orderly transfer of the insurance business, and increase operational efficiency of the insurers. Regulations allow 100 percent equity ownership by foreign companies in the insurance industry in Rwanda, and there have been a number of acquisitions by foreign players: foreign groups own either 99 percent or 100 percent equity in a number of life insurers as well as non-life insurers.

The regulations allowing foreign ownership has played a catalytic role in the overall insurance market development. In addition to injecting capital, foreign owners are adding positive value, skills and practices through a number of initiatives ranging from implementation of new IT infrastructure to capacity building and on job training to other country offices.

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*There was a high turnover of CEOs and top executives, which often incentivizes the executives to make business decisions that are good for performance indicators in the short term*

Improved board and corporate governance: While company board and corporate governance are ingredients for success in the insurance sector in any economy, what is particularly unique to the Rwandan market is the fact that, in the past few years, the decisions of the insurance companies' board were often perpetuating the principal agent problem through leadership discontinuity.

There was a high turnover of CEOs and top executives, which often incentivizes the executives to make business decisions that are good for performance indicators in the short term but are detrimental to the company's sustainability, its policyholders as its shareholders in the long term. In order to strengthen the corporate governance in the insurance institutions, BNR has introduced a new regulation on corporate governance and risks management that are in line with international best practices and standards.

The Board and CEOs were trained to ensure that they are conversant with the new corporate governance requirements as well as their roles and responsibilities.

## RISK BASED SUPERVISION:

BNR also adopted since 2012, the risk based supervision regime (RBS) as on-site inspection processes. RBS is a framework geared towards allocating regulatory resources in the most efficient and economical manner. The RBS framework requires the regulator to focus more on and allocate resource to regulated entities that pose higher risks to policy holders, while on the other hand focusing less on well-managed and less risky regulated entities. This policy shift is meant to address the conventional approach associated with compliance/rule based supervision, which allocates equal regulatory focus to all regulated entities irrespective of their level of exposure to risks.

## MICROINSURANCE FRAMEWORK:

The BNR has recognised the importance of micro-insurance in reaching the masses, and has laid down a framework for the development and regulation of such products. The development of the micro insurance regulation in the year 2018, is expected to make a meaningful contribution to the development of inclusive insurance market in Rwanda. It is expected that the regulatory framework is likely to address some of the regulatory obstacles to the development of micro insurance such as product approvals, more distribution channels, dedicated micro insurers licensing, etc; and will help to boost the insurance penetration.

The BNR law No 55/2007 was replaced by the law No 48/2017 of 23/9/2017



Other measures introduced include the directive on conduct of business especially requiring the insurers to have the strategic underwriting and pricing policy, prohibition of selling insurance on credit and the directive on antifraud and whistleblowing mechanism which aims at tracking and blacklisting the fraudsters in the insurance sector. These measures are meant to get rid of the insurance malpractices.

#### HOW AUTOMATION AND EDWH ARE ENABLING THE BNR TO BUILD EFFICIENCY IN THE INSURANCE SUPERVISION

The National Bank of Rwanda (BNR) has effective from October 2018 adopted new technologies and embraced continuous improvement to enhance the efficiency of its regulatory and supervisory work. The Bank is using an Electronic Regulatory Reporting System called "Electronic Data warehouse (EDWH). This is a web based technology software to manage communication with the regulated entities.

Through the EDWH, entities are able to complete and submit all statutory returns online. In addition, the regulator can validate, process, manage and analyse the submitted data.

Initiated since 2015, the EDWH is making supervision easier, faster and more effective for the regulator. The system automates the core supervision processes, massively reducing manual work, decreasing errors and enhancing delivery timeliness. This improves service delivery to the insurance players.

Further, the new software project has reduced the time taken to prepare data outputs and analysis. Today, the time for processing and submitting financial returns, which used to take more than a month, take five days through the EDWH. The online service technology falls within the BNR's strategy to become more environment sensitive by decreasing reliance on paper submission.

In addition, the EDWH implementation will lead to improved data depth, consistency, quality and accessibility. This will enabled the Bank to achieve its dynamic model of supervision in line with international standards.

#### INNOVATION AND TECHNOLOGY (INSURTECH) TO DRIVE THE INSURANCE PENETRATION IN RWANDA

The global insurance industry is at the cusp of technological disruptions along the entire value chain. A variety of technologies and innovations – from mobile

“Insurance supervision has evolved since the enactment of the insurance law in 2008, when the solvency calculation was factor-based, to a Risk Based Capital adequacy (RBC) approach.”

phone technology and Internet of Things (including telematics and wearable devices) to artificial intelligence (AI) and “big data” –hold immense disruptive promise for the insurance industry. Some of these technologies can dramatically reduce costs and expand insurance coverage while others can enhance trust in the insurance sector. Additionally, there are other technological interventions that enable insurance providers to better assess and price risks.

Some of the technologies that are feasible in advanced markets may not be feasible in the emerging markets and developing economies in the near future. The financial investments and the skill mix composition requirements for technology adoption varies with the type of technology in question.

Furthermore, some forms of technological disruptions around business model innovation that changes the way insurance business is conducted may not necessarily address the key barriers to inclusive insurance. In Rwanda however, only mobile phone technology and its applications to sales & distribution and claims management process in the context of Rwandan insurance market can apply.

There is a number of key trends that have created the enabling conditions to leverage mobile phones in distribution and claims management phases of the insurance value chain in Rwanda:

The government's push towards becoming a “cashless economy” combined with the nature of telecommunications industry – where there are only 2 players (MTN and Airtel) with a unique advantage of having large customer base – creates opportunities for driving innovation in distribution and achieving economies of scale.

The landscape of mobile services has changed a lot recently. Mobile phone penetration in the country is high, at around 75 percent, and significantly high percentage of the population in rural areas own mobile phones: telecommunication service providers estimate that around 40 percent of their transactions are rural.

There are a number of disruptions brought by the telecommunications industry with the introduction of several new mobile financial services: deposit and withdrawal, bill payment (including payment of off-grid services), savings products, regional cross-border remittances and, as of recently, micro insurance.

Although there is an issue of trust initially with mobile money across economies where it is first introduced, the initial barrier is starting to get overcome through the increasing acceptance of these new mobile financial services products. Users of mobile insurance services should also be well trained.

**Sales & Distribution:** Leveraging mobile phone technology as a distribution channel to sell insurance would have two key benefits: ability to unlock scale – serving geographic segments that have currently not been reached by agents and brokers – and possible reduction in price for end customers.

Digitization is especially important in a market such as Rwanda: in markets with low income levels, lower price points are required to drive greater demand for insurance products and a lean structure of the entire value chain – particularly along the sales & distribution phase – is required to drive the costs down. Digitization would reduce distribution costs and given the highly competitive nature of the industry, lower cost structure is expected to translate to lower price for customers.

**Claims Management:** Mobile phones can be used along the different steps of the claims management phase – from first notification and data collection to loss assessment and claims settlement. While the application of mobile phone technology in the loss assessment stage may require smartphones – therefore this can be applied on a larger scale as the smartphone ownership rate increases in Rwanda – other steps such as first notification and payments can be completed through regular phones. In general, the use of mobile phone technology can reduce costs to both customers and insurers and also increase efficiency.

#### BNR IS MOVING FROM COMPLIANCE BASED SUPERVISION APPROACH TO RISK BASED CAPITAL APPROACH

Insurance supervision has evolved since the enactment of the insurance law in 2008, when the solvency calculation was factor-based, to a Risk Based Capital adequacy (RBC) approach.

RBC adequacy approach measures minimum capital based on the size and risk profile of the insurer. The framework establishes regulatory capital requirements at a sufficient level so that, in adversity, an insurer's obligations to policyholders will continue to be met as they fall due. It also requires that insurers maintain capital resources to meet the regulatory requirements.

The framework has control levels that trigger different degrees of intervention by the BNR, with an appropriate degree of urgency. To facilitate the implementation of RBC, other significant changes have been introduced in 2017 and published in the official gazette. These include the new corporate governance requirements and risk management (Reg. No 11/2017 of 23/11/2017), the new regulation on accreditation of external auditors (Reg 14/2017) and a directive on RBC parallel run No 2310/2018 of 23/10/2018. These requirements was also expected to foster confidence of consumers in the insurance market.

The BNR recognises that corporate governance is important to promote prudent management of all the insurers in Rwanda. Good governance of the insurers is critical to the stability and development of the insurance industry. The corporate governance requirements endeavoured to improve corporate governance of insurers' by restricting individual shareholding of insurers to a maximum of 25 percent. This move was expected to ensure that management of insurers was prudent and free from undue influence.

#### DEVELOPING TECHNICAL SKILLS AND CAPACITY TO STRENGTHEN THE SECTOR

One of the key bottlenecks to insurance market development is inadequate technical capacity across the board, from the private sector players to the regulator. There needs to be a holistic approach to address the issue of limited capacity on a market wide level. For instance, a holistic capacity building approach should entail a fine balance between developing technical skills specific to insurance and developing business strategy and financial skills.

The key is to provide a combination of skills – from underwriting and risk management to financial investment and strategic thinking in terms of business growth – in a way that provides a good value for money and makes a sustainable impact. To achieve this, it requires synergies between different stakeholders: development sector, policy makers, regulator and the private sector.

#### OTHER KEY REGULATORY OR POLICY DEVELOPMENTS

**Review of the insurance Law-** this is being done to align the existing law with the change in market dynamisms and other international supervisory standards.

**Licensing regulation for insurers and reinsurers:** key changes include the licensing conditions and capital requirements

(from Frw 1 bn to Frw 3 bn for General insurers and Frw 2bn for Life insurers) and fit and proper of the Board and senior managers. The new licensing requirements also require new insurers to demonstrate the value addition they bring to the market as one of the pre-condition for granting a license.

**Bancassurance framework:** This will be an avenue for banks to provide insurance intermediation services to different insurance companies.

**Licensing regulation for insurance intermediaries:** key changes include the delegation of the BNR's licensing power to the insurers as the Principals of their own insurance agents, extending the insurance brokerage license to perpetuity instead of being renewed every year and extending the license of the loss adjusters to three years from one year. This will facilitate ease of doing business and financial deepening.

**Law on motor third party Liability:** the BNR, in collaboration with other insurance market stakeholders, is reviewing the law regarding the compensation of injuries caused by motor vehicles. This law which is dated in 1975 has been a hindrance to the development and profitability of the motor underwriters in Rwanda.

**Establishment of the department of financial inclusion and conduct supervision:** A new department in charge of conduct supervision was created to promote financial education and public awareness about the financial sector and to deal with the consumer protection or market conduct issues relating to the financial sector.

**Industry association meetings:** BNR has set a plan to meet the industry associations at least every year to discuss key challenges facing the insurance sector in Rwanda and solutions to these challenges. This collaboration is bringing positive results.

#### CONCLUSION AND WAY FORWARD

There is much for the BNR to celebrate achievements for the past ten years of regulation and supervision of the insurance sector in Rwanda. We hope that, implementing all the above mentioned strategies, among others, will propel the BNR's aspirations to become a World Class Insurance Regulator. The above mentioned strategies are likely to lead to an improved performance, sound and inclusive insurance sector.

# A new dawn for development of diverse sources of financing in Rwanda January 2019



**By: Jean Bosco Iyacu**  
Director of Programs at  
Access to Finance Rwanda

**T**he law regulating Non-Deposit Taking Lending Institutions was published on 17th December 2018, offering a great start to the New Year– 2019 as the entire financial sector is encouraged to embrace and foster innovation to serve the underserved market.

This focus note examines what the new law means for the sector in Rwanda and how it could stimulate the role that non-banking financial service providers have been playing in provision of credit intermediation outside of the regular banking system.

According to the National Bank of Rwanda (BNR) Annual Financial Stability Report 2017/2018, the Rwandan Financial Sector continues to maintain robust growth averaging 12% per year with total financial sector assets of approximately 5 billion US Dollars as of 30th June 2018.

However, 2016 Finscope survey indicates that the banking sector remains the largest sub-component of Rwanda's

financial sector with 66% of the total financial sector assets yet it only serves 26% of the adult Rwandan population. This therefore demonstrates the need to have diversified sources of finance to ensure inclusion of different unserved or underserved segments.

During the last two decades, we have witnessed new developments in the financial sector across the globe characterised by the introduction of a myriad of firms disrupting the market. They disrupt the market whilst offering financial products and services through a diverse range of distribution channels. These parallel institutions are functionally very similar to traditional financial institutions yet barely supervised or regulated. Some of them do not hold any capital for security reasons and are not subject to any meaningful prudential requirements in regard to liquidity, leverage or any other feature of their assets and liabilities. They also have very few reporting obligations and have to meet few governance standards.

These institutions operate

Annual Financial Stability Report 2017/2018

within a framework that has always been referred to as "shadow banking", a system which The Financial Stability Board broadly describes as "credit intermediation involving entities and activities (fully or partially) outside the regular banking system" or call it non-bank credit intermediation." The shadow banking sector contains all financial institutions that perform bank-like activities, however the shadow banking system is not subjected to the same regulatory requirements as banks and do not have access to public safety nets.

## THE IMPORTANCE OF SHADOW BANKING AND ITS CURRENT REGULATORY LANDSCAPE

"The shadow banking system has a tangible reputation of providing market participants with an alternative source of funding and liquidity with more flexibility. However, as the 2008 financial crisis has shown, the shadow banking system can also become a source of systematic risk, both directly and through its interconnectedness with the regular banking system. It can also create opportunities for arbitrage that might undermine stricter bank regulation and lead to a build-up of additional leverage and risk in the system (FSB, 2011, p. 1)".

The Alliance for Financial Inclusion (AFI) conference held in Moscow in 2015 underscored the importance of Shadow Banking. First, it highlighted the importance of non-bank financial intermediaries in driving innovation and channeling

Financial Stability Board, 2011, Page 1



*The rationale for regulating shadow banking lies in the contribution that shadow banking gives to the overall systemic risk within the financial system*

funds for financial inclusion and economic growth, especially in emerging economies and developing countries; Second, it supported the efforts of regulators and supervisors to identify and monitor trends in shadow banking and advance proportionate regulations to address the risks to financial stability emerging outside the regular banking system while not inhibiting sustainable non-bank financing models that do not pose systemic risk.

The rationale for regulating shadow banking lies in the contribution that shadow banking gives to the overall systemic risk within the financial system. On the other hand, likewise many other segments of the financial intermediation, shadow banking regulation has to be designed in order to protect customers and, more generally, less informed parties.

As a result of this conference's deliberations and following the Financial Stability Board's recommendation to Central Banks to monitor shadow banking and its systemic risks, China and the European Union (with a critical role of the United Kingdom), started devising regulatory frameworks of shadow banking. Africa followed suit and more than seven countries including Tanzania, Kenya, Gambia, Ghana, Liberia, Uganda and South Africa introduced different shadow banking regulations.

## FACTS ABOUT SHADOW BANKING IN RWANDA

The Rwandan economy and the financial sector in particular is growing fast. Considering the current need to diversify



sources of finance for economic agents in order to effectively contribute to the economic development of the country, the regulatory framework should be progressive in order to stimulate financial innovation. It is therefore advisable to allow new products to enter in the market, by following a sandbox regulatory framework that follows a “Test, Learn and Regulate” approach for both the innovator and the regulatory body.

In April to May 2018, Access to Finance Rwanda (AFR) in collaboration with the National Bank of Rwanda (BNR), carried out a survey to assess the current shadow banking system and related activities in Rwanda in order to advise on how to design a conducive regulatory environment for entities involved and put in place a supervisory mechanism that will help them optimise their operations.

The survey provided evidence of “shadow banking system” in Rwanda as it identified more than seven entities with shadow banking characteristics. Those are credit only institutions, guarantee providers, peer to peer lending platforms, cloud funding, factoring companies, private equity funds, etc. On one hand, activities of these institutions when monitored may participate in driving innovation and channeling funding for financial inclusion while on another hand, the non-oversight of shadow banking system can be a source of systemic risk when there is interconnectedness with the regular banking system.

As a result of these findings, the National Bank of Rwanda with support from AFR developed a new regulation for Non-Deposit Taking Lending Financial Insti-

tutions and it was published on the 17th December 2018

### WHAT SHOULD WE EXPECT FROM THE NEW REGULATORY FRAMEWORK?

This proportionate regulatory regime for Non-Deposit Taking Lending Financial Institutions is expected to allow provision of responsible finance that focuses on credit only, mortgage finance, credit guarantees, refinancing, factoring, debt collection and other financial services.

One important feature of this regulation is that it may allow the non-banking financial service provider to apply for a “Sandbox” to the central bank. This would happen in the event that an entity intends to provide an innovative product or service, but this does not clearly correspond to one of the services or products currently regulated, or represents a hybrid product. A sandbox is a live, contained environment in which participants may test their product, service or solution subject to the requirements under a regulatory body.

Olivia B Zank, CEO & Founder of BeneFactors Ltd, a factoring firm, had this to say, “BeneFactors Ltd welcomes the new licensing structure from BNR. It provides much needed clarity and regulatory predictability for non-deposit-taking financial institutions. This in turn provides comfort for our investors, who are pleased to see the appropriate light-touch approach from BNR to this regulation. We remain committed to work with the regulator to promote innovation in the Rwandan financial sector and are looking forward to further developments of the same nature”.

*As a result of these findings, the National Bank of Rwanda with support from AFR developed a new regulation for Non-Deposit Taking Lending Financial Institutions and it was published on the 17th December 2018*

“

*According to the National Bank of Rwanda (BNR) Annual Financial Stability Report 2017/2018, the Rwandan Financial Sector continues to maintain robust growth averaging 12% per year with total financial sector assets of approximately 5 billion US Dollars as of 30th June 2018*



# The new FRW 500 Banknote



„The Canopy Walk“ is the new main motive on the front side.



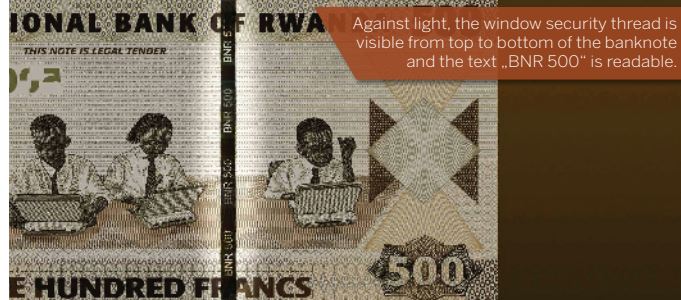
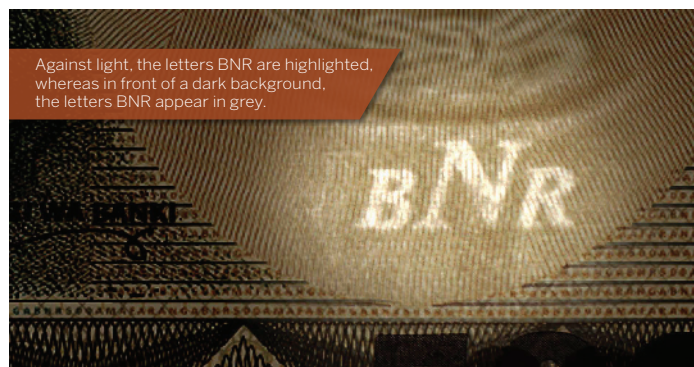
A new golden triangle represents the letter BNR.



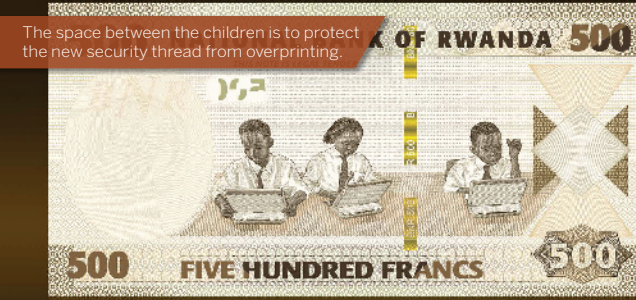
Against light, the watermark represents the coat of arms of the Republic of Rwanda. The letters BNR are highlighted below.



Against light, the letters BNR are highlighted, whereas in front of a dark background, the letters BNR appear in grey.

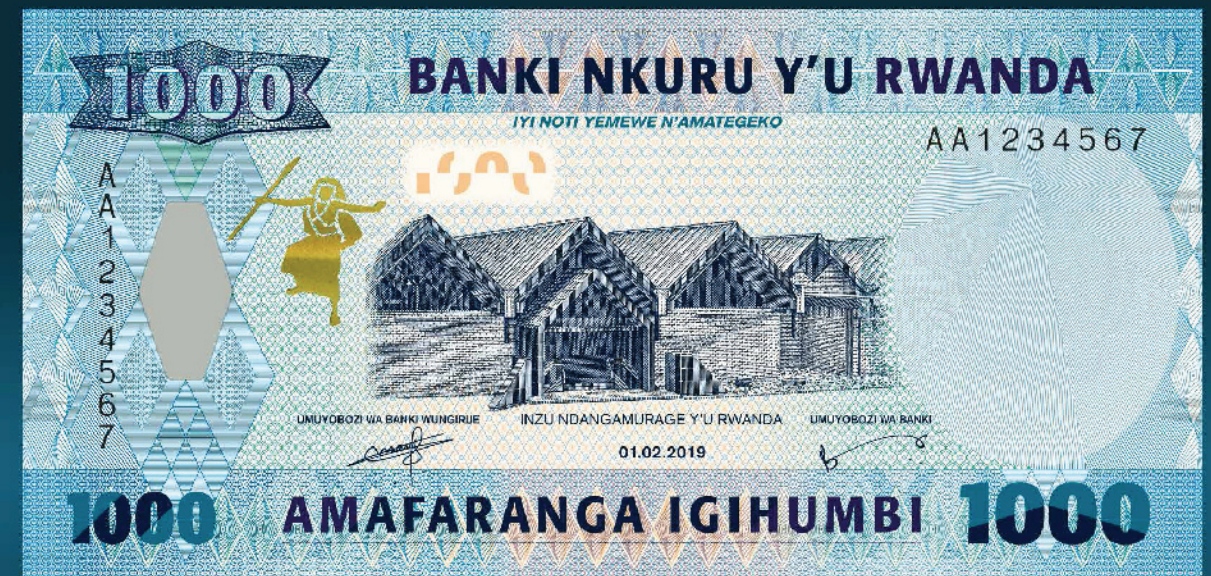


Against light, the window security thread is visible from top to bottom of the banknote and the text „BNR 500“ is readable.



The space between the children is to protect the new security thread from overprinting.

# The new FRW 1000 Banknote



When tilting the banknote, the new Intore Dancer changes colour from gold to green with a diagonal bar moving up and down.



When tilting the banknote, a new security thread shows a colour change from gold to green while tilting the banknote and a bright diagonal line is moving up and down.



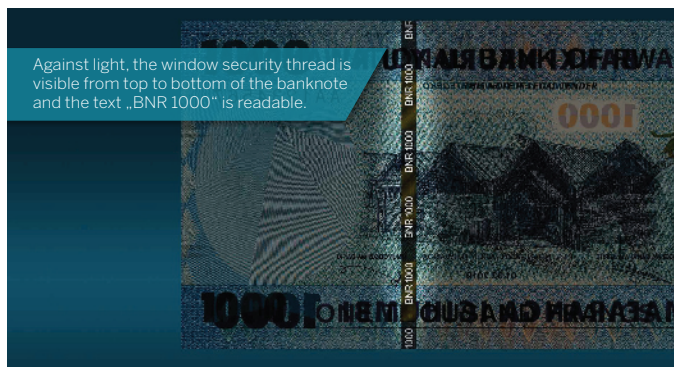
Against light, the watermark represents the coat of arms of the Republic of Rwanda. The letters BNR are highlighted below.



Against light, the letters BNR are highlighted, whereas in front of a dark background, the letters BNR appear in grey.



Against light, the window security thread is visible from top to bottom of the banknote and the text „BNR 1000“ is readable.



The image in the silver area represents the letters BNR.





# BNR ENGAGE IN SCHOOLS

## EASTERN PROVINCE



## NORTHERN PROVINCE



## SOUTHERN PROVINCE



## WESTERN PROVINCE



## The Insur-Techs, the next game changer in Rwanda's insurance sector

In today's world of rapid technology, the internet and mobile devices are becoming core elements of our lifestyle and have changed how nearly every sector does business. The pace of change in the financial services industry is fast-tracking, the insurance sector is no exception, as a new phenomenon called Fin-Tech is reshaping the industry's status quo.

The term Fin-Tech has been described as "technologically enabled financial innovation that could result in new business models, applications, processes, or products with an associated material effect on financial markets and institutions and the provision of financial services. Fin-Tech covers a broad array of technical innovations that are finding their way into the financial sector. Specifically to the insurance sector, InsurTech refers to insurance-specific branch of Fin-Tech that refers to the variety of emerging technologies and innovative business models that have the potential to transform the traditional insurance business.

Most of these innovations in global insurance market are mainly driven by the supply of new technology available for insurers/policyholders, and customer demands for new products. These innovations are bringing on board (1) competitive advantage by improving pricing, risk selection, detection of fraud in claims settlements, and eventually improve customer's loyalty. (2) Back-office efficiency by seeking possible ways to reduce management expenses – i.e.: digitizing certain operations to reduce human involvement. (3) Societal changes demanding digitized products: For instance, millennials requires consideration for an increased appetite for mobility usage, shared economy (sharing of underutilized assets i.e. Cars) etc.

### Global InsurTech Landscape

In developed countries, InsurTech is driving the way insurance services are distributed, accessed, and thus reducing costs and creating sufficient scale for a viable business. Although, Fin-Tech investments have been largely focused around banking and capital markets, maturity has brought much greater diversification with innovators seeking to disrupt other financial services such as insurance which is viewed as the next great opportunity for investment.

According to IAIS report, the technology companies targeting the insurance business received less than \$800 million as



**Eulade Rugambwa**  
Officer Financial Stability Analysis

funding in 2014, but in 2015, InsurTech start-ups attracted more than three times that amount, receiving approximately \$2.5 billion. While 2016 saw \$1.7 billion in InsurTech investments, and 2017 registered \$2.3 billion according to data by Accenture. This implies that Venture capital investors across the globe are excited to seize the potential opportunities in InsurTechs.

African tech startups raised funding in excess of US\$195 million in 2017, up 51 per cent on 2016 (Disrupt Africa funding report 2017). The report indicates that South Africa, Nigeria and Kenya were the top three destinations for tech investors in 2017, both in terms of numbers of deals and total amount of funding. However, Ghana, Egypt and Uganda were identified as emerging hotspots.

According to InsurTech intelligence, it highlighted that 10 insurTech startups are expected in 2018, which will turn around the landscape of insurance service delivery in Africa. Particularly in East Africa, Jamii, Tanzanian based InsurTech startup. This startup is a mobile micro-health insurance for the informal sector which enables Tanzanian families that make less than \$70 a month to access and afford health insurance at just \$1 a month.

It is operational in 400 hospitals and serves about 20,000 active users. Early 2018, Kenyan InsurTech startup "Kakibima" launched an online software -as-a-service (SaaS) insurance manager that tracks a user's insurance and micro-insurance policies, claims and premiums, and simplifies access to information. This platform focuses on distribution and automating traditional insurance model, which used to take a lot of time at the same time providing a tool that makes an insurer's job easier.

As InsurTech start-ups continue to emerge and attract funding, this is expected to change dramatically the insurance business model. Thus, Old-fashioned insurers could be losing relevance for customers due to their products and services are failing to keep pace with rapid technological developments in the connected world.

### OVERVIEW OF INSURTECH INNOVATIONS IN RWANDA.

As Rwanda aspires to be the largest Fin-Tech Hub of Africa, Fin-Tech start-ups in most of the economic sectors of Rwanda are expected to boost, including the insur-



**Most of these innovations in global insurance market are mainly driven by the supply of new technology available for insurers/policyholders, and customer demands for new products**



ance sector. Furthermore, under National Strategy for Transformation (NST1), the 7-year Government Plan(2017-2024) sees technological innovations as a potential driver of accelerated inclusive economic growth and development towards implementing Rwanda's national socio-economic development agenda in the next 30 years to the vision 2050. With hindsight, Fin-Techs is still one of the emerging technologies in Rwanda. This is evinced by many technological innovations in the banking services and payment & remittance systems whereby many products and services are more digitalized. Albeit, much has been done in the above sectors, but Rwandan insurance sector is still lagging behind in terms of creating technological innovations on the market.

The digital insurance innovations is still in its infancy stage on Rwandan insurance market. Nevertheless, some Insurers have started partnering with Telcos to initiate new digital insurance product. For instance, the recent launched digital insurance product "Ingoboka Cash" which was developed for Telco mobile money customers in case of a need of medical care when they stay in hospital for 3 nights or more in a row. This new digitized product is expected to boost uptake of medical insurance services as well as improving insurance penetration level in the country. Early 2018, Community-Based Health Insurance (CBHI) commonly known as "Mutuelle de Santé" initiated a new method of collecting premiums through Rwanda Online (Irembo) an institution that was contracted to digitize all government services. This platform (Irembo) eased whole process of accessing medical insurance services by the population. Because, Ubudehe category (Ranks of financial capability of population) can be easily accessed on mobile phone through code \*909#, then CBHI subscriber can recognize the amount of his/her payments to be processed on mobile money platforms based on his/her ubudehe category.

Therefore, these recent technological innovations reflect the early important signals that traditional insurance business model will be disrupted in the near future on Rwandan insurance market. In this regards, local insurers should act proactively to seize the opportunities offered by Insur-Tech and remain relevant on the market by delivering exceptional customer's experience.

#### ....SOME POTENTIAL INSURTECH DISRUPTORS LIKELY TO TURN-AROUND TRADITIONAL INSURANCE BUSINESS IN RWANDA

These Insur-Tech innovations reflect the impending opportunities, not just only threats to the insurers. There are a number of Insur-Tech innovations worldwide, which could disrupt the insurance business model in particular jurisdiction, the following are potential Insur-Tech applications or innovations, which would bring the greatest potential disruptions for Rwandan insurance businesses in the near future. Therefore, insurers will have to think differently, be more innovative and more faster.

#### MOBILE INTERNET TRANSACTIONS:

Smartphones and tablets allow customers to research, buy and manage (i.e. transact) insurance online wherever and whenever they choose. As a growing part of population-millennials is progressively capturing big shares of insurance market, many customers will be using their smartphones for insurance transactions.

Mobile internet apps could improve customer experience that we have never seen before. For instance, mobile internet apps could automate claims and data submission. They would allow customers to take pictures of damage (i.e.: Claims on motor insurance), wherever and whenever it occurs and submit these photos to their insurers. On the other hand, the insurance underwriting process could be done through these mobile internet apps to avoid time and resources spent while going to insurers' offices. This could dramatically improve customer satisfaction.

Internet of things (IoT) and telematics: IoT involves the internet working of physical devices, vehicles, buildings and other items (also referred to as "connected devices" and "smart devices"), embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data. IoT allows connecting with peoples'

### InsurTechs driving the way insurance services are distributed, accessed, and thus reducing costs and creating sufficient scale for a viable business

lives more seamlessly in manner that a lot data could be collected by insurers. For instance: The use of IoT in insurance, the insurers can utilize the data derived from all types of devices as well as external sources, such as weather data and provide the best level protection possible for their policyholders (Market Research Future Report). IoT would indeed help insurance companies to monetize risks and work with appliance, automobile, and other equipment manufacturers to reduce actual risk, which would boost IoT insurance market.

Therefore, embracing IoT insurance would further create a movement towards usage-based insurance models, would likely decrease risks and reduce claims numbers. For motor insurance, as Volkswagen, the motor manufacturing company that was established in Rwanda last year can partner with, other insurance companies and see how insur-

ance can be sold with the product (i.e. the vehicle) or as part of infotainment service package. Later on, Insurers would deal with these technology companies to obtain the insurance risks embedded within the service that is Telematics insurance.

Under the worst scenario (for insurers), technology companies only provide the minimum necessary claims data. Big Data and Data Analytics: In some developed insurance markets, Big Data and Data Analytics are currently used in various processes, such as product offerings, risk selection, pricing, claims prediction and fraud detection. In today's insurance market, insurers are striving for high premiums growth, but the challenge is to ascertain whether those premiums reflect the risk in insurer's current book. In this regards, big data and data analytics would assist the insurers to better understand potential risk and achieve competitive rates and maintain rate adequacy. This ultimately will push insurers to offer customized products and allow automated underwriting activities. On the other hand, Loss reserve- When a claim is first reported, it is nearly impossible to predict its size and duration.

However, accurate loss reserving and claims forecasting is essential, especially in long-tail claims like liability and workers' compensation. Analytics can more accurately calculate loss reserve by comparing a loss with similar claims. Then, whenever the insurance claims data is updated, analytics can reassess the loss reserve, so you determine exactly how much money you need on hand to meet future claims.

#### WHAT SHOULD RWANDAN INSURERS DO? PARTNERSHIP IS A KEY.

Most of insurers perceive the InsurTech start-ups as competitors in sense that the part of their business is at risk of being disrupted. But also, these innovations present great opportunities to the insurers, many global insurers have started spotting these start-ups as potential partners to turnaround the insurance value chain to enhancing the insurance customers' experiences.

In some insurance markets, there is more collaboration between Insur-Tech start-ups and insurers. Albeit, insurers may create their own internal facilities that support innovations, but most of them may use external resources in one way or another. The partnership is key for driving digital solutions to the insurance business by supporting to the end of the value chain and focusing on the customer. These start-ups ensure that the Insurer's processes revolve around the customer journey rather than the processes themselves.

The key point in all of this, is for the insurers to find the potential InsuTech partner, who has the capability to understand their drivers and customer journey and who is able to work alongside them for the longer term. In nutshell, this partnership can be beneficial to all stakeholders in this particular business both, insurers, InsurTech start-ups, customers as well as the insurance regulators.



**Innocent Rugagi,**  
Officer IT Security,  
ICT Security Division

#### INTRODUCTION

Recently, we observed increase in the number of seminars, news stories, blogs and articles on what blockchain is and how it is going to disrupt the status quo across all vital economic sectors. The emergence of blockchain technology offers significant opportunities for the provision of the decentralized services; with decentralized in particular being relevant for financial interaction and transaction exchange without any central authority.

Blockchain technology provides unprecedented transaction security using cryptographic algorithms and cuts the costs incurred by main frames and data centers. Consequently, it completely changes the financial transaction-processing cost model. Since its inception in 2008, we are now witnessing the first tentative steps (tentative steps for the reason explained in further sections of our discussion) of blockchain technology adoption pick up speed as both interest and investment accelerate.

Organizations of all sizes; from small start-ups to major corporations and governments agencies are now investing in the technology, promising that blockchain will cause disruption to current business models in the financial services sector and beyond. However, to non-tech people, it can take a while to figure out what blockchain technology is and how it works.

#### WHAT IS BLOCKCHAIN?

Blockchain is a new and fast-evolving method of organizing, recording and sharing data across multiple data stores (also known as ledgers). It allows for transactions and data to be recorded, shared and synchronized; in an immutable manner, across a distributed network of participants. These distributed databases (ledgers) are decentralized and cryptographically secure, hence no need for a central authority.

In blockchain, each transaction is cryptographically linked to the previous one (making it tamper resistant and tamper

## WHAT ARE THE ISSUES SLOWING DOWN ADOPTION OF BLOCKCHAIN TECHNOLOGIES FOR CENTRAL BANKS



evident), and creating a chain of linked transactions which is why the technology is called Blockchain.

#### HOW DOES BLOCHCHAIN TECHNOLOGY WORK?

Due to the distributed nature of blockchain, there are two challenges to be addressed by the blockchain technology. First and foremost is to be able to store, record and exchange data across different participants without the need for a central authority and without the need for trust among participants. Second, is to ensure that the same transaction cannot be sent to multiple parties; which is known as avoiding 'double spending'.

To address these issues, blockchain technology adopts the form of append-only chain of data 'blocks'.

First, new additions to the database are initiated by one of the participants (nodes), who creates a new "block" of data containing several transaction records.

Second, information about this new data block is then shared across the entire network, containing encrypted data so transaction details are not made public.

Third, all network participants collectively determine the block's validity according to a pre-defined algorithmic validation method ('consensus mechanism'). Only after validation, all participants add the new block to their respective ledgers.

Through this mechanism each change to the ledger is replicated across the entire network and each network member has a full, identical copy of the entire ledger at any point in time.

#### PERMISSIONLESS AND PERMISSIONED BLOCKCHAINS

Blockchain is divided into two categories: permissionless, and permissioned. It is of crucial importance to understand the difference between these two categories for organizations looking into adopting blockchain technologies, in order to understand which subset of blockchain technologies may be applicable to its business requirements.

In permissionless blockchain, networks are decentralized ledger platforms open

to anyone to publish blocks, without permission from any authority. Permissionless blockchain platforms are often open source software, freely available to anyone who wishes to download them. Since any blockchain network user within a permissionless blockchain network can read and write to the ledger, there must be a way to prevent malicious users to attempt to publish blocks in a way that subverts the system. To prevent this, a multiparty agreement or 'consensus' method is used. Examples of such consensus models is a 'proof of work'.

On the other hand, in permissioned blockchain networks publishing blocks must be authorized by some authority (be it centralized or decentralized). Since only authorized users are maintaining the blockchain, it is possible to restrict read access and to restrict who can issue transactions. Permissioned blockchain networks may thus allow or deny anyone to read the blockchain. Permissioned blockchain networks may be implemented and maintained using open source or closed source software.

Permissioned blockchain networks are well suitable for organizations that need to more closely control and protect their blockchain. It asserts full control over every aspect of the blockchain's operations.

#### WHY IS IT DIFFICULTY FOR CENTRAL BANKS TO ADOPT BLOCKCHAIN?

Since the inception of blockchain idea back in 2008, its adoption by central banks (and government in general) is extremely low compared to private start-ups. When it comes to what limits this adoption for central banks in particular, and government in general two reasons are advanced:

First, Central Bank serves as the apex body of the banking structure of the country and should have overall control over the financial system: it is centralized in nature. On the other hand, the strong point of blockchain technology is its decentralized nature (no central entity required), and is most suitable when data comes and shared from/to multiple entities or participants. As many authors



and blockchain evangelists describe blockchain as “it brings TRUST in trust-less setting”, this trust comes from the distributed nature of blockchain where every participant has (to a certain degree) control over his data/transaction without depending on a centralized entity. Therefore, this on its own is an obstacle of blockchain technology adoption for central banks.

Second, the unadventurous nature of central banks is another challenge to take into consideration vis-à-vis embracing the blockchain technology. Central banks want to play it safe, avoiding risks. The above discussed reasons (centralized and unadventurous nature) tend to be insincere when it comes to why adoption of blockchain technologies for central banks is slow. Instead, we should dig deep into blockchain technology inherent issues which slow down its early adopters. As promised in our introduction, it is true there is hype around the use of blockchain technology, yet the technology is not well understood. The typical level of readiness is extremely low in this area, and technical details are limited for organizations wanting to adopt blockchain technology. Almost all of the currently ongoing initiatives one can refer to, are either trials or planned trials, with almost no production systems in use.

Furthermore, much of the publicly available information about many of these blockchain initiatives, is in the form of announcements or news stories, with insufficient technical details and hardly any discussion of related problems: This results in failing to identify a roadmap to success or failure, or opportunities to learn from previous initiatives’ mistakes. Without losing in general and minor issues with blockchain, major difficulties facing adoption of blockchain systems for central banks (and governments in general) are:

#### CYBERSECURITY:

all publications about blockchain technology describe it as being immutable, or ‘impossible to change or alter’. But this is somehow overstating. Most of blockchain implementations use the strategy of accepting the longest chain (the one in which most amount of work was invested). This tactic makes it possible to replace the most recently published blocks (known as tail blocks) by longer chain with different tail blocks to serve as guarantee in case of many competing chains. This implies that when two chains are competing, but each includes their own unique sequence of tail blocks, whichever is longer will be adopted by participating nodes.

This poses a risk especially in permissionless blockchain. It can result in an attack known as 51% attack. For this attack to be successful, attacker harvests plenty

resources (possessing more than 51 % of the resources applied towards producing new blocks) to outperform the block creation rate of the rest of the blockchain network. As any newly adopted technology, blockchain-based applications may contain new or known vulnerabilities which can be discovered and attacked. Therefore, blockchain technology is vulnerable to several types of traditional attacks such as denial of service attacks as well as bad actors who can conduct network scanning and reconnaissance to discover and exploit vulnerabilities and launch zero-day attacks.

#### INTEROPERABILITY AND INTEGRATION WITH LEGACY SYSTEMS:

any new technology platform is likely to integrate with existing legacy systems. When it comes to government related services in particular, there is often a need to integrate not only technically, but also legally. That said, the blockchain technology is still evolving and may pose new risks and challenges, many of which are yet to be determined as it continues to be embraced. In addition, another challenge relates the significant costs related to mi-

tralized governing entity leads to concerns about ensuring effective governance of the overall blockchain infrastructure.

#### KYC & CDD:

to be adopted in the financial system, blockchain applications will need to comply with Know-Your-Customer (KYC) and Customer Due Diligence (CDD) requirements of Anti-Money Laundering/Combating the Financing of Terrorism (AML/CFT) regulations. Most permissionless blockchain systems mask the identity of network participant by using public key encryption, which will make it difficult to comply with existing AML/CFT regulations, and would allow transactions with unvetted parties. However, permissioned blockchain applications solve for this problem because network access is controlled and identity verification of the participant is required for the checking process, which could require AML/CFT compliance of all network participants.

#### WAY FORWARD

Adopting blockchain or not is not meant to be a trivial choice. Organizations considering implementing blockchain technology need to understand fundamental aspects of this technology. Most of

“ **Permissioned blockchain networks may be implemented and maintained using open source or closed source software**

grating existing ancient IT systems, operational arrangements, and institutional structures to DLT based infrastructure. Furthermore, expected are uncertainty in software and standards. This is why DLT applications are likely observed in areas without many legacy investments in automation, such new start-ups and Fin Tech incubations.

#### GOVERNANCE.

Regulators have traditionally relied on establishing effective governance protocols on central infrastructures and other regulated entities. However, in permissionless blockchain context, governance is introduced via codes updates and manage core funds. Blockchain governance is a balance between the core developers, the full nodes, and the foundation. The software developers can release new code, but the changes will not take effect unless the full nodes implement them.

The core developers are like the legislative entity: they have the power to create code and add it to the core repository, although they do not have the power to put it into effect. Instead, full nodes have that power. However, to some extent core developers have big influence on current version of blockchain. This lack of a cen-

tralized governing entity leads to concerns about ensuring effective governance of the overall blockchain infrastructure. all, organizations must understand that blockchain technology is not a one size fit all. They should examine whether existing technologies can better solve their problems without undergoing the blockchain technology. Blockchain implementations must be designed with a specific purpose or function. Example functions include distributed ledger systems between businesses (e.g. Interbank and International Payments).

Another factor to consider while thinking of adopting blockchain technology, is the fact that it is still at its early stage of development and its full potential and problems are yet to be realized, especially with issues such as cybersecurity, interoperability and integration, governance and compliance as well as legal and regulatory issues.

Finally, organizations should not be driven by fear and pressure of missing out on this emerging technology, rather approach it by first understanding how it works, where it fits within the organization’s business, and how it can integrate with existing systems and business processes.

PASSWORD

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## WHY IT IS IMPORTANT TO ENSURE FIRM CYBER SECURITY FOR YOUR COMPANY

#### 1. HAVE A TEAM IN PLACE.

A company ought to place a tech- team in place, this should consist of data protection experts who will identify the breach and help minimize the damage. This team should always be ready to promptly and efficiently deal with any kind of data breach.

#### 2. REVISE RISK MANAGEMENT MEASURES.

In the occurrence of numerous cyber threats, it is important to always update the modes of interjection when it comes to dealing with risk assessment. Some of the favored risk management standards and frameworks which will be stated for the risk assessment are ISACA’s COBIT five, ISO 31000:2009, Committee of Sponsoring Organizations of the Treadway Commission (COSO) Enterprise Risk Management-Integrated Framework, OCTAVE and many more.

#### 3. PROTECT IT SYSTEMS.

Safeguarding these systems is critical for the protection of the company’s data and minimizing the damage that can be done. It is not right for any business to take the whole system offline or just removing the malware. Malware is just a symbol of associate degree attack, and you should isolate only the compromised segment of your network and then work on identifying the source of the breach.

Since hackers typically use admin passwords, you need to change them the second you detect the breach. You should amend your access control list, that is typically an automatic method, since

that’s the fastest method of effectively doing therefore.

#### 4. STRENGTHEN END-POINT PROTECTION MEASURES.

Organizations ought to make sure that there’s adequate protection at points of entry through net and email access. End-point protection solutions ought to be capable of recognizing suspicious activity on end-user systems like uncommon ports and traffic patterns. Users with desktops, laptops, mobile handsets and personal digital assistants can be very lucrative targets for cyber attackers.

#### 5. MAKE REGULAR PENETRATION TESTING.

For organizations that haven’t conducted penetration testing (internal and external), it may be time to consider this as one of the most effective ways to proactively identify technical security vulnerabilities within the system that might potentially be exploited by associate degree attacker.

Last but not least, notify authorities about the cyber-attack on your organization. This is essential because then you get access to advice on how to deal with certain data security breaches.

#### WHY A SAFE CYBER SPACE IS IMPORTANT?

Prioritizing cybersecurity is a matter that can’t be overstated. Apart from protecting the company’s trust in the eyes of its clients, it also lessens the extremity of expenses a business has to endure when dealing with cyber-attacks.



**David Rukundo**

Manager Financial Settlement, Financial Markets Department, Financial Markets Department

# Data science and its benefits

**D**ata science is the use of statistics and computer algorithms to interpret and reveal patterns of both historical and current big data. Data Science mainly involves data mining, data cleaning, statistics, machine learning and data visualisation skills to identify insights and correlations between various factors.

With the world becoming more digitalised, there are so many devices and applications being used around the globe to collect a wide range of data including: locations, sales and purchases, traffic, age and many more variables about the users.

Big data comprises of 3 properties; the 3 V's - Volume, Velocity and Variety. Volume meaning a large size of growing data, Velocity being data that is always changing, Variety meaning data that comprises of different variables.

Data Science specialists help to put this big data to good use and make sense of it. As a result, different industries can make more informed decisions, such as: analysing customers' behavioural patterns so as to tailor their products or services to them, generating adverts to internet users based on their search history, among others.

Now the question is, can Data Science be integrated in the banking sector? The answer is YES. The banking sector is becoming more digitalised and the National Bank of Rwanda is aiming at taking the Rwandan economy cashless. Commercial banks have a collection of rich data including the clients' details, transactions made, trends in inflation and exchange rates and a lot more.



**With the data warehouse project at the National Bank of Rwanda, a vast array of data is provided about the financial sector in significant detail**

Their rich databases would be used to derive insights and help them make more informed decisions such as:

- Evaluation of company's worth during mergers and acquisitions through effective risk modelling.
- Fraud detection through spotting unusually high purchases, multiple accounts with similar personal details etc.
- Generating more targeted or personalised advertisements to their clients
- Clustering the customers based on their behavioural patterns

• Real time analytics can help them handle problems before they are out of hand while predictive analytics would facilitate in determining the right technique to handle the issues before hand.

- Facilitating real time, automated, personalised customer support

With the data warehouse project at the National Bank of Rwanda, a vast array of data is provided about the financial sector in significant detail. This data is a gold mine and with data science utilisation, a lot of valuable information can be obtained and used to make strategic decisions, especially in monetary policy and financial sector supervision.



[www.afi-global.org](http://www.afi-global.org)



**THE 2019 AFI GLOBAL POLICY FORUM**  
USING TECHNOLOGY FOR INCLUSION OF WOMEN AND YOUTH

## SAVE THE DATE

# 11th - 13th September, Kigali, Rwanda

We are looking forward to advancing the financial inclusion objectives of the AFI community and we are excited to announce that the National Bank of Rwanda (NBR) and the Alliance for Financial Inclusion (AFI) will host the 2019 AFI Global Policy Forum (GPF) from 11-13 September 2019 in Kigali, Rwanda.

Hailed for its gender equality policies and equal participation of women in all spheres of life, the 2019 GPF aims to showcase the experience of Rwanda and highlight how the use of technology will bring progress in financial inclusion of the most vulnerable groups, especially women and youth.

Since the adoption of the Denarau Action Plan (DAP) at the 2016 GPF, AFI members have pledged to cut the gender gap in half by 2021 within their respective jurisdictions. The 2019 GPF is an occasion to take stock of the progress made and set out steps ahead to reach the goal of halving the financial inclusion gender gap. We will also share and discuss how AFI members are developing and implementing youth-specific financial inclusion policies, as well as what are the commitments we need to make as a global policy leadership alliance to make financial inclusion related services and products more accessible to youth.

Official invitations and a logistics note providing all necessary details will be sent out prior to the event. In the meantime, we would be most grateful if you could save these dates.





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