

THE AFRICAN CASH REPORT

2018

ca||eo

CONTENTS

ACKNOWLEDGEMENTS.....	1
ABOUT US.....	2
1. EXECUTIVE SUMMARY.....	4
2. COUNTRY PROFILES.....	8
2.1. ANGOLA	8
2.1.1. Overview	8
2.1.2. Banknotes and Coins	10
2.1.3. The Cash Cycle	12
2.2. MOROCCO.....	13
2.2.1. Overview	13
2.2.2. Banknotes and Coins	14
2.2.3. The Cash Cycle	16
2.3. NAMIBIA	18
2.3.1. Overview	18
2.3.2. Banknotes and Coins	19
2.3.3. The Cash Cycle	20
2.4. NIGERIA	21
2.4.1. Overview	21
2.4.2. Banknotes and Coins	22
2.4.3. The Cash Cycle	24
2.5. SOUTH AFRICA	25
2.5.1. Overview	25
2.5.2. Banknotes and Coins	26
2.5.3. The Cash Cycle	28
2.6. ZAMBIA	29
2.6.1. Overview	29
2.6.2. Banknotes and Coins	30
2.6.3. The Cash Cycle	32
3. CASH DEMAND.....	36
3.1. Value of Cash in Circulation	37
3.2. Value of Cash in Relation to GDP	38
3.3. Volume of Cash in Circulation	40
3.4. Drivers of Cash Growth	42
3.4.1. GDP	42
3.4.2. Economic Factors	42
3.4.3. Reliance on Cash	43
3.4.4. Cross-Border Usage	43
3.4.5. ATM Growth	44
3.4.6. Financial Inclusion	45
3.5. Inhibitors of Cash Growth	48
3.5.1. Poverty and Unemployment	48
3.5.2. Cost of Cash	48
3.5.3. Cashless Initiatives	49
3.6. Projections of Cash Demand	49
4. BANKNOTES	54
4.1. Banknote Sourcing	55
4.2. Security & Substrates	56
4.3. Communication & Public Awareness	58
5. CASH CYCLE	60
5.1. Outsourcing of Processing	61
5.2. Clean Note Policy	64
5.3. Innovation & Challenges in the Cash Cycle	66
6. CONCLUSION	68

ACKNOWLEDGEMENTS

We would like to extend our warm gratitude to the organisations and individuals who have made this research possible.

The Central Banks of the six countries covered in this report were a major help and took the time to answer our questions and provide us with data and insight into their cash cycles:

- The Banco Nacional de Angola
- Bank Al Maghrib
- Bank of Namibia
- The Central Bank of Nigeria
- The South African Reserve Bank
- The Bank of Zambia

And the sponsor companies that have provided support, resources, and industry expertise.

- International Currency Association
- CashEssentials



ABOUT US



ICA

www.currencyassociation.org

The International Currency Association is a not-for-profit organisation that is working to:

- Ensure that its members drive innovation and offer the best commercial and technical practices to their customers
- Promote the highest ethical standards
- Do everything in its members' power to ensure that cash is secure, efficient and effective
- Support and promote currencies worldwide as universal and inclusive means of payment
- Defend and promote the use of cash as a key option for payments
- Foster technological innovation
- Maintain the highest levels of confidence in currency and the broader supply chain
- Anticipate and prepare the functionalities of the cash of tomorrow
- Create a transparent and open communications platform
- Develop educational programmes for and spread best practice.

Calleo
calleo.co.za



Calleo is an independent marketing firm, established in 2009, that specialises in business-to-business marketing and research in the Financial, Retail, and Technology industries across Africa and the Middle East. We supply unique information about market trends, and support engagement with target sectors. Our focus is two-fold: Developing our clients' insight into the Financial, Retail, and Technology industries in these regions, and assisting our clients to develop business-to-business relationships in these markets.



CashEssentials

cashesentials.org

OUR MISSION

CashEssentials is as an independent initiative, which aims at offering a platform for debate about the payments and monetary ecosystems, to conduct and foster high-quality research on cash and its future.

WHY CASHESSENTIALS?

Every day billions of banknotes and coins change hands, enabling transactions and contributing to economic growth. Banknotes and coins are a collective good. They are issued by central banks or monetary authorities, distributed by banks and spent by individuals.

Because it is a common good, the evolution of cash is shaped collectively. Central banks may decide on the design and the denomination mix; commercial banks facilitate the distribution by deploying ATMs and branches; retailers facilitate its acceptance; but it is ultimately the consumer who drives demand.



1

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Africa is a large continent with a population of over 1.2 billion people spread over 54 countries.

It is therefore difficult to get a single picture of what is typical of Africa.

By focusing on a handful of countries spread across Africa, this report aims to give a snapshot of the different opportunities and challenges that are being experienced with regard to cash in Africa.

This report, therefore, looks at six countries: Angola, Morocco, Namibia, Nigeria, South Africa, and Zambia.

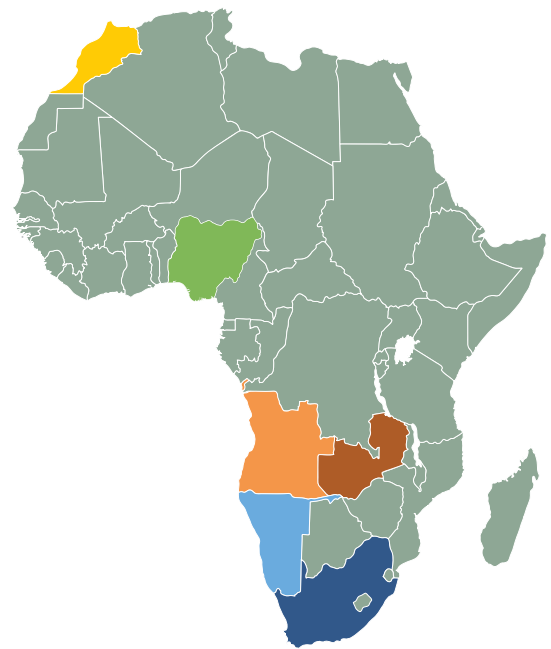


Figure 1: Countries in Scope

ANGOLA is in the process of swapping out low-value banknotes for coins, while at the same time introducing higher-value banknotes into circulation.

MOROCCO has made good strides in reducing poverty but still has a largely underbanked population. It also has one of the highest cash-in-circulation to GDP ratios, which shows a high reliance on cash in the economy.

NAMIBIA has a fairly new currency. It was first printed in 1993 after Namibia gained independence. The value of the currency is kept on a one-to-one parity with the South African rand, and the rand is also legal tender across the country.

NIGERIA has a high volume of banknotes and a population that is very reliant on cash. According to the InterMedia Financial Inclusion Insights (FII) 2016 Annual Report, almost 50% of Nigerians generate income through informal sector employment, which relies almost exclusively on cash.

SOUTH AFRICA has the most mature banking and payments sector in Africa. In July 2018, the South African Reserve Bank released a complete series of commemorative circulating banknotes for Nelson Mandela's centenary. This was also an opportunity to introduce new substrates and features.

ZAMBIA decided to re-denominate the currency in 2013 to counteract the effects of a period of high inflation. The currency rebasing exercise entailed dividing all denominations by 1000. As part of this process all banknotes and coins in circulation were replaced with the rebased currency.

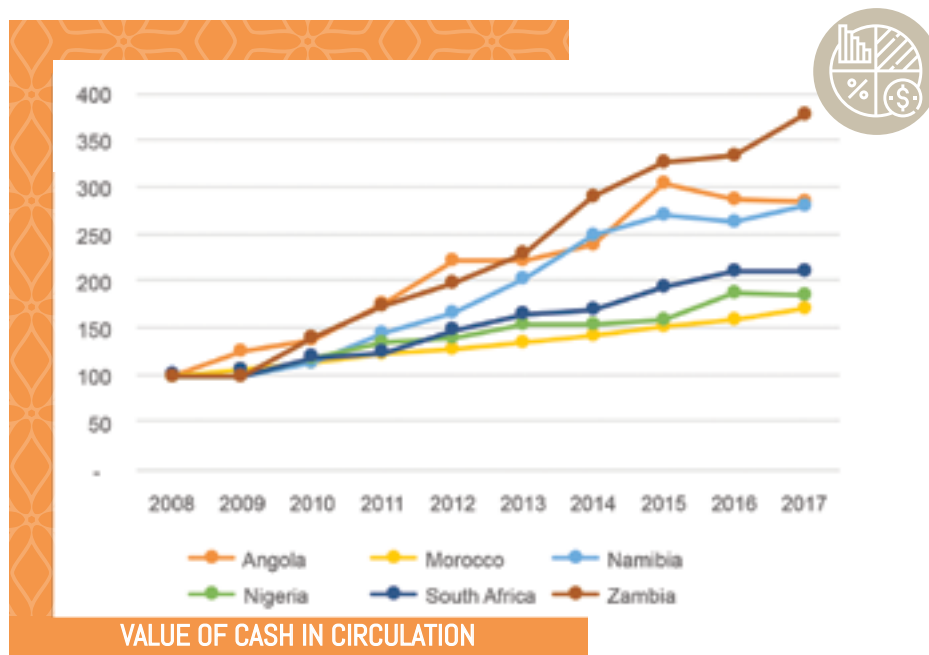
	ANGOLA	MOROCCO	NAMIBIA	NIGERIA	SOUTH AFRICA	ZAMBIA
Population, total (2017)	29,8m	35,7m	2,5m	190,9m	56,7m	17,1m
GDP (current US\$) (2017)	124,2bn	109,1bn	13,2bn	375,8bn	349,4bn	25,8bn
GDP per person (US\$)	4 170	3 054	5 227	1 969	6 161	1 510
GDP local currency	1 690bn	951bn	109bn	69 200bn	3 120bn	135bn
Cash in circulation (LCU)	527,7bn	231,8bn	4,7bn	2 158,4bn	132,2bn	7,3bn
CiC/GDP (%)	31%	24%	4%	3%	4%	5%
Number of banknotes	412,9m	1 611m	50,4m	7 341,5m	1 381m	139,9m
Number of banknotes per person	14	45	20	38	24	8
ATMs per 100.000 adults (2016)	19	27	64	17	69	11
Account ownership (1% of adult population)	61	29	81	40	69	46

Source: World Bank, Central Banks

Cash is growing in value across all of the countries covered in this report.

Demand for cash is driven by:

- GDP Growth
- Economic Factors
- Cross Border usage
- ATM Growth
- Financial Inclusion



Source: Central Banks - All values set to 100 in 2008

Reduction of both poverty and income inequality across all of Africa will also play a major role in stimulating cash growth. While Africa is seeing strong economic growth in many places, offering a huge potential for the future, it is still growth off a low base and a lot of improvements have to be made in order to benefit all categories of population.



2

COUNTRY PROFILES

2.1 ANGOLA

2.1.1 OVERVIEW

ANGOLA	
Population, total (2017)	29 784 193
GDP (current US\$) (2017)	124 209 385 825
Banknotes in Circulation	412 935 356
Number of banknotes per person	14
Account ownership (% of adult population)	61
Debit card ownership (% age 15+) (2017)	37
ATMs per 100,000 adults (2016)	19
Commercial bank branches (per 100,000 adults) (2016)	10

Angola's economy is heavily dependent on oil, with the industry representing about a third of its GDP and 95% of its exports.¹

Source: World Bank Data, National Bank of Angola

Lower international oil prices have subdued economic growth over recent years with real GDP settling to 4.7% growth between 2011 to 2015, resulting in a significant reduction in infrastructure expenditure. Short-term economic growth is projected to be more modest, between 2.4% to 2.8% in the upcoming years, but the overall downturn in economic growth has impacted industries and employment in the construction, manufacturing and retail industries. On the other hand, the agriculture, fisheries and energy industries helped to lift economic growth to a projected 2.1% in 2017, from the previous year's growth of 0.1%².

A large percentage of the population still lives below the poverty line and unemployment is high among the large young-adult population. About 45% of the population is under the age of 15 and this percentage is expected to grow significantly if the high fertility rates continue at their current trend³.

Although the country has made significant economic and political progress, it continues to

face the challenges of reducing its dependency on oil, diversifying the economy, and improving the employment rates and living conditions of its population. The country's business regulatory environment is also not seen to be supportive for new business, as illustrated by the World Bank's ranking of Angola of 182 out of 190 countries, in its Doing Business 2017 report.

To stimulate growth in non-oil sectors the government has allocated large sums to finance private sector projects in industries that can help to reduce the dependency on imports, or that support potential for export. These include projects to develop its electricity producing capacity, and to improve transport and logistics infrastructure, both domestically and to regional corridors to the Democratic Republic of Congo, Namibia, and Zambia.

To alleviate poverty and improve employment, the government is encouraging initiatives with partnerships driven by developmental organisations such as the Local Development Project in partnership with The World Bank.

1: The World Bank: Angola Overview <http://www.worldbank.org/en/country/angola/overview>

2: African Development Bank Group: Angola Economic Outlook <https://www.afdb.org/en/countries/southern-africa/angola/angola-economic-outlook/>

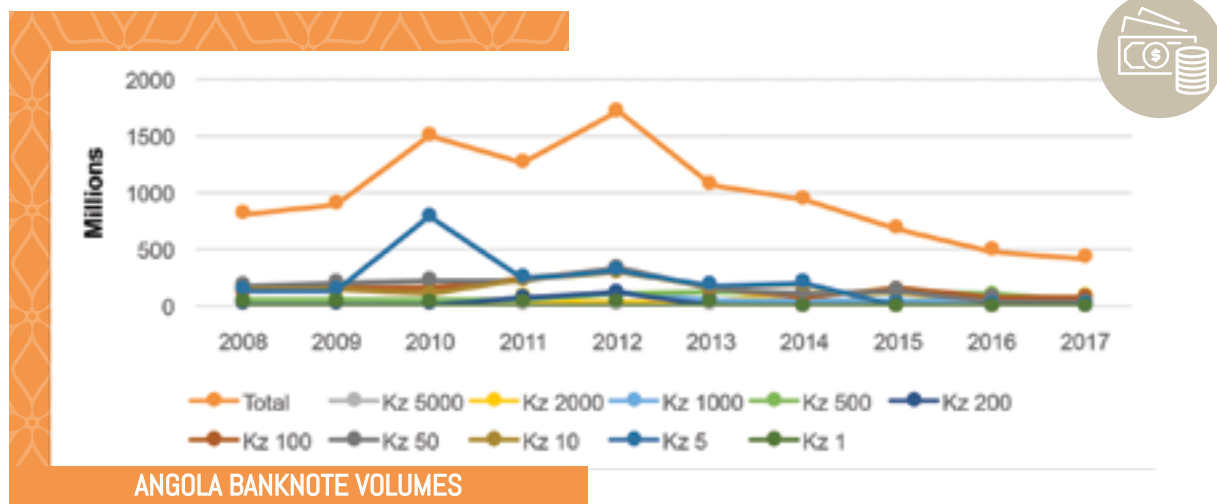
3: CIA World Factbook: Angola https://www.cia.gov/library/publications/the-world-factbook/geos/print_ao.html



This project, considered the largest bottom-up poverty reduction program in Angola, has enabled about 2.3 million Angolans to gain access to basic social and economic services. The agricultural sector, which accounts for 11% of GDP, is seen to have significant potential for employment in the poorest

segments of the population and is being supported by government plans to reform trade tariffs. However, overall social sector and human development expenditures are being challenged by inflationary pressures and inefficiencies in social expenditure⁴.

2.1.2 BANKNOTES AND COINS



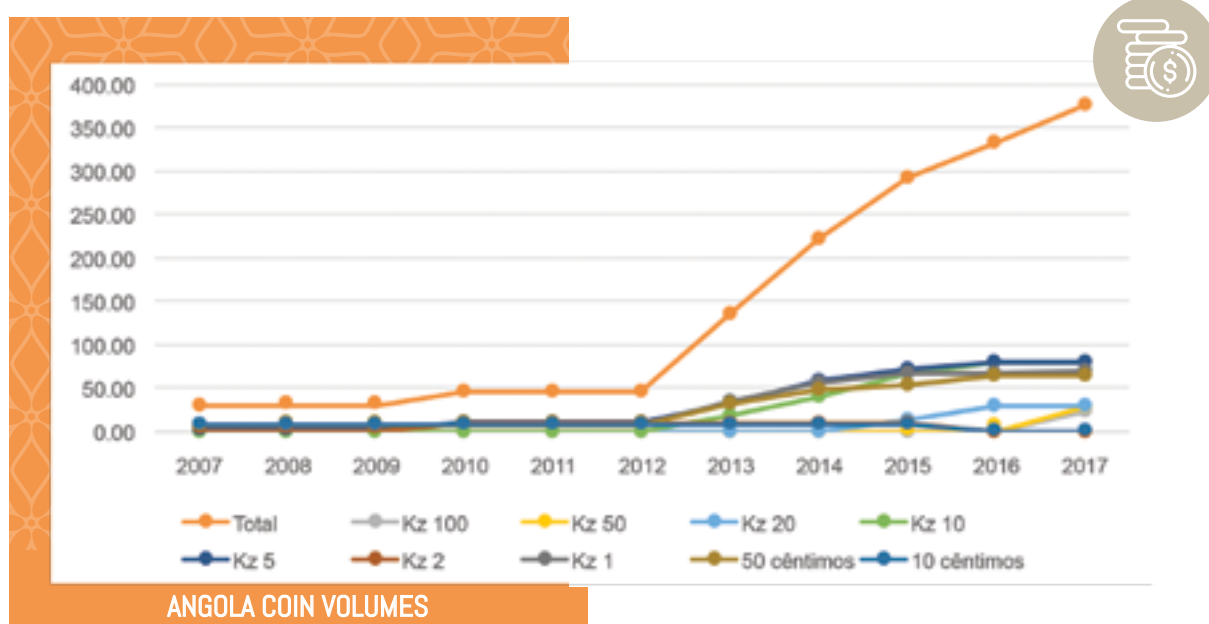
Source: National Bank of Angola

The Banco Nacional de Angola (National Bank of Angola) is responsible for issuing bank notes and coins in Angola. As central bank and issuer, it must ensure the preservation of the value of the national currency and participate in the definition of monetary, financial and exchange rate policies.

4: Performance and Learning Review of the Country Partnership Strategy for The Republic of Angola <http://documents.worldbank.org/curated/en/331731524880895283/pdf/Angola-PLR-April-4-SECPO-rev-2018-04042018.pdf>

The Angolan currency is the Kwanza. Angola notes in circulation are: Kz 5000, Kz 2000, Kz 1000, Kz 500, Kz 200, Kz 100, Kz 50, Kz 10, Kz 5, Kz 1. Coins include Kz 100, Kz 50, Kz 20, Kz 10, Kz 5, Kz 2, Kz 1, 50 cêntimos, and 10 cêntimos. The cêntimos are however rarely used.

Overall Angola's banknote volumes are declining. this is due to the phasing out of low value notes. The Kz 1 note was completely withdrawn in 2014 with the Kz 5 and Kz 10 both dropping from about 200 million pieces in 2014 to only 8 million in 2017. On the other end of the spectrum the Kz 5000 note was introduced in 2013 and has grown from 9 million pieces in 2013 to 47 million in 2017.



Source: National Bank of Angola

This reduction in banknotes has been mirrored by a growth in coins as the kz 10 coin was introduced in 2013, and the Kz 20, Kz 50 and Kz 100 coins were introduced in 2015. Over the last five years the quantity of cash in circulation is decreasing, but the value is increasing. It is expected that this will continue for the next five years .

Angola sources its banknotes from Goznak, a Russian manufacturer of banknotes and other secure products. Banknotes are sourced through a direct tender process or direct indication. While the current sourcing process was via direct indication, in the future the process will only be done by tender. Banknote demand is forecast through the use of De La Rue analytics and testing of the data it produces.

In the future there will changes in the banknote substrates to improve durability. There are no other plans to change security features or note production materials.

2.2.3 THE CASH CYCLE

The main body in charge of the cash cycle in Angola is the Central Bank of Angola. It is responsible for the issuing, printing and destruction of banknotes and coins. The other key parties that are involved include commercial banks and cash management companies (CMCs).

The Central Bank is responsible for distributing cash from its branches to the commercial banks. From there the commercial banks distribute it to the public and ATMs.

The average life cycle of banknotes in Angola is 38 months. This is changing as the mix of notes and coins changes. The current life cycle for banknotes is 30 months for

low denominations, 38 months for medium denominations and 46 months for higher denominations.

The Central Bank of Angola is currently reducing internal processing volumes. In addition to the Central Bank, banknotes are processed at commercial bank branches and at the point of sale. As the Central Bank reduces processing volumes, there is increasing participation of commercial banks in processing.

The Central Bank supervises and monitors external processing by defining the characteristics of processing machines and through on-site supervision actions.

2.2 MOROCCO

2.2.1 OVERVIEW

MOROCCO	
Population, total (2017)	35 739 580
GDP (current US\$) (2017)	109 139 484 007
Banknotes in Circulation	1 611 000 000
Number of banknotes per person	45
Account ownership (% of adult population)	28
Debit card ownership (% age 15+) (2017)	21
ATMs per 100,000 adults (2016)	27
Commercial bank branches (per 100,000 adults) (2016)	25

Morocco has a strong economy and ranks is the most competitive country in the North Africa region.

Source: World Bank Data, Bank Al Maghrib

Morocco has a strong economy and ranks as the most competitive country in the North Africa region. Following a severe drought in 2016, the economy recovered in 2017 to grow at 4%. This growth was driven largely by the recovery in the agricultural sector, the extraction industry and tourism, while other sectors grew at a more modest 2.8%. Real GDP growth is forecast to be over 3.5% in the upcoming years, but this growth is still highly susceptible to fluctuations in the output of the agricultural sector.

To reduce the dependency on the agricultural sector output, the country is working on its non-agricultural trade with international partners, specifically the European Union. The EU accounted for 64.6% of Morocco's exports in 2017, dominated by machinery and transport equipment and agricultural products⁵.

The country still suffers from high unemployment and even amongst workers holding a tertiary education degree, unemployment rates are as high as 18.5%. Unemployment also has a significant impact on the youth with over 29% of young people

(aged between 15 and 24) being unemployed. Morocco has made great strides in reducing poverty between 2001 and 2014. Poverty stood at 15.3% in 2001 and declined to 8.9% in 2007 before dropping to 4.8% in 2014⁶. However, demonstrating the point of disparities across urban and rural areas, about 19% of the rural population are still living in poverty.

On the economic front, the government has set some key objectives to address these challenges, including targeting a 4.5% to 5.5% growth rate by 2021 and a reduction in the overall unemployment rate from 10.6% to 8.5% in the same period. The government is focusing its attention on continuing with development initiatives, including social protection programmes and reducing unemployment and economic disparities, across rural and urban areas and all regions within Morocco.

The focus is therefore largely to reduce the dependency on agriculture for economic growth and to reduce unemployment. The government is expecting recent reforms to realise these benefits in full and expects the

5. European Commission: Morocco Trade Picture <http://ec.europa.eu/trade/policy/countries-and-regions/countries/morocco/>

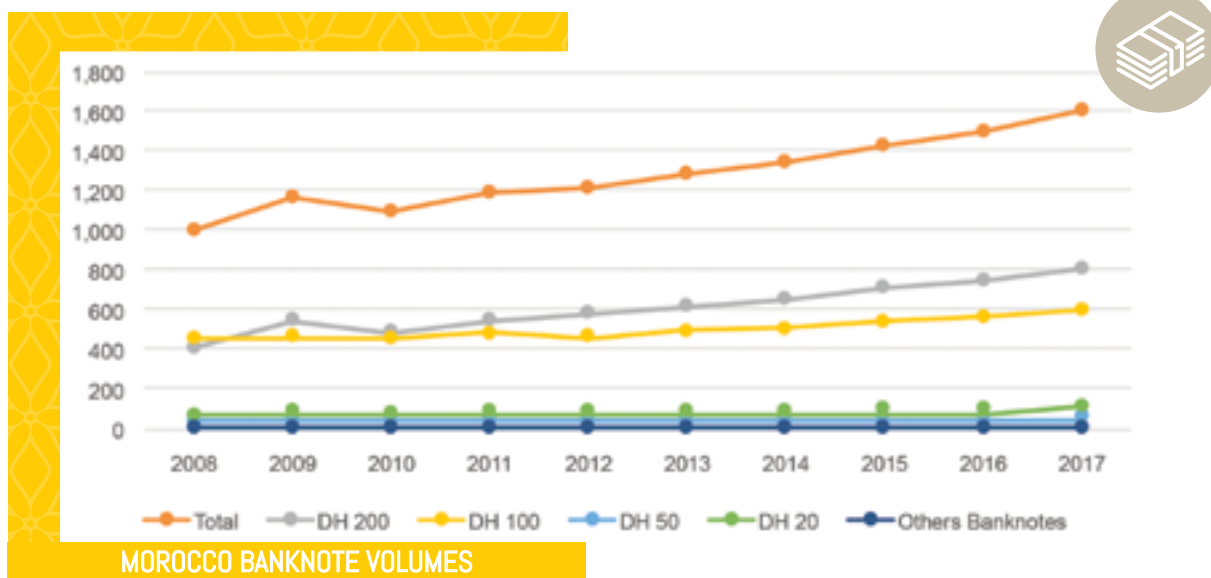
6. The World Bank: Morocco Economic Outlook <https://www.worldbank.org/en/country/morocco/publication/economic-outlook-april-2018>



improved activity in non-agricultural trade with Europe to help address these objectives. The Central Bank, Bank Al-Maghrib, has a strong commitment to financial inclusion, acknowledging it as a key objective and one of the main drivers for their financial sector development strategy by 2020. Their intention to promote access and usage of financial services was announced in 2013 through the

Maya Declaration, which was then reaffirmed in 2016 as part of the Financial Sector Alignment Roadmap. These initiatives have focused on promoting access, usage and financial literacy and have been largely successful. In the 9 years from 2007 to 2016, the banking system was boosted by almost 2,500 new branches, a growth of nearly 70%⁷.

2.2.2 BANKNOTES AND COINS



MOROCCO BANKNOTE VOLUMES

Source: Bank Al Maghrib

The Central Bank of Morocco, Bank Al Maghrib, is responsible for issuing banknotes and coins in Morocco.

7. Bank Al-Maghrib: Fulfilling our Maya Declaration Commitments <https://www.afi-global.org/blog/2018/01/bank-al-maghrib-fulfilling-our-maya-declaration-commitments>

In 1987, Morocco set up its own Printworks and Mint for this purpose called Dar As-Sikkah (DAS). Bank Al-Maghrib is therefore an independent issuing institution and has sole jurisdiction to assess and maintain the quality of the notes in circulation. DAS is responsible for the design and production of national banknotes and coins.

The Moroccan currency is the Dirham (DH). Morocco currently has 20DH 50DH 100DH and 200DH notes in circulation, as well as / DH, 1DH, 2DH, 5DH, 10DH, 10 centimes, and 20 centimes coins. To source banknotes, forecasts of yearly demand for each denomination are prepared by the Currency Management Department (CMD) and discussed and validated with DAS. A production and delivery plan is then set by DAS. Budgets and purchasing requirements are also defined by DAS and adjustments of inventories are set by both DAS and CMD.

DAS makes use of a number of security features when producing banknotes. Current public security features include a one side intaglio, a watermark, a see-through window, and microtexts on all notes. On the 20DH and 50DH notes there is also a colour-shift window thread and on the 100DH there is a window thread that combines movements with changing colours, while the 200DH notes features a micro-optic three-dimensional window thread. Optically variable magnetic inks (OVMI) are used to enhance the security of the 100DH and 200DH notes.

There are no planned changes in banknote substrates, security features or note production materials in the foreseeable future. If there are any changes, they will be for low denominations, particularly the 20DH note, due to its low resistance in circulation and low return frequency.

If any changes are made in the future, they would most likely be trialled with a commemorative banknote. In order to ensure the quality and standards of notes, Bank Al Maghrib has a clean note policy as part of the recycling scheme regulation that was set in 2010. The controls are operated by the Central Bank branches locally at commercial bank branches and at Cash Management Companies' premises to ensure that notes are processed for authentication and for quality before they are reintroduced into circulation.

Only fit or new notes can be remitted by banks to their customers either at the counter or through ATMs. Non-processed notes should not be remitted to the public.

Sorting and authentication machines must also pass a test by the Central Bank before being offered for sale by suppliers. Calibration and testing of authentication and sorting machines at CMCs are performed in cooperation with the Central Bank.

2.2.3 THE CASH CYCLE

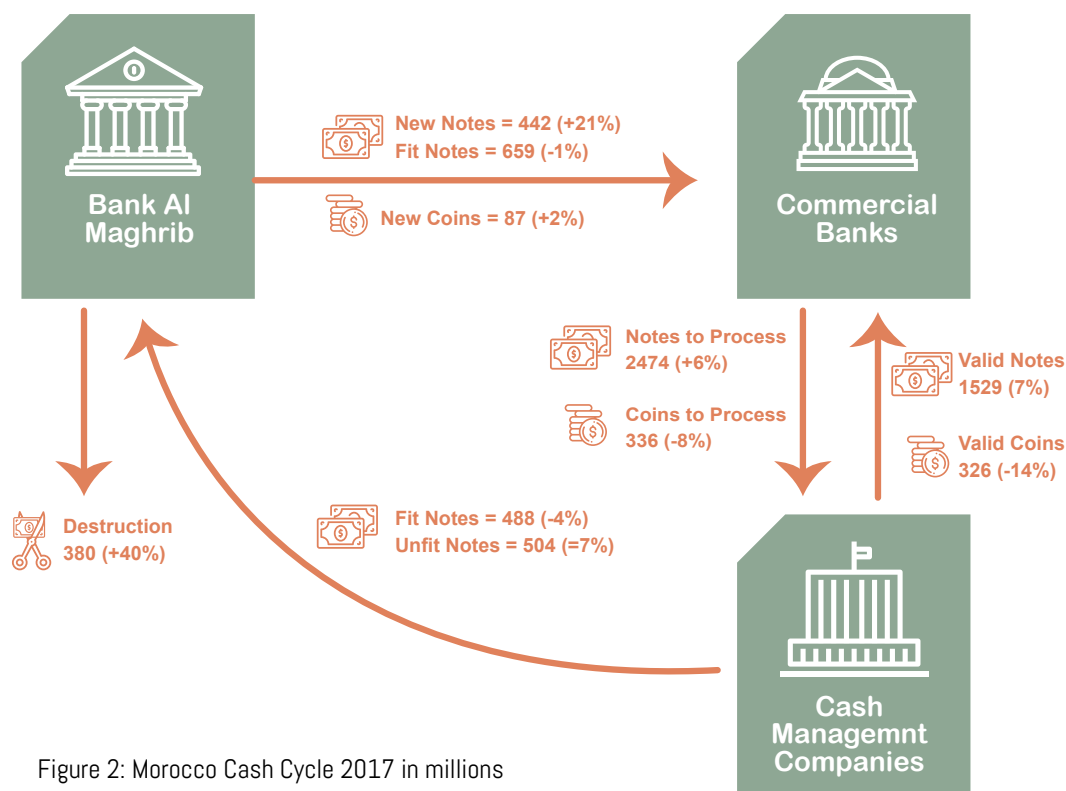


Figure 2: Morocco Cash Cycle 2017 in millions

The Central Bank of Morocco distributes notes and coins to cash management companies (CMCs), commercial banks, and other financial agents through its network of 20 branches. Outflows include new notes, fit notes, and coins, while inflows include fit notes, unfit notes, and sometimes coins.

The life cycle for low denominations (e.g. 20DH) is 1.9 years. For medium denominations the life cycle is 1.20 years for 50DH notes and 3.7 years for 100DH notes. For the high denomination 200DH the life cycle is approximately 6 years.

Overall Central Bank processing volumes are declining in Morocco. In 2007, the Central Bank processed 771 million notes compared to 473 million notes in 2017.

Over time, the CMCs are becoming more involved and perform the largest share of note processing. Outside of the Central Bank, 75% of all banknotes are processed at commercial cash centres. Some banknotes are also processed manually at bank branches.

The Central Bank currently has a strategy to reduce its footprint in the cash management and processing phase of the cash cycle. To this end it is reviewing the roles and functions of its branch network. It is also looking at how it can outsource cash processing to third parties and keep pressure on costs. Going forward, the Central Bank will mainly process unfit notes received from CMCs and handle shredding.

Third parties that will play a more active role in processing include cash management companies, which operate 14 cash centres among them in different cities across Morocco.

The Central Bank monitors and supports external processing through controls on site at commercial bank branches and at CMCs. Equipment testing is also a priority for the suppliers of machines and sorting machine calibration.

Looking forward, there will be increased involvement of commercial cash centres in the processing and recycling of cash and there will be a reduction of the Central Bank branches' role in cash distribution and processing.

The Central Bank will instead be more active as a wholesale provider of cash (mainly for new notes and coins). The Central Bank cash department will also be allowed to receive cash inflows directly from CMCs. There are also plans to install regional cash centres.

Over the next ten years, the cash cycle in Morocco will become more regulated as an update of the current regulation is underway. In the future, the Central Bank will be less involved in quality processing and will concentrate more on processing before shredding. The idea of implementation of balance sheet relief mechanisms could be considered in the future to reduce the volumes of inflows and transportations.

The cash cycle will also be more decentralised. The main goal is that notes processing is done exclusively by CMCs. This will cause significant changes to the organisation of the cash cycle. A project is under way to study the feasibility of reducing the number of Central Bank branches involved in currency management and processing, the installation of regional cash centres and the creation of two cash depots.

2.3 NAMIBIA

2.3.1 OVERVIEW

NAMIBIA		Although Namibia has the smallest GDP of the countries covered in this report, it has the second highest GDP per capita - 2 nd to South Africa - and ranks 24 out of 54 African countries in nominal GDP, according to the IMF.
Population, total (2017)	2 533 794	
GDP (current US\$) (2017)	13 244 597 345	
Banknotes in Circulation	50 390 000	
Number of banknotes per person	20	
Account ownership (% of adult population)	81	
Debit card ownership (% age 15+) (2017)	65	
ATMs per 100,000 adults (2016)	64	
Commercial bank branches (per 100,000 adults) (2016)	15	

Source: World Bank Data, Bank of Namibia

Access to natural mineral riches, together with a small population of 2.5m both contribute to the relatively high GDP per capita. Namibia's economy is very dependent on mining, which contributes 12.5% of GDP and more than 50% of foreign exchange earnings⁸.

Employment intensive industries such as retail, tourism and public administration have seen a reduction while mining and agriculture have recently grown by 15% and 5% respectively. GDP growth in 2017 declined to about 1% and is expected to recover slightly in 2018 to 1.5% and to 3% by 2020 with most of the growth expected to be driven by increases in mining production. The service industries are expected to follow the growth as domestic demand increases and trading with regional partners recovers. Further support for economic growth is likely to come from infrastructural investment projects supported by development bank funding.

Although poverty has reduced through increased spending on social programmes, the impact on unemployment and socio-economic inequalities has not been significant. Namibia has one of the world's highest inequalities in income distribution. Almost 40% of the population lived below the \$3.10 per day poverty datum line in 2015. The government has been driving policies and strategies to address this situation, including the Harambee Prosperity Plan, and the fifth National Development Plan covering 2018 to 2022⁹. The purpose of the NDP5 is to set out a framework for rapid industrialisation through economic progression, social transformation, environment sustainability and good governance.¹⁰

During the preceding NDP phase (NDP4), Namibia's growth was just short of 5% but this growth did not reduce unemployment or socio-economic gaps to the desired levels. However, the government estimates that more than 600 000 Namibians have been lifted out of poverty since

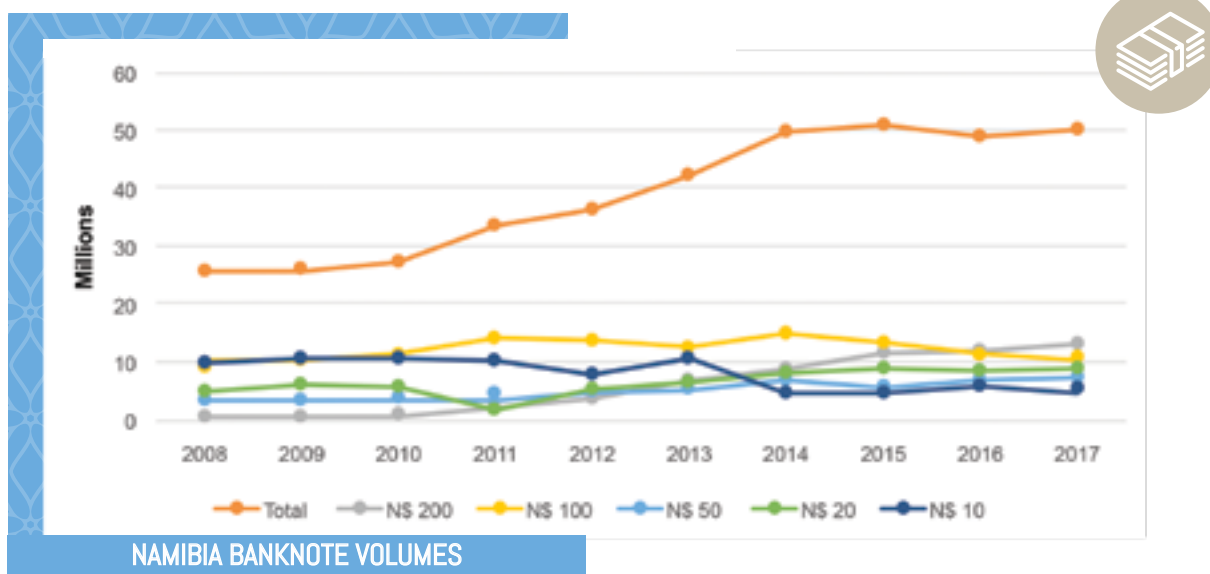
8. CIA World Factbook: Namibia <https://www.cia.gov/library/publications/the-world-factbook/geos/wa.html>

9. The World Bank: Namibia Overview <http://www.worldbank.org/en/country/namibia/overview>

10. Namibia's 5th National Development Plan (NDP5) <http://www.gov.na/documents/10181/14226/NDP-P+5/5a0620ab-4f8f-4606-a449-ea0c810898cc?version=1.0>

independence and poverty reduced from 28.7% in 2009/10 to 18% in 2015/16. The success with poverty reduction can be attributed to the fact that most of the budget has been channelled to social development since independence.¹¹

2.3.2 BANKNOTES AND COINS



Source: Bank of Namibia

Bank of Namibia, the Central Bank of Namibia, is responsible for the issuing and circulation of all currency in Namibia.

The currency in Namibia is the Namibian Dollar (N\$). Notes currently in circulation include, N\$10, N\$20, N\$50, N\$100, N\$200. Coins in circulation are 5c, 10c, 50c, N\$1, N\$5, N\$10.

The banknotes are sourced from pre-approved suppliers, and the sourcing is handled through a closed tendering process. This is not likely to change in the foreseeable future. Banknote demand is forecast via an internal currency forecasting model.

The Namibian Dollar was first printed in 1993, when the country switched from using the South African rand to its own currency.

The Namibian Dollar is, however, still linked to the rand and can be exchanged on a one-to-one basis. The rand is also still legal tender in Namibia, as the country is part of the common monetary area.

The Central Bank of Namibia currently uses level one and level two security features on its banknotes. The security features found on the different banknotes are fairly standard and include technologies like a colour shifting window security thread, optically variable inks (OVI) and intaglio embossing coated with special varnishes.

The only major differences on older banknote series are that the N\$100 has a silver foil patch and the N\$200 banknote a gold foil patch, while the lower denominations have none. The security features range from intaglio



printing for the main features on the notes, a windowed security thread and a watermark of the main portrait. Bank of Namibia is not planning any changes to the current banknote substrates or security features. The clean

note policy in Namibia is enforced through scheduled visits to the various commercial bank cash centres to ensure standards are being met.

2.3.3 THE CASH CYCLE

The cash cycle in Namibia consists of cash procurement, distribution and destruction. Commercial banks conduct daily deposit and withdrawal transactions with the Bank in order to ensure quality and that a sufficient quantity of currency is available to the Namibian Public. Commercial banks also deposit all notes that are unfit for the market with the Central Bank and these notes are destroyed at the Bank during a highly secured banknote-shredding process.

Bank of Namibia has a cash distribution model that consists of new and re-issuable banknotes with a ratio of 30:70.

The current life cycle for banknotes is 2 years for low denominations and three years for medium and high denominations.

Banknotes are processed at the Central Bank and at commercial cash centres. The Bank has not outsourced its sorting mandate, but only allows the commercial banks to sort banknotes before redepositing with the Central Bank. The Central Bank has a balanced model in terms of currency processing and does not foresee a change in the near future.

Processing is monitored and supervised by way of regular cash centre visits, to ensure standards are maintained.

The cash cycle in Namibia is highly centralised at the moment and is expected to remain so unless major developments in the cash industry warrant otherwise. It is likely, however, that the Central Bank will become less involved in banknote processing in the future, with currency production and issuance being the sole responsibilities of the Central Bank.

2.4 NIGERIA

2.4.1 OVERVIEW

NIGERIA		Nigeria has by far the largest population in Africa, one of the biggest populations of youth in the world and is seen to have potential for healthy economic growth in the near future.
Population, total (2017)	190 886 311	
GDP (current US\$) (2017)	375 770 713 743	
Banknotes in Circulation	7 341 480 609	
Number of banknotes per person	38	
Account ownership (% of adult population)	40	
Debit card ownership (% age 15+) (2017)	32	
ATMs per 100,000 adults (2016)	17	
Commercial bank branches (per 100,000 adults) (2016)	5	

Source: World Bank Data, Central Bank of Nigeria

After a recession in 2016, the economy has recovered and is projected to reach 2.1% in 2018 and between 2.5% and 2.8% in 2019. The growth forecasts are expected to be driven by stronger growth in the oil and agricultural sectors. Nigeria is the main exporter of oil and has the largest reserves of natural gas in Africa.¹² Similar to other oil-dependent economies, such as Angola, the government is trying to diversify its economy to limit its dependence on oil.

In addition to diversifying the economy, some of the other challenges facing the country include power shortages, disruptions in fuel supplies and high levels of poverty, with nearly 80% of Nigeria's population living on less than \$2 per day.¹³ The government recognises these challenges and has set its priorities on diversifying the economy, reducing corruption, improving employment and the living standards of its population.

Like some of the other countries covered in this report, income inequality is a growing challenge and large sections of the Nigerian population live without access to basic services or job opportunities. Regional inequalities in income and employment are necessitating more inclusive policies to alleviate poverty and improve employment across the country. Unemployment rates are growing as demonstrated by data from the National Bureau of Statistics (NBS), which shows the number of unemployed rising to 16.2% of the 110m+ economically active population in the 3rd quarter of 2017. The government is trying to reduce the rate of unemployment and reported recently that over 7m jobs had been created in the agricultural sector.¹⁴

To support the diversification and growth of the economy and the improvement of income and social equality, the government has formalised structural reforms in its Economic Recovery and Growth Plan 2017–2020. This plan focuses on its priority sectors to stimulate growth, including agriculture, manufacturing, mining, services, construction, and oil and gas. The overall objectives of this plan include stabilising the macroeconomic environment, supporting the agricultural industry to achieve food security and drive employment opportunities, developing energy efficiency, improving

12. The World Bank: Nigeria Overview <https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html>

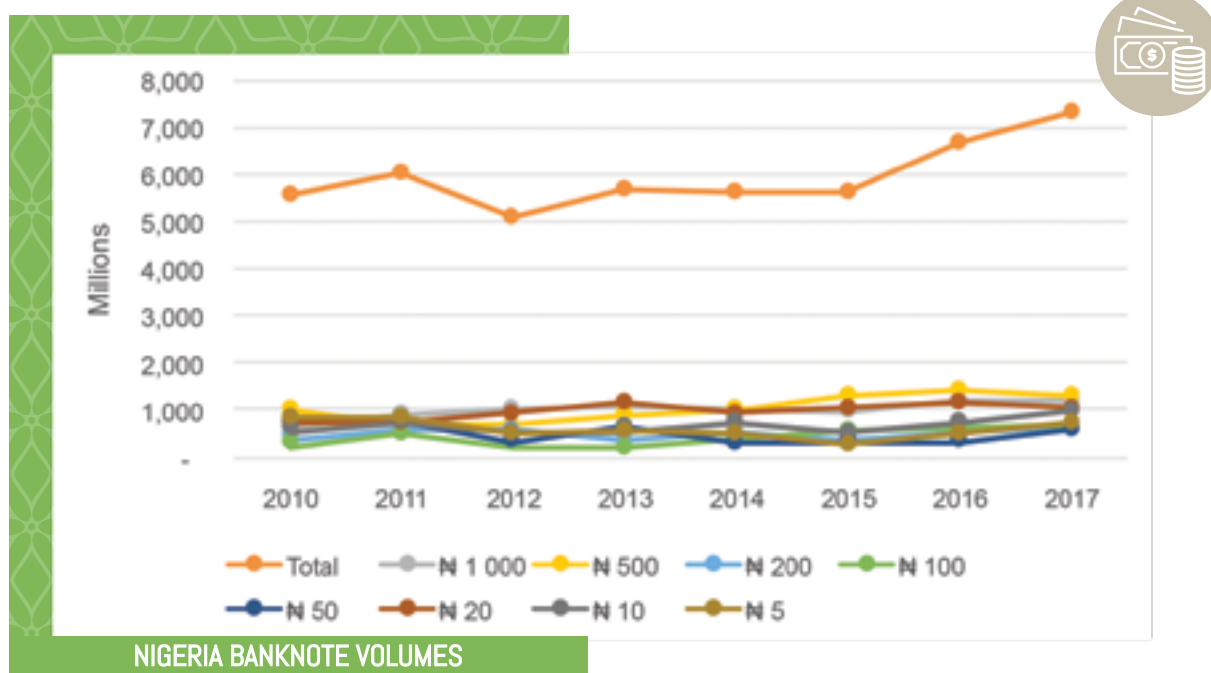
13. African Development Bank Group: Nigeria Economic Outlook <https://www.afdb.org/en/countries/west-africa/nigeria/>

14. 2018: Interrogating Government's Job Creation Initiatives <https://leadership.ng/2018/01/23/2018-interrogating-gov-ernments-job-creation-initiatives/>



transport infrastructure and driving industrialisation focused on small and medium enterprises. To have a direct impact on poverty and broader social needs, the government set up the National Social Investments Programmes (NSIP) in 2016, which thus far has supported over 4m beneficiaries¹⁵. The focus of the NISP includes youth empowerment, grants to the poor, micro lending to the informal sector and a school-feeding programme.

2.4.2 BANKNOTES AND COINS



Source: Central Bank of Nigeria

The Central Bank of Nigeria (CBN) is the sole issuer of legal tender currency in Nigeria. The Nigerian currency is the naira (₦). Current notes in circulation include ₦5, ₦10, ₦20, ₦50, ₦100, ₦200, ₦500 and ₦1000. Coins in circulation include 50 kobo, ₦2 and ₦1. The Central Bank of Nigeria (CBN) regulates the volume of money supply in the economy, in order to ensure monetary and price stability.

15. Federal Republic of Nigeria: Economic Recovery and Growth Plan <https://statehouse.gov.ng/policy/economy/economic-recovery-and-growth-plan/>



The Currency Operations Department is responsible for currency management, through the procurement, distribution, supply, processing, reissuing and disposal and destruction of banknotes and coins. Nigeria saw a spike in its banknote volumes in recent years as it released large amounts of lower value notes into circulation¹⁶.

Nigerian banknotes are currently sourced from the national printer, Nigerian Security Printing and Minting Company (NSPM) Plc. in Nigeria. The banknotes are acquired through a process of direct procurement, in line with the Public Procurement Act (PPA).

The Central Bank currently uses public security features and cash handling machines with readable features to ensure the security of notes. The notes are protected by a number of security features, including intaglio print, a security thread and a watermark. Other areas such as the portrait, lettering and the denominational numerals on the front and the back are also embossed. The security window thread has “CBN” in small lettering printed on both sides of the notes. The naira notes are also protected against photocopying through the use of UV inks.

There are currently no plans to change the existing security features, but the Central Bank of Nigeria constantly reviews the performance of the security features for vulnerability to counterfeiting to enable it to respond appropriately.

While the Central Bank does not foresee changes in banknote substrates and because operations are largely cost driven, banknotes substrates that offer increased durability, while still being cost effective, would be an incentive to replace existing substrates.

The Central Bank of Nigeria’s clean note policy covers the production, issuance and recirculation of notes by commercial banks to ensure they conform to predetermined standards. It operates through a process where notes are processed into fit and unfit. Fit notes are re-circulated while unfit notes are returned to the Bank for authentication and destruction. Both the CBN and service providers sort banknotes in line with these predetermined standards.

The Central Bank of Nigeria also conducts sustained awareness campaigns to educate the public on the proper handling of banknotes.

16. <https://www.thisdaylive.com/index.php/2018/03/04/cbn-moves-to-tackle-inflation-with-lower-naira-denominations/>

2.4.3 THE CASH CYCLE

The Central Bank of Nigeria (CBN) is responsible for the production and distribution of cash in Nigeria. This includes design, production, storage, distribution, processing and the disposal of all cash. The Central Bank will also conduct research to ensure that it keeps up with cash trends and is distributing cash according to the needs of the public.

The CBN forecasts banknote demand through a statistical ARIMA Model. The indent is calculated with various parameters that capture the banknote requirements of the economy e.g. level of CIC, GDP, inflation rate, buffer stock and replacement rate.

There is public apathy towards the use of coins that the Central Bank is trying to combat.

The CBN has a decentralised distribution model. It receives notes from NSPM and distributes these to its 37 branches, for further distribution to the public. Processing that takes place outside of the Central Bank includes that done by commercial banks, which sort notes for their ATMs.

The CBN has only one registered sorting company that has been licensed to process banknotes, but the Bank is gradually relinquishing the sorting functions to third-party service providers and encouraging them to take over the job.

The Bank monitors and supervises external processing through a service level agreement. Machines are configured according to predetermined standards as advised. There is also regular monitoring to ensure compliance. Where there are deviations, service providers are sanctioned.

The current life cycle for low denomination notes is 24 to 36 months, while the current life cycle for medium and high denomination notes is 18 months. The long life cycle for low value denominations points to a low return frequency, which could be a contributing factor to the CBN policy to issue more low denomination notes in 2017.

In the future, the CBN is aiming to increase outsourcing and only participate in the wholesale functions of currency management. It foresees an evolution in the Central Bank cash distribution model where the Central Bank will be less involved in banknote processing and the cash cycle will be more decentralised. This will be enabled by increased usage of cash recyclers and improved and cost-reduced banknote-processing systems.

It is also likely that there will be significant changes in the organisation of the cash cycle and that the cash cycle will be more regulated in the next ten years.

2.5 SOUTH AFRICA

2.5.1 OVERVIEW

SOUTH AFRICA	
Population, total (2017)	56 717 156
GDP (current US\$) (2017)	349 419 343 614
Banknotes in Circulation	138 100 000
Number of banknotes per person	24
Account ownership (% of adult population)	69
Debit card ownership (% age 15+) (2017)	34
ATMs per 100,000 adults (2016)	69
Commercial bank branches (per 100,000 adults) (2016)	10

South Africa's economic growth rate was 1.3% in 2017 and is estimated to increase marginally in 2018 to 1.4%.¹⁷

Source: World Bank Data, South African Reserve Bank

Growth peaked at 3.3% in 2011 and then shrunk to a low of 0.3% in the same year, largely affected by the decline in commodity prices for coal, platinum, iron ore and gold.¹⁸ The low growth rates have stifled opportunities to reduce poverty and improve employment rates. Poverty rates have reduced substantially since the country transitioned to democracy in 1994, with poverty reducing from 33.8% in 1996 to 16.9% by 2008.¹⁹ High unemployment and income inequality are also significant challenges in South Africa, with unemployment at 26.7% in 2017 and unemployment among the youth at 50%.²⁰ South Africa's population is ageing, with the country's fertility rate declining from 6 children per woman in the 1960s to 2.2 in 2014.²¹ This ageing pattern is similar to trends in other emerging economies in Southeast Asia, the Middle East, and North Africa and unlike the rest of Sub-Saharan Africa.

Income inequality stands at one of the highest rates in world with the wealthiest 20% of the population consuming 65% of total expenditure. Part of the strategy to reinvigorate the economy, and reduce the consequential effects of poverty, unemployment and income inequality, is to focus on reindustrialisation of specific sectors, including agro-processing and clothing and textile-related sectors. South Africa has also made substantial investments to increase its electricity capacity and is focusing future investments on transport and water to support the infrastructure demands of reindustrialisation efforts.²² Commodity prices have also lifted in recent years which, together with expectations of increased business confidence, may further support an increase in economic growth rates.

While South Africa's business environment is considered to be well developed, ranking 82 out of 190 countries in the World Bank's 2018 Doing Business report,²³ basic education and the resultant shortage of skilled labour are major challenges. Specific initiatives have been launched to reduce

17. The World Bank: South Africa Overview <http://www.worldbank.org/en/country/southafrica/overview>

18. African Development Bank Group: South Africa Economic Outlook <https://www.afdb.org/en/countries/southern-africa/south-africa/south-africa-economic-outlook/>

19 & 20. The World Bank: South Africa Overview <http://www.worldbank.org/en/country/southafrica/overview>

21. CIA World Factbook: South Africa <https://www.cia.gov/library/publications/the-world-factbook/geos/sf.html>

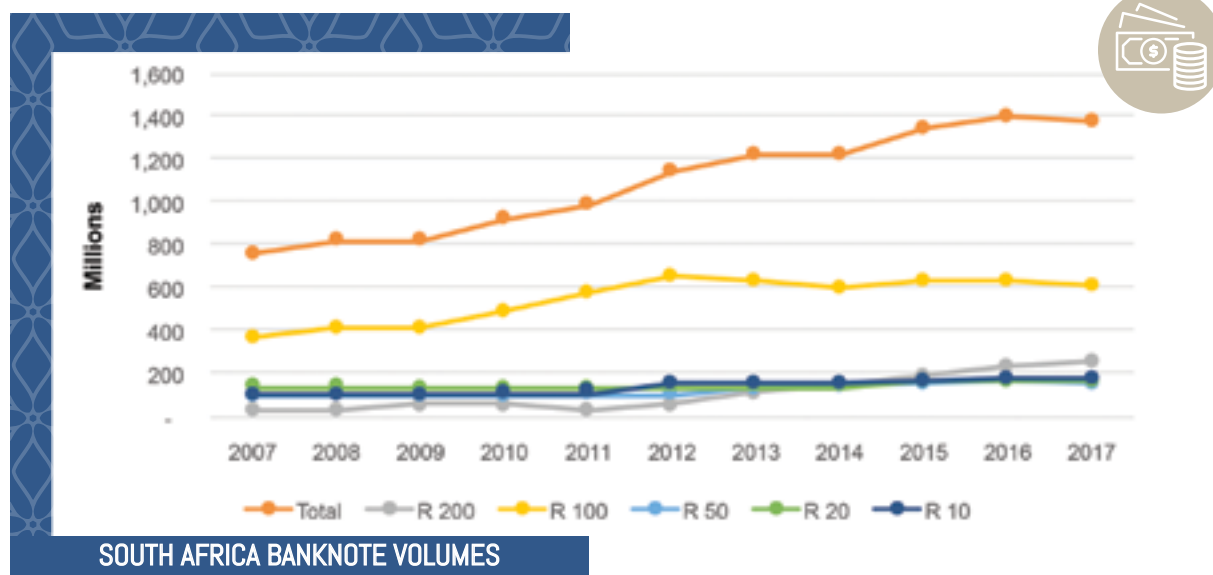
22 & 23. African Development Bank Group: South Africa Economic Outlook <https://www.afdb.org/en/countries/southern-africa/south-africa/south-africa-economic-outlook/>



the high youth unemployment, such as the recently launched Youth Employment Service (YES), which is targeted at the six million unemployed youth in the country.²⁴

Like other African countries covered in this report, the government has a broader strategic development plan to reduce poverty, stimulate economic growth, and to reduce unemployment and income inequality. The 2030 National Development Plan focuses on key areas to improve socio-economic conditions, including building capabilities, improving infrastructure, improving the quality of education and healthcare and working on safer communities and fighting corruption.²⁵

2.5.2 BANKNOTES AND COINS



Source: South African Reserve Bank

24. Government says YES to jobs for youth <https://www.sanews.gov.za/features-south-africa/government-says-yes-jobs-youth>

25. National Development Plan 2030 https://www.gov.za/sites/default/files/NDP-2030-Our-future-make-it-work_r.pdf

The South African Reserve Bank (SARB) has the sole right to print, issue and destroy banknotes and to mint coins in South Africa. The currency of South Africa consists of banknotes and coins and is denoted in rand (R). The current notes in circulation are R10, R20, R50, R100 and R200. Coins in circulation include 5c, 10c, 20c, 50c, R1, R2 and R5.

South African banknotes are locally printed by the South African Banknote Company (SABN), a subsidiary of the South African Reserve Bank. The South African Mint Company, which is also a subsidiary of the Bank, mints all the coins on behalf of the Reserve Bank.

The banknote sourcing processes consist of annual orders, which are placed with the SABN and this process will not change in the foreseeable future. The SARB manages a denomination mix in circulation, but there is a trend of moving to higher denominations in dispensing due to average ATM withdrawals increasing. There is also a general decline in the demand for the 5c coin.

To ensure the security of the banknotes, a variety of security features are currently in use. These include public security features such as substrate, print features, security thread, watermarks, micro-print, see-through register, numbering, anti-copy features, colour, optical effect inks and intaglio. There are also second level machine-readable security features, including security thread, covert features, intaglio, magnetics, fluorescence, UV and IR.

In July of 2018, the SARB released a complete series of commemorative circulating banknotes for Nelson Mandela's centenary. This was also an opportunity to introduce a new hybrid substrate that was used on the R10 and R20 commemorative notes. They also introduced new optical effect magnetic inks on all denominations.

While it is not likely there will be any changes soon, the SARB is constantly scanning the market for suitable substrates and security features that could possibly be incorporated in the future.

To preserve the quality standards of the currency in circulation, the SARB has technical defect standards and a soiling standard that must be adhered to and which is enforced through a quality inspection model.

The quality of banknotes in circulation is managed in terms of Section 14 of the Bank's Act Number 90 of 1989 and is primarily based on two guidelines. Firstly, the used banknotes issued by the branches of the Bank must be capable of being mechanically handled by cash receiving and/or dispensing machines. Secondly, the quality of used banknotes should be acceptable to members of the public when paid to them by the tellers of commercial banks.

In order to manage the quality of banknotes placed into circulation, all banknotes deposited at the branches of the SARB are processed on electronic banknote processing machines.

2.5.3 THE CASH CYCLE

The South African Reserve Bank has the mandate to print, issue, distribute, process and destroy banknotes in South Africa. The SARB's cash distribution model is a partially delegated model. Through this partially delegated model, processing for fit/unfit for recirculation is delegated to the Commercial Banks and cash in transit operators.

The current life cycle of low denominations (R10 and R20) is approximately 8 months, for medium denominations (R50) it is 10 months, and for high denominations (R100 and R200) it is 24 months. This may change over time as more durable substrates are trialled. Banknote demand is calculated by the SARB based on a demand/consumption-driven formula.

Overall Central Bank processing volumes are decreasing. Outside of the Central Bank, banknotes are processed by commercial banks at the bank branch and ATMs, at commercial cash centres, and in a limited capacity at the point of sale. The progressive growth in ATM recyclers means that over time this mix is changing with more processing happening closer to source. The share of cash back is limited compared to ATMs and branch/float pay-outs.

The Central Bank monitors and supervises external processing through quality inspection for technical and soiling standards. In the current partially delegated model, the SARB processes unfit/soiled cash for destruction. This will remain a core function of the Central Bank.

The cash cycle has evolved over the past few years, with cash recycling machines making it easier to decentralise processing and it is likely that the trend will continue in this direction.

There are, however, instances where specialisation of processing, for example in coin processing, is creating more centralised super-centres and less processing at branches and cash hubs, as the super-centres can leverage the economies of scale.

The Reserve Bank does not predict any major changes to the key steps of the cash cycle in the future, as there will still be a significant role for cash. Evolution in the Central Bank cash distribution model will potentially be even more delegated, as processing moves closer to the front end of the cash value chain.

2.6 ZAMBIA

2.6.1 OVERVIEW

ZAMBIA	
Population, total (2017)	17 094 130
GDP (current US\$) (2017)	25 808 666 422
Banknotes in Circulation	139 890 000
Number of banknotes per person	8
Account ownership (% of adult population)	46
Debit card ownership (% age 15+) (2017)	20
ATMs per 100,000 adults (2016)	11
Commercial bank branches (per 100,000 adults) (2016)	5

Zambia's recent economic growth continues to be healthy and has been close to 4% in the past two years.

Source: World Bank Data, Bank of Zambia

Growth has been supported through the agriculture and energy sectors and could have been over 5% if it weren't for pressure on the financial sector, due to government payment arrears. The country has recovered from a drought over 2015 and 2016, which had a major impact on energy supply which, together with lower mineral prices, led to 2015 being Zambia's lowest growth rate in over a decade (2.9%).²⁶

In the medium term, growth is expected to be over 4%, further improving through higher mineral prices and improved production capacity in the mining sector.²⁷ Further energy reforms, higher electricity tariffs and revisions to electricity regulations will provide more stability and stimulate private-sector participation in the energy sector, further supporting economic growth. Zambia is also looking to reduce its dependence on copper, which currently contributes over 77% of total exports. This dependence makes the economy highly vulnerable to copper price fluctuations and susceptible to unstable growth rates.

Zambia also suffers from high levels of poverty with extreme poverty levels in rural areas and high unemployment rates.²⁸ Poverty in rural areas is 76.6%, compared to 23.4% in urban areas, highlighting the inequality levels and the fact that healthy economic growth has done little to alleviate poverty in rural areas. Zambia's high fertility rate of over 6 children per woman is driving its population growth rate of 3.3%.³⁰ Projects such as the Girl's Education and Women's Empowerment and Livelihoods Project are trying to address the lack of access to family planning, education for girls and employment for women which have a direct impact on high fertility rates and poverty.³¹

The Zambian government initiated its 7th National Development Plan 2017–2021 to address

26. African Development Bank Group: Zambia Economic Outlook <https://www.afdb.org/en/countries/west-africa/nigeria/>

27. The World Bank: Zambia Overview <https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html>

28. CIA World Factbook: Zambia <http://www.worldbank.org/en/country/namibia/overview>

29. 7th National Development Plan 2017 to 2021: republic of Zambia <http://www.mndp.gov.zm/download/7NDP.pdf>

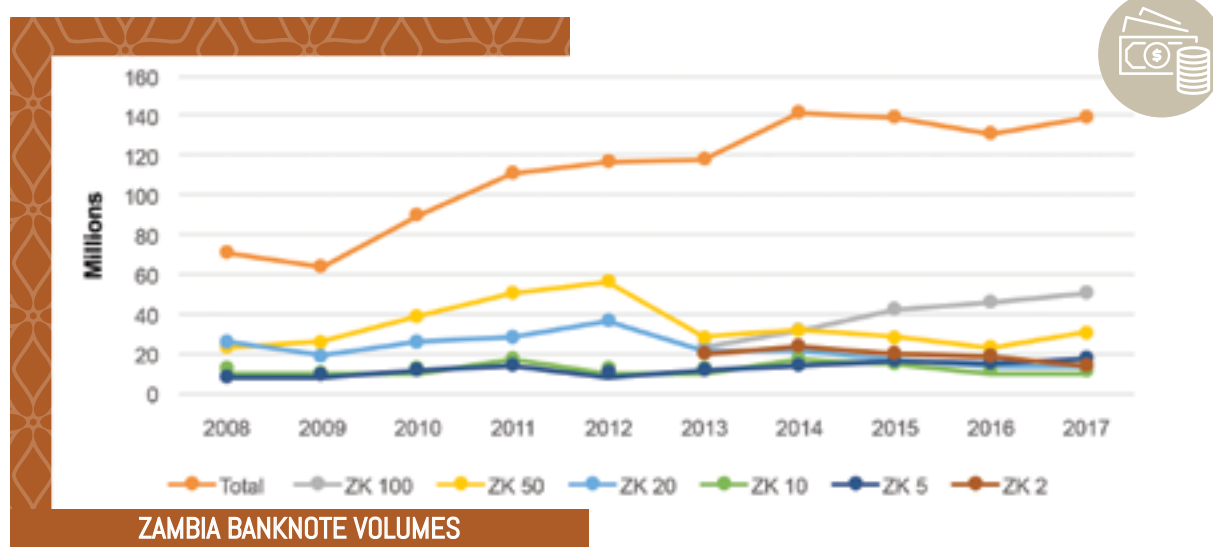
30. <http://worldpopulationreview.com/countries/zambia-population/>

31. <https://www.worldbank.org/en/news/feature/2018/06/12/project-empowers-zambias-women-helps-girls-stay-in-school>

economic growth and social improvements. The plan focuses on economic diversification, job creation, poverty alleviation, human development, governance, and reducing inequalities.³²

To improve employment rates, the plan includes investment in labour intensive sectors such as agriculture, forestry, construction and small-scale mining industries.³³

2.6.2 BANKNOTES AND COINS



Source: Bank of Zambia

Note: The K100 and K2 denominations were introduced in 2013 after the rebasing of the Zambian Currency. The denominations of K50,000, K20,000, K10,000 and K5,000 which were in circulation prior to rebasing have been converted under their direct denominations of K50, K20, K10 and K5 respectively.

The Bank of Zambia is responsible for issuing banknotes and coins in the country. The Currency division is responsible for the designing and ordering of banknotes and coins to meet the country's demand.

The Zambian currency is known as the Zambian Kwacha (K). The banknotes currently in circulation are K100, K50, K20, K10, K5, K2. The coins in circulation include, K1, 50Ngwee, 10Ngwee, and 5Ngwee. In 2013, the Government of the Republic of Zambia decided to re-denominate the currency, on the recommendation of the Bank of Zambia.

An extended period of high inflation had driven the currency into high denominations. By re-denominating the currency, it was hoped that the currency could retain its basic function as a store of value and medium of exchange.

The currency rebasing exercise entailed dividing all denominations by 1000. As part of this process, all banknotes and coins in circulation were replaced with the rebased currency.

32. African Development Bank Group: Zambia Economic Outlook <https://www.afdb.org/en/countries/west-africa/nigeria/>

33. 7th National Development Plan 2107 to 2021: republic of Zambia <http://www.mndp.gov.zm/download/7NDP.pdf>

In Zambia, banknotes are sourced on the international market, from a variety of commercial printers and minters. To source banknotes, The Bank of Zambia has a 3-year procurement cycle with the aim of procuring banknotes of acceptable quality at reasonable cost. Printers and minters are selected via a selective international tender process targeted at attracting reputable firms with, among other factors, over 15 years' experience. Banknote demand is forecast through trend analysis.

The currency in circulation remains concentrated in the higher denominations in value terms while in volume, it is higher in low value denominations. There are challenges with the acceptance of the lowest value coins and this has resulted in hoarding of these denominations by the public. The Bank educates the public from time to time that these should be accepted as legal tender and are useful for change purposes.

To ensure the security of the banknotes in circulation, there are a number of security features in place. These include, peak pixel, a watermark, and a hologram consisting of a shiny metallic strip with colour-shifting properties when tilted.

They also include machine readable security features such as micro-lettering, security thread and machine-readable inks. The Bank of Zambia has just recently introduced several new security features, including the latest optical effect inks on the K20, K50 and K100 notes, which consist of colour-shift properties, optical brightness and dynamic light effects.

There will also be a 5mm optically visible four-window security thread with micro optical dynamic effects, which have replaced the hologram on the three denominations. A "tactile mark" for the visually impaired has now also been put on both edges of the banknotes to enhance tactility.

On the K10 denomination, a new four-window security thread will replace the hologram on the front of the banknote, and on the K2 and K5 notes different images appear as a new glossy varnish with a blind embossing for ease of identification.

The Bank of Zambia is in the process of reviewing the entire Currency Family. These security features are therefore likely to be continually enhanced or changed in line with emerging trends. The Bank may also consider substrate changes during the currency restructuring process, as well as changes to the design and composition of the family of banknotes and coins.

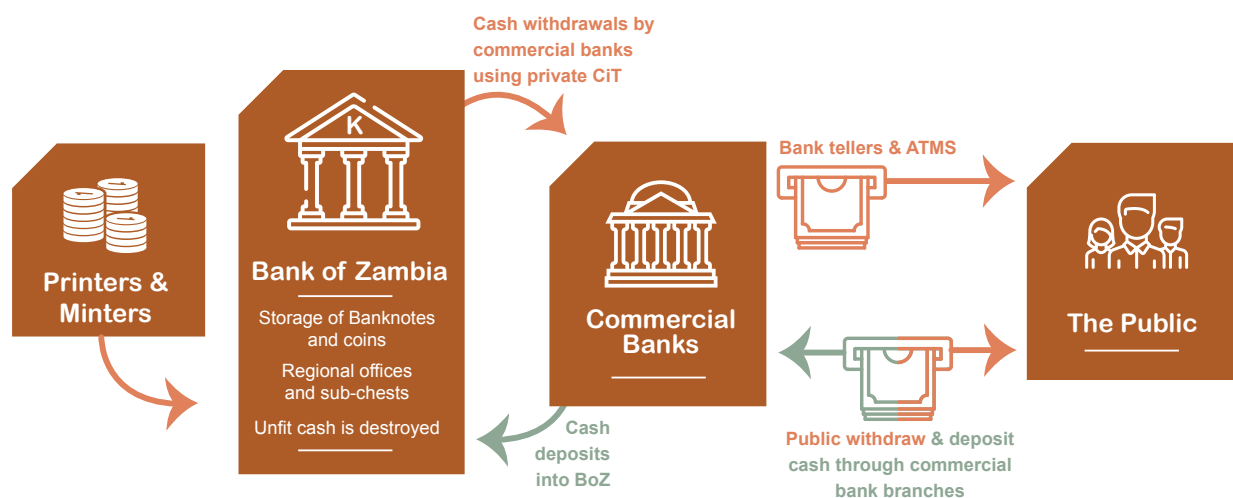
The Bank of Zambia has a clean note policy, which promotes the circulation of good quality banknotes. This is achieved by making sure that all regions are supplied with clean banknotes and coins. The Bank also issues sorting standards that have been shared with all cash cycle participants, including commercial banks, major cash handlers and cash management services. In addition to this, the Bank has conducted training for all participants in order to ensure uniformity in the cash-sorting process. On-going monitoring and training are conducted to ensure that these standards are upheld by all parties. The Bank has also held public awareness campaigns aimed at educating the public on good cash-handling practices.



2.6.3 THE CASH CYCLE

The Central Bank of Zambia is responsible for the issuing, processing and destruction of cash across the country. The Bank also has several cash centres around the country to aid the timely and efficient distribution of

currency and collection of unfit banknotes. The diagram below shows the movement of cash after receipt from printers up to its surrender to the Central Bank for processing or destruction.



The contracted printers deliver currency, which is distributed by BOZ to the commercial banks. The public accesses this cash from the commercial banks through their branch and ATM networks. The public also returns soiled/unfit banknotes to the commercial banks for onward submission to the Central Bank where secure destruction takes place.

The major cash handlers are engaged by commercial banks to sort their cash marked for deposit at the Central Bank. Their role is to ensure that the sorting standards are adhered to. The major cash handlers also play an important role as they handle bulk cash. They are trained on sorting standards and how to identify genuine banknotes.

This is done in order to transfer this function from the Central Bank to the cash-cycle participants.

BOZ measures the effectiveness of the cash cycle by using metrics such as the longevity of the currency in circulation and the quality of banknotes in circulation.

The life cycle of banknotes is 3-6 months for low and medium denominations (K20, K10, K5, K2), and 6 – 12 months for high denominations (K100, K50).

Some of the key challenges the BOZ has within the cash cycle are liquidity management by the commercial banks, which in turn affects the exchange process amongst these commercial banks as they prefer to deposit fit notes to the Central Bank for value. This defeats the purpose of the Central Bank's role as wholesaler only to issue new/fit currency and destroy unfit currency.

There is also a challenge due to staff turnover in the commercial banks and cash management services, which affects sorting standards that can be compromised by inexperienced staff. The Central Bank always endeavours to conduct training to avoid this.

In Zambia, the Central Bank processing volumes have decreased as commercial banks are required to sort cash into fit and unfit notes before depositing. The Central Bank levies a charge for unsorted cash to encourage sorting before depositing. Emerging cash processing companies have also contributed to the decrease in volumes. Outside of the Central Bank, banknotes are processed at commercial banks and in commercial bank centres. This mix is changing over time as commercial banks are leaning more towards outsourcing cash management services, resulting in more cash

being sorted at commercial cash sorting centres.

The Central Bank monitors and supervises external processing by conducting site inspections and checks to commercial banks and cash management services. It also conducts regular monitoring and training and is constantly observing the quality of banknotes sent to the Central Bank and identifying training needs.

The Central Bank does see an evolution in the Bank's distribution model in the future. It is expected that the cash cycle will become more efficient, with the Bank only conducting wholesale activities. The Bank of Zambia currently aspires to a level where the Central Bank will only have two roles remaining: issuing new banknotes and destroying used banknotes.

In 10 years' time it is expected that the cash cycle will be more regulated, with the aim to develop standards and allow the market more autonomy to handle issued cash.

The Central Bank will be less involved in banknote processing as it's currently hiving off activities to cash cycle participants. In the future, the cash cycle is expected to be more decentralised.

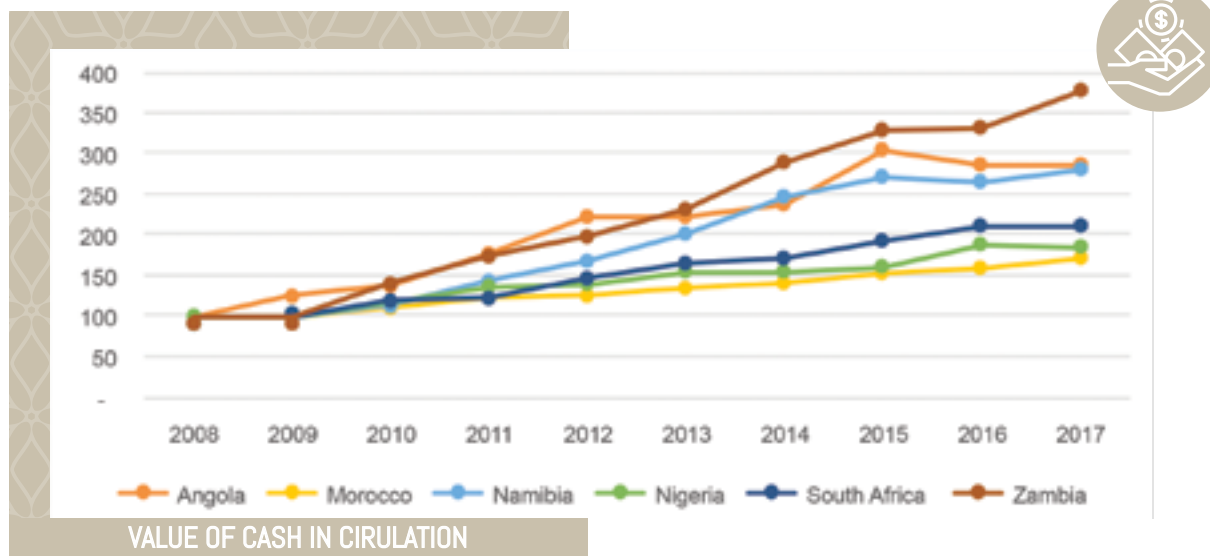
The Bank expects to see significant changes in the cash cycle, as it is establishing direct links with end users to understand their needs as opposed to providing the commercial banks with what is only convenient for their operations.



3

CASH DEMANDS

3.1 VALUE OF CASH IN CIRCULATION



Source: Central Banks - All values set to 100 in 2008

The value of cash in circulation has been growing steadily across the six countries covered in this report between 2008 and 2017.

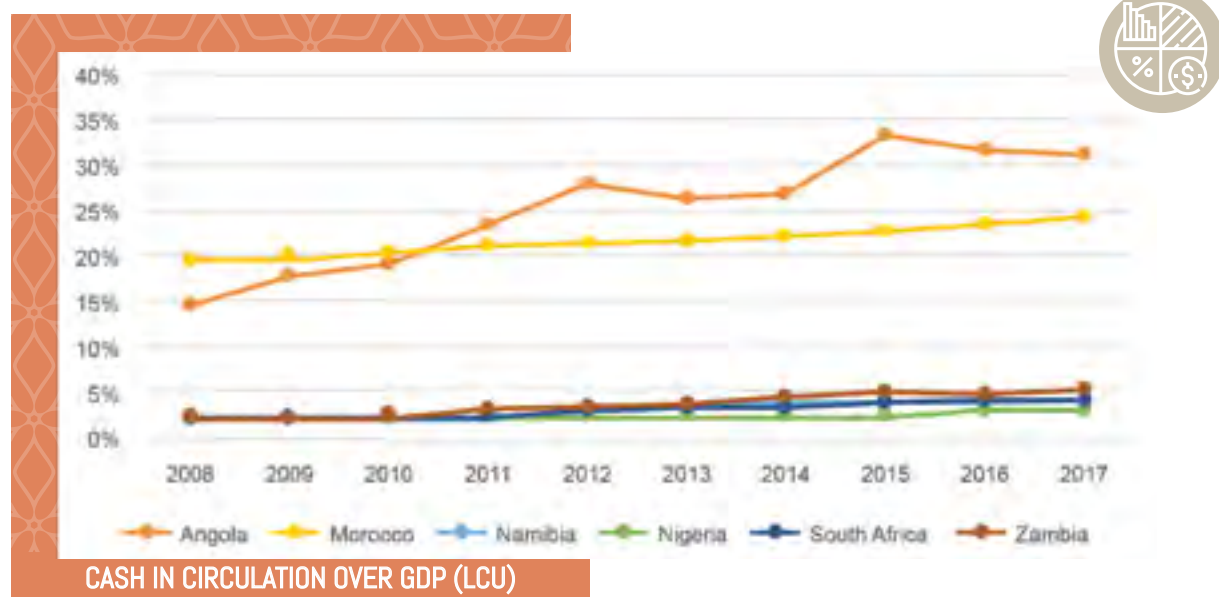
Zambia showed the highest growth with a 14% compound average growth rate (CAGR) in the value of cash in circulation over the last 10 years. Angola and Namibia both saw CAGR of 11%. Morocco and Nigeria, on the other hand, only saw a 6% CAGR between 2008 and 2017. South Africa has seen a CAGR in value of cash in circulation of 8%.

CAGR value of banknotes 2008-2017

Angola	11%
Morocco	6%
Namibia	11%
Nigeria	6%
South Africa	8%
Zambia	14%



3.2 VALUE OF CASH IN RELATION TO GDP

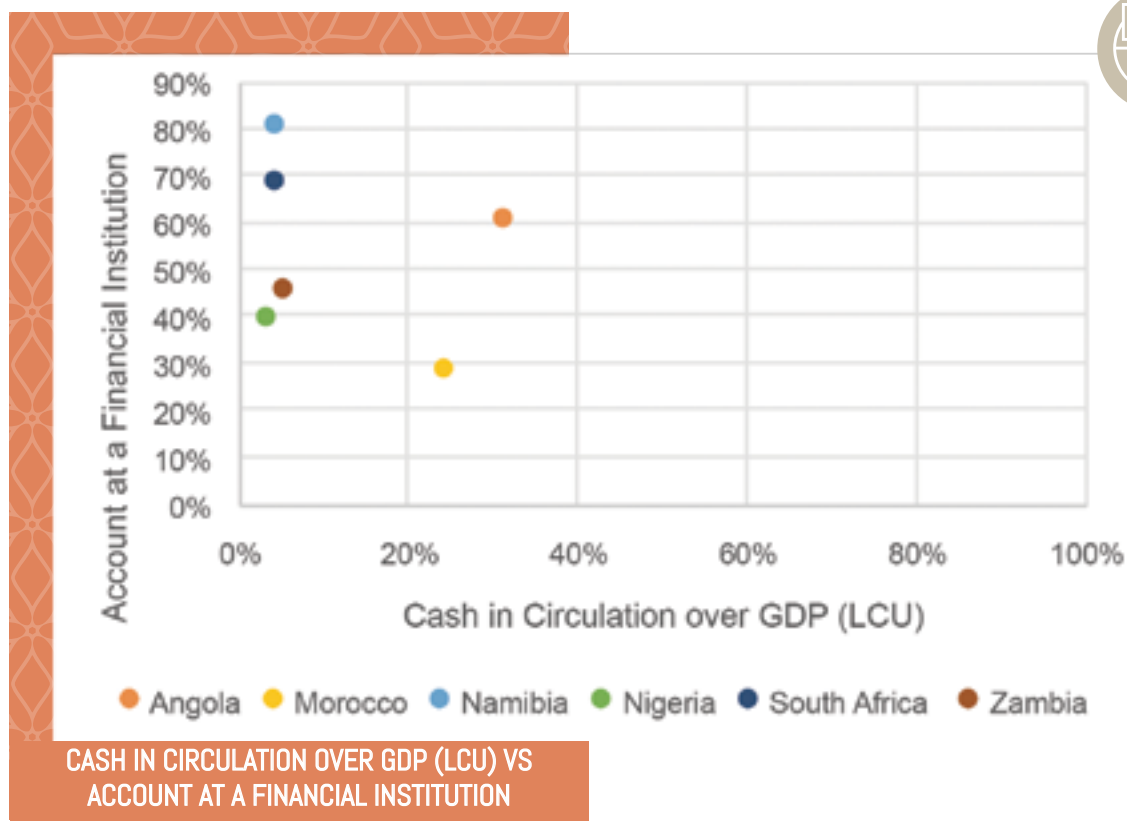


Source: World Bank Data, Central Banks

A lot of factors affect the cash in circulation to GDP ratio, including macro-economic, historical, cultural and micro-economic reasons. In general, there is a linear relationship between cash in circulation and GDP across all the countries covered in this report.

Measured in relation to GDP, the level of cash in circulation in Angola and Morocco is a clear outlier across the countries covered. Namibia, Nigeria, South Africa and Zambia all have a ratio of around 5% and are showing gradual linear growth over time.

Morocco is also showing gradual linear growth, but from a much higher base. Angola's ratio is also growing, but more erratically in line with changes to the cash in circulation.



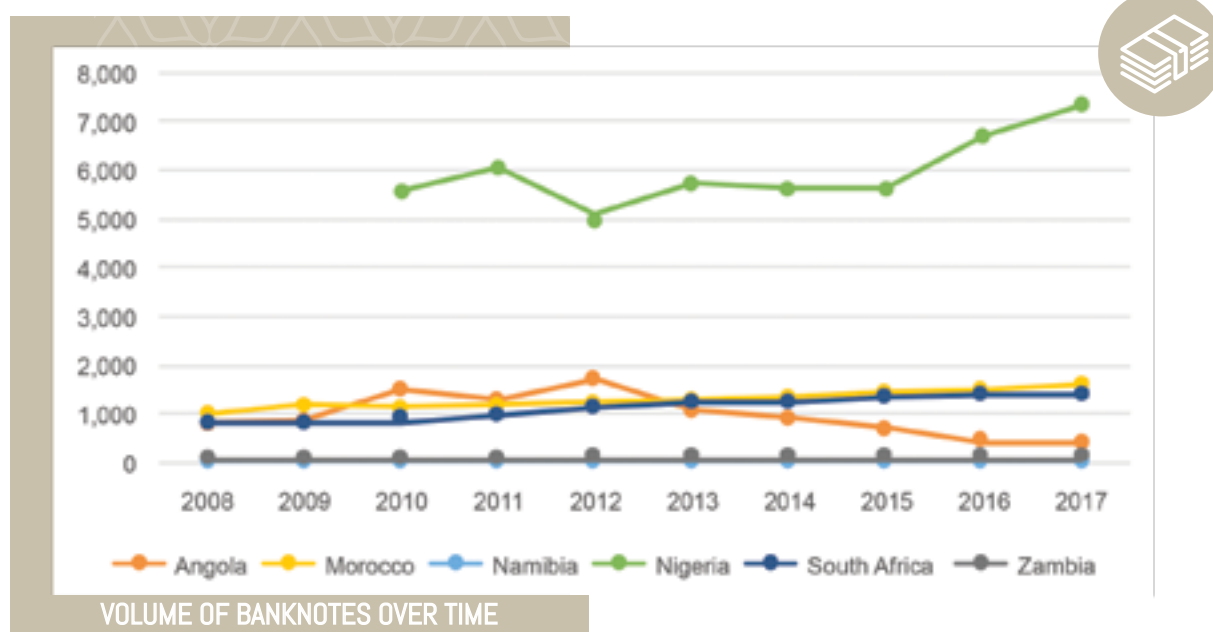
Source: World Bank Data, Central Banks

Looking at the percentage of the adult population with bank accounts, there is a spread of different levels of banking maturity across the countries covered in this report.

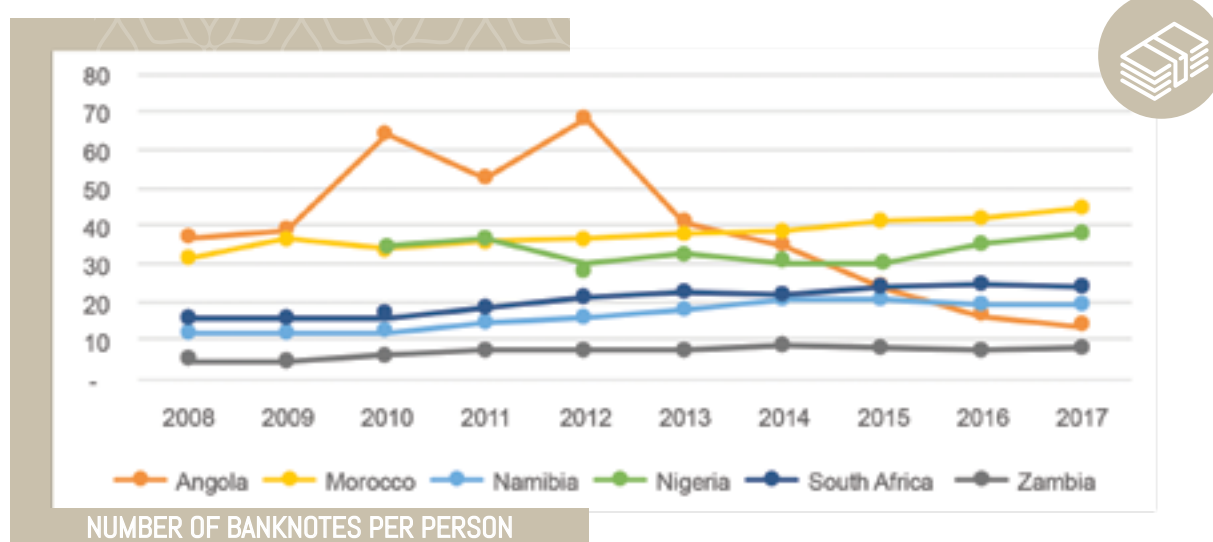
When one compares the cash in circulation over GDP to the percentage of the adult population with formal bank accounts, for instance, Morocco has a low banking penetration and a high ratio of cash in circulation, whereas Angola has a much higher banking penetration and a high ratio of cash in circulation.

Namibia has the highest rate of formal bank accounts across the selected countries, higher even than South Africa, which has the most mature banking environment. This could be attributed to Namibia's close association with South Africa, its small population, which makes penetration and access easier, and a much higher uptake of mobile money, which often acts as a precursor to formal banking.

3.3 VOLUME OF CASH IN CIRCULATION



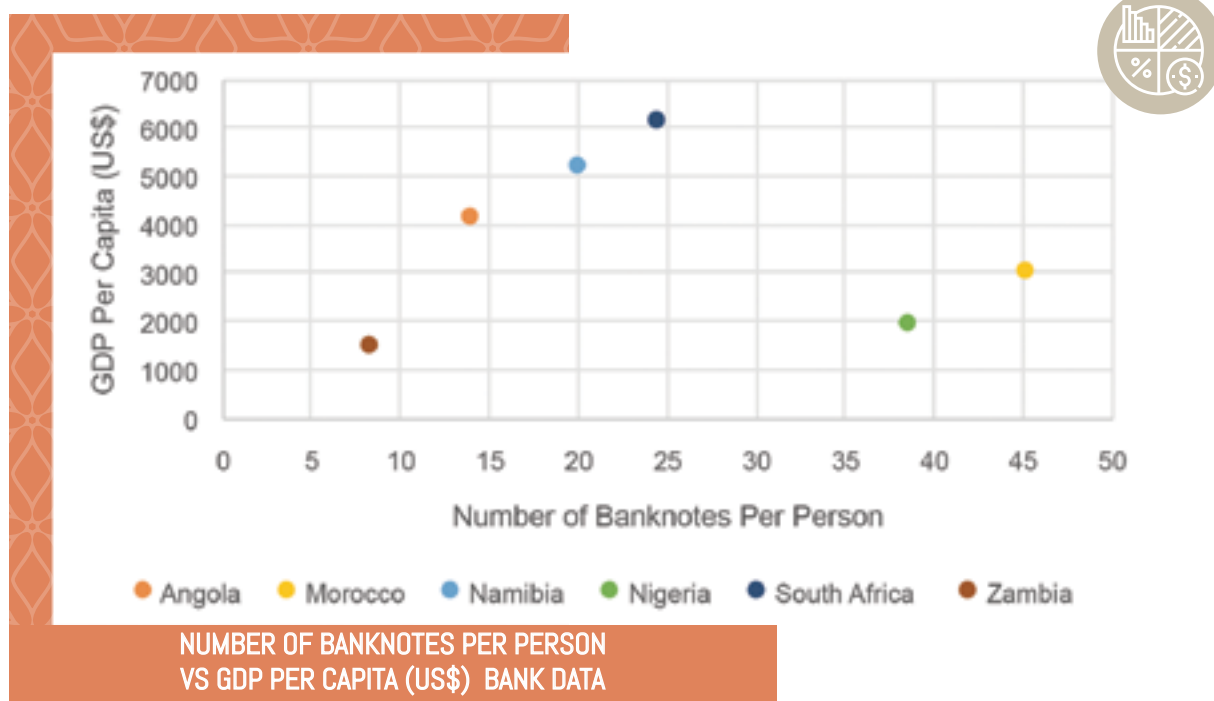
Nigeria has a significantly higher volume of banknotes compared to the other countries. This is due to several factors, including its large population and big economy, the fact that the economy is still very cash based, the low levels of formal banking, and a lack of electronic payment infrastructure or mobile money penetration.



Despite Nigeria's high banknote volumes, the number of banknotes per person is lower than Morocco. Nigeria, Zambia, Namibia, South Africa and Morocco have all maintained a fairly steady ratio of banknotes to population over the last ten years, with a minor linear growth. Angola's ratio of banknotes to population meanwhile was much higher between 2010 and 2012 but has decreased in line with its reduction of banknote volumes.



When compared to other regions the overall number of banknotes per person is still relatively low across the board. For example, in the USA there are over 120 banknotes per person³⁴, while in Singapore there are 190, and in Hong Kong there are more than 320 banknotes per person. Even other developing countries such as Thailand and Indonesia generally have higher numbers of banknotes per person, with Thailand at approximately 80 notes per person, and Indonesia at over 60 per person.³⁵



Source: Central Banks, World Bank Data

When looking at the number of banknotes per person vs GDP per capita it is evident that the three countries with the highest GDP per capita have a similar number of banknotes per person. Nigeria and Morocco meanwhile have a lower GDP per capita and higher volumes of banknotes per person. Zambia, as the least mature economy, has the lowest GDP per capita and the lowest number of banknotes per person.

34. <http://www.visualcapitalist.com/many-u-s-dollar-bills-circulation/>


35. <http://www.cashessentials.org/blog/article/cashessentials/2017/08/07/the-future-of-cash-an-asian-perspective>

3.4 DRIVERS OF CASH GROWTH

3.4.1 GDP

One of the key drivers for cash growth is a growth in GDP, as a growing economy leads to an increase in the number of transactions and therefore an increase in the need for cash.

	GDP CAGR 2008 - 2017	Banknote Volumes CAGR 2008 - 2017
Angola	4%	-6%
Morocco	2%	5%
Namibia	5%	7%
Nigeria	6%	3%
South Africa	2%	7%
Zambia	4%	7%



All countries in this report show a GDP that is growing over time with a compound average growth rate of between 2% and 6%. Banknote volumes are also generally growing, except in Angola where there has been a strategic decrease in notes in recent years, in favour of coins, causing a negative CAGR on banknote volumes.

As emerging economies, all the countries covered in this report show very strong growth trends in their GDPs, despite difficult economic conditions many of them are facing individually. As the economies of the six countries are assumed to continue to expand in the future, it should be reasonably expected that the overall value and volume of cash will also continue to grow.

3.4.2 ECONOMIC FACTORS

Changes in the macro and micro economics of a country can have a significant effect on the cash volumes and demand. This can include inflation, interest rates, government spending and seasonal changes.

For example, when looking at inflation, the Bank of Namibia has noted an increase in the circulation of higher denominations in the market due the decreased buying power of smaller denominations. Rapid inflation was also the cause of the currency rebasing project in Zambia in 2013. Even since this exercise, Zambia has seen that the concentration of value in higher denomination notes is growing due to the effects of inflation.

The South African Reserve Bank also reported that there is a trend of moving to higher denominations in dispensing due to average ATM withdrawal increasing. Across all of these examples this leads to increased demand for higher value notes.

Seasonal changes in the market were also reported to have an effect on cash demand. This includes increased demand over holiday periods, as well as factors such as crop-planting seasons or particular religious events.

3.4.3 RELIANCE ON CASH

Many of the economies in Africa are still extremely reliant on cash for everyday transactions and large informal markets drive the usage of cash for transactions.

According to a recent report cash accounts for over 50% of transaction value in South Africa.³⁶ This is despite south Africa having the most mature banking and payments ecosystem of any of the countries covered in this report. In Nigeria, much of the population operates in the cash-based informal sector. According to FII data, 47% of Nigerians generated income solely through irregular informal sector employment in 2016.³⁷ In Morocco, according to the Central Bank annual report 2017, the informal or non-observed economy is estimated at 31% of the annual GDP.

Formal banks will struggle to draw these cash holders away from informal money management unless they can provide low value transactions at a suitably low cost, and with a tangible value-add.

3.4.4 CROSS-BORDER USAGE

In many regions across Africa, currencies are used not only in their own countries but also in neighbouring countries. Of the countries covered in this report, both South Africa and Namibia are part of the Common Monetary Area, along with Lesotho and Swaziland, where the South African rand is officially legal tender across all four countries.

Zambia has signed a memorandum of understanding with Mozambique and Malawi. Through this agreement, all three of their currencies can be used across all three countries. More informally, the Angolan Kwanza is used in some neighbouring countries such as DRC, Republic of Congo, and Namibia for low-value commercial transactions.

Some countries in Africa will also use foreign currency alongside their own currency. For example, in Angola the US dollar and the Euro are both used within the country in significant amounts. This is also true in Zambia where the US dollar, the British pound, and the South African rand are all used within the country. In Morocco, foreign currencies such as the Euro, US dollar and British pound are also used by foreign tourists for payments at some hotels, restaurants and speciality shops.

36. <http://www.bizcommunity.com/Article/196/163/161340.html>

37. <https://cfi-blog.org/2018/03/30/why-is-financial-inclusion-in-nigeria-lagging-compared-to-its-african-peers/>

3.4.5 ATM GROWTH

Africa, and particularly sub-Saharan Africa, has the lowest ATM penetration rate of any region in the world. According to the World Bank, there are fewer than 6 ATMs per 100 000 adults across sub-Saharan Africa.

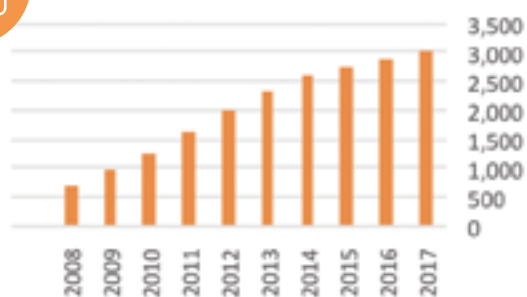
Of the countries covered in this report, South Africa has the most mature ATM market with 69 ATMs per 100 000 adults. This equates to about 30 000 ATMs in total. Nigeria, in contrast, has approximately 20 000 ATMs in total but the number of ATMs per 100 000 adults is much lower at only 17, due to Nigeria's much larger population.

Conversely, the only other country in our sample that can match South Africa's ATM penetration rate is Namibia at 64 ATMs per 100 000 adults, but this is due to Namibia's low population and translates to an install base of only about 1 000 ATMs.

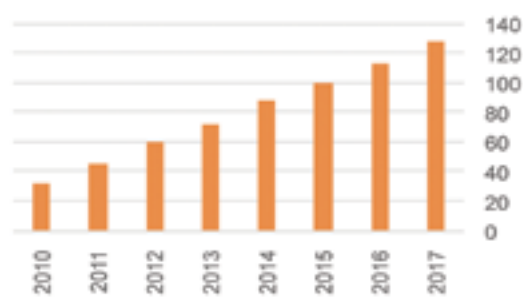
	Angola	Morocco	Namibia	Nigeria	South Africa	Zambia
ATMs per 100,000 adults (2016)	19	27	64	17	69	11

Source: Central Banks, World Bank Data

This shows that there is a huge potential for growth in the ATM market across Africa.



ANGOLA ATM INSTALL BASE

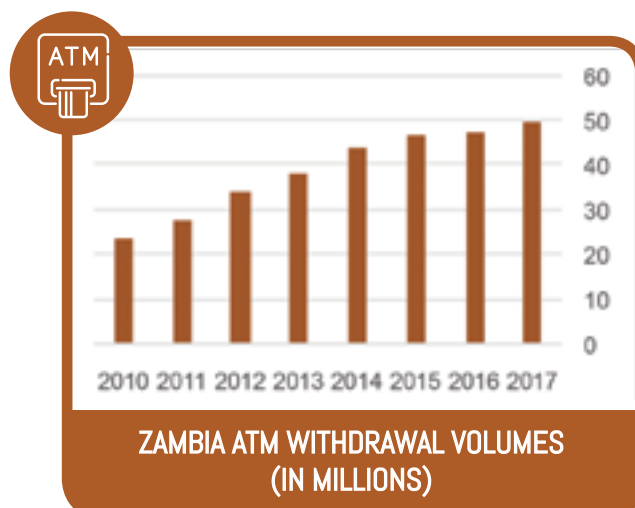


ANGOLA ATM WITHDRAWAL VOLUMES
(IN MILLIONS)

Source: National Bank of Angola

Angola for example has seen steady growth of its ATM install base over the last 10 years and this correlates directly with the ATM withdrawal volumes that have been seen. Zambia similarly has seen steady growth in its ATM withdrawals.

As this growth occurs more people will have greater access to cash and this is likely to create changes in the usage and distribution of cash.



Source: Bank of Zambia

3.4.6 FINANCIAL INCLUSION

Another driver of cash growth is financial inclusion. Although Africa is one of the most financially excluded regions in the world, major strides have been made in recent years, with many organisations and governments working to reduce financial exclusion and increase access to banking services.

Year	2017	2014	2011
Angola	61%	29%	39%
Morocco	29%	NA	NA
Namibia	81%	59%	NA
Nigeria	40%	44%	30%
South Africa	69%	70%	53%
Zambia	46%	36%	21%

Source: Central Banks, World Bank Data

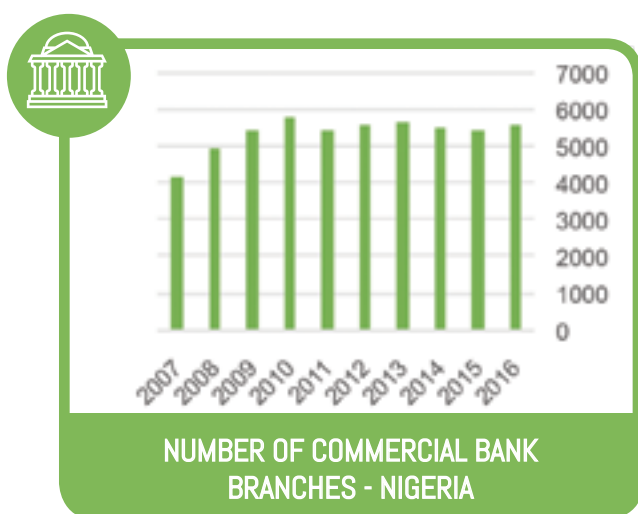
Looking at the percentage of account ownership at financial institutions that is seen in the adult population of the countries we are covering in this report, there has been significant growth between 2011 and 2017.

While Morocco has a fairly low rate of account ownership according to the World Bank data, the Central Bank has recently launched a financial inclusion initiative that has been undertaken in

conjunction with commercial banks. Their financial inclusion levels are therefore rising rapidly, Bank Al Maghrib has reported recently that there are 14.1 million bank cards in circulation, which hints that closer to 50% of the adult population is financially included. Bank Al Maghrib also conducted a feasibility study in conjunction with the Telecommunications Regulation Agency (ANRT) for the deployment of mobile payments. As a result of the study, four mobile payment companies were licensed by the Central Bank and have begun issuing mobile wallets to customers.

At this stage, six important transaction flows have been identified as a priority target. These include the payment of low amount social benefits, small-scale domestic transfers between individuals, purchases by individuals in the retail trade, network payment of service bills, purchase of telephone recharges and payment of suppliers by retail traders. The digital payment of bills (electricity and water, phones, etc) and taxes is also made available to customers by banks, utility companies and tax administrators.

In Nigeria, there is also a strategic financial inclusion initiative, the Nigerian National Financial Inclusion Strategy, which was launched in 2012 with the aim of reducing the percentage of adult Nigerians who does not have access to financial services. Nigeria is, however, having difficulty reaching this goal, and while financial inclusion is growing, it is not currently on track to achieve its target of increasing financial inclusion to 80% by 2020. Between 2014 and 2017, the percentage of banked adults in Nigeria dropped nearly 4 percentage points, while in sub-Saharan Africa as a whole, the average increased by more than 8 percentage points³⁸



Source: Central Bank of Nigeria

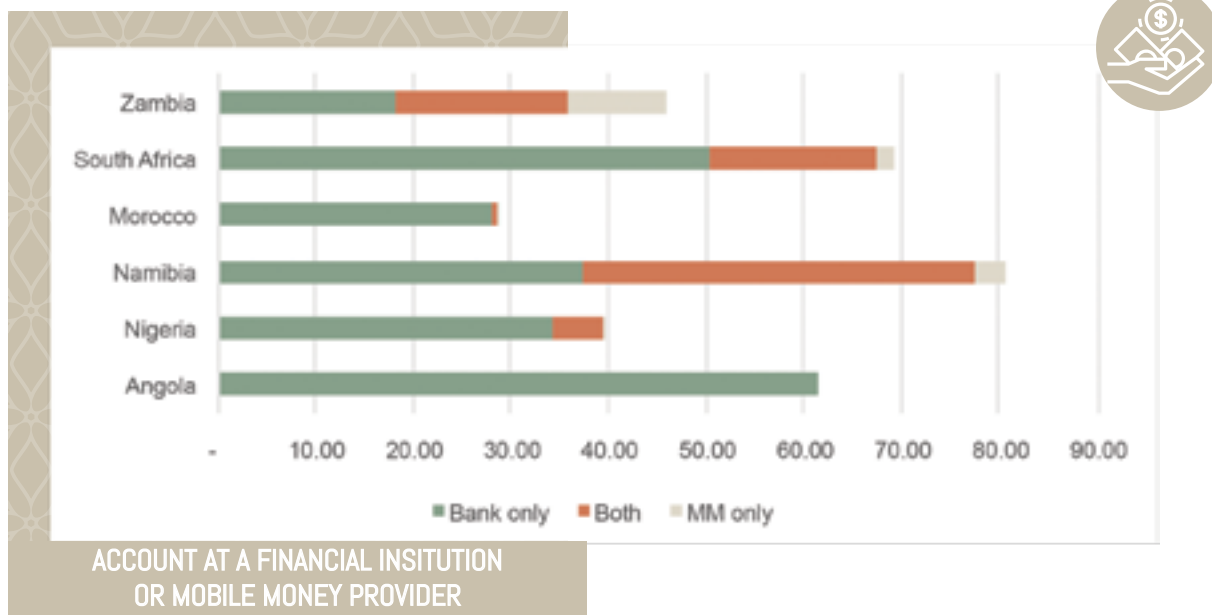
The number of commercial bank branches across Nigeria has registered a stagnation in recent years after an initial period of growth.

A lack of infrastructure, low financial literacy, increasing bank costs and regulations, and a recession in the local economy are factors that are inhibiting financial inclusion in Nigeria.

The Central Bank is however making moves to drive financial inclusion forward. This includes an initiative to increase the number of banking agents from 100 000 to 500 000 as a way to penetrate unbanked and underbanked areas.

38. <https://www.moneyweb.co.za/news-fast-news/nigerians-bury-cash-in-backyard-banks-as-mobile-money-stumbles/>

One of the key factors that has inhibited financial inclusion growth in Nigeria is the low penetration of mobile money, which is almost negligible compared to many other countries in Africa.



Source: Central Banks, World Bank Data

In Zambia, mobile money has been a major contributor to financial inclusion. This can be seen when looking at the number of people who have an account at a financial institution versus those with a mobile money provider. Zambia is unique in our sample countries for having a significant number of mobile money subscribers who do not also have formal bank accounts.

The volume of transactions processed through the mobile money platform in Zambia increased by 60.9% in 2016. This increase is attributed to the rising number of users due to financial inclusion campaigns, as well as the increased footprint of mobile payment agents, which increased from 4 599 in 2015 to 8 043 in 2016.

While financial inclusion will continue to increase across sub-Saharan Africa, many underbanked and newly banked people still use agency banking and mobile money as cash-in cash-out services, that is, rather than displacing cash in any significant way, mobile money and agency banking often start as a way for people to access and move cash more easily. Having adequate supplies of cash is therefore a key factor in rolling out and promoting these initiatives.

3.5 INHIBITORS OF CASH GROWTH

3.5.1 POVERTY AND UNEMPLOYMENT

Poverty, in its essence, is a lack of money. This means that areas with higher poverty rates generally have a lower demand for cash. Across Africa, poverty is a major issue with all the countries covered in this report still having significant poverty levels that need to be addressed.

Morocco has made the greatest strides in this direction recently, reducing poverty levels from 15.3% in 2001 to only 4.8% in 2014. In contrast, nearly 80% of Nigeria's population is living on less than US\$ 2 a day, and almost 40% of people in Namibia are under the poverty datum line.

The largest proportion of people in poverty is generally found in rural areas. In Zambia, poverty in rural areas is 76.6%, compared to 23.4% in urban areas, highlighting the inequality levels and the fact that healthy economic growth has done little to alleviate poverty in rural areas.

Alongside poverty, unemployment is also a concern across Africa. In Nigeria, 16% of the population is unemployed. High unemployment is also a key challenge in South Africa, with 26.7% of the population currently unemployed.

To combat the high poverty and unemployment rates, a number of government policies and development plans have been put in place across all the countries to support economic growth and employment.

3.5.2 COST OF CASH

The cost of cash is another factor that can inhibit cash growth and usage. The cost of transporting, distributing and processing large volumes of cash can be a significant issue for banks, cash management companies, ATM companies and retailers.

In South Africa, external consultants were recently commissioned to ascertain the impact of the Cash Management Strategy on the cost of cash for the public and looked at how the cost of cash can be reduced through efficiencies in cash processing and network operating models as well as efficiencies in logistics in the cash value chain.

Overall, Central Banks are looking at ways to reduce the cost of cash, such as improving banknote need and forecasting models, increasing the use of alternative forms of payments (cashless initiatives) and increased automation in cash processing.

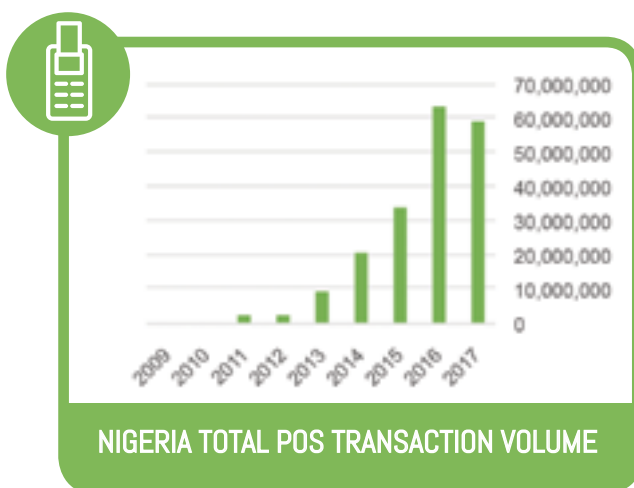
In Zambia, for example, an effort is being made by the Central Bank to shift people onto alternative payment methods that are safer and cheaper. Through this they hope to see a shift towards more automation in the long run, but at the moment we still see a strong preference for cash payments by the general public.



3.5.3 CASHLESS INITIATIVES

The Central Banks generally expect that cash in circulation will change in the future in relation to the growth and uptake of alternative electronic payment methods. While this is not expected to completely displace cash in any way, it may be a factor in slowing the growth of cash in some countries.

Most of the countries covered in this report have some form of cashless initiative in place to encourage the use of digital payment methods and increase financial inclusion.



Source: Central Bank of Nigeria

The Central Bank of Nigeria, for example, introduced a cashless policy that placed additional cash-handling charges on ATM withdrawals over a certain amount. The goal of this policy is to reduce the amount of physical cash circulating in the economy and to encourage the use of electronic payment methods.

While transaction volumes across electronic payment methods have increased significantly in Nigeria over the last few years, the Nigerian Interbank Settlement System has suggested that only three million

individuals were liable for the 75 million electronic transactions recorded in the first quarter of 2018.³⁹ This shows that only a small fraction of the population is utilising alternative payment methods. It is therefore not likely to be a significant threat to cash usage for the foreseeable future.

3.6 PROJECTIONS OF CASH DEMAND

When projecting the possible future banknote volumes for each of the countries covered, some interesting trends emerge. Morocco, Namibia, Nigeria, South Africa and Zambia all suggest fairly steady linear growth over the next ten years, based on the last ten years.

Angola's trend line, on the other hand, suggests that currency volumes would continue to decrease until they reach negative values, which is highly unlikely. The past spikes in growth, however, make the upper confidence projection show strong growth, which is also unlikely in the near future. The most likely scenario is perhaps between the standard forecast and the upper confidence level, with the volume continuing to decrease at a slow rate and then holding steady at a lower level.

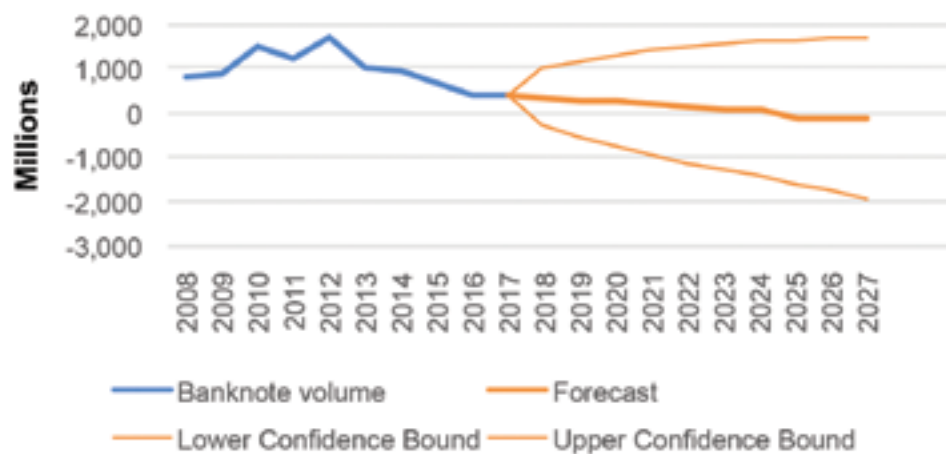
This, however, will depend greatly on the performance of the economy in the next few years and the overall strategy of the Central Bank. Over the next ten years, the National Bank of Angola believes that cash in Angola will continue to decrease in quantity but increase in value.

In Morocco, cash in circulation is expected to continue to grow during the next 5 years by an average annual rate of 4%, according to the Central Bank. Cash in circulation will continue to grow in the next ten years at a rate of 3% to 5%. This will have a direct impact of the GDP growth at an average rate of 4% till 2025.

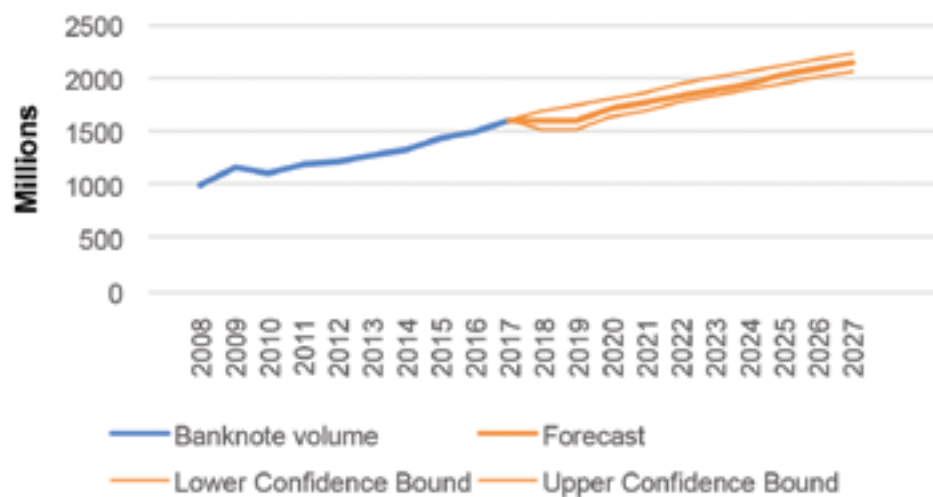
Nigeria's strong growth in recent years, coupled with the previous dips, gives it the highest range between the upper and lower confidence forecasts. While strong growth is expected, the level that it takes will depend on the Central Bank's strategy going forward.

South Africa shows a strong growth trend. According to the Central Bank, over the next five years it is expected that there will still be positive growth in the demand for cash year-on-year.

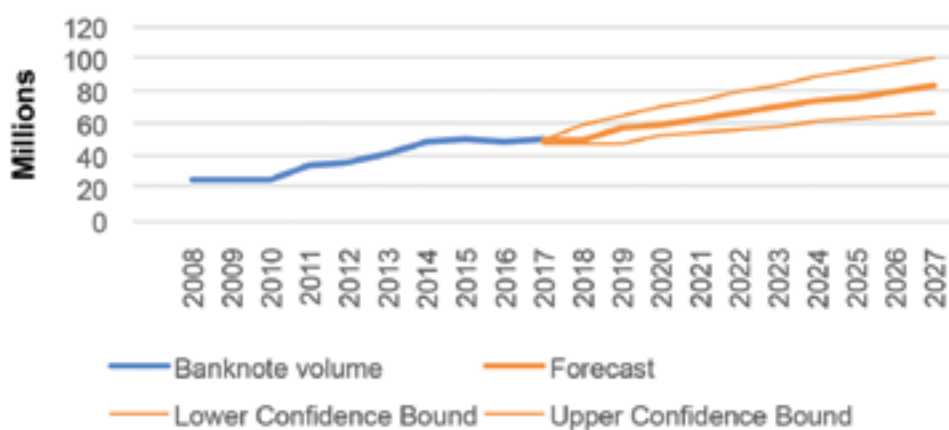
Angola



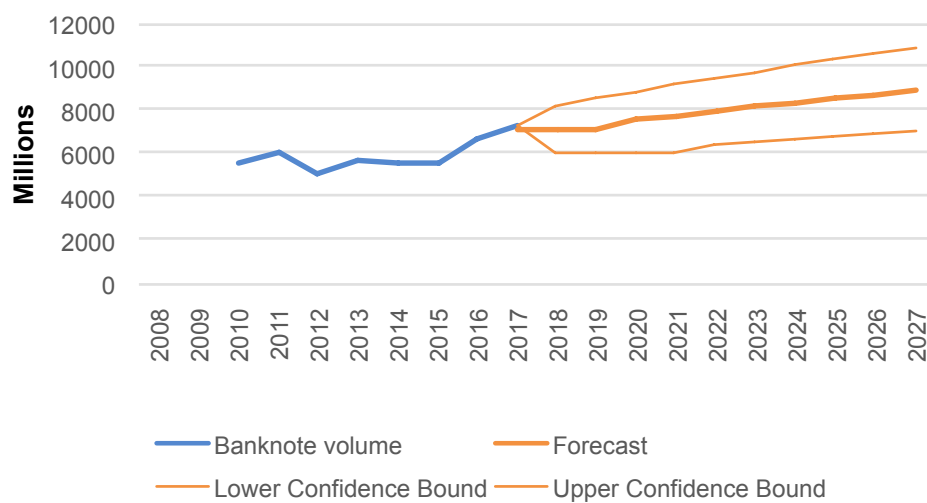
Morocco



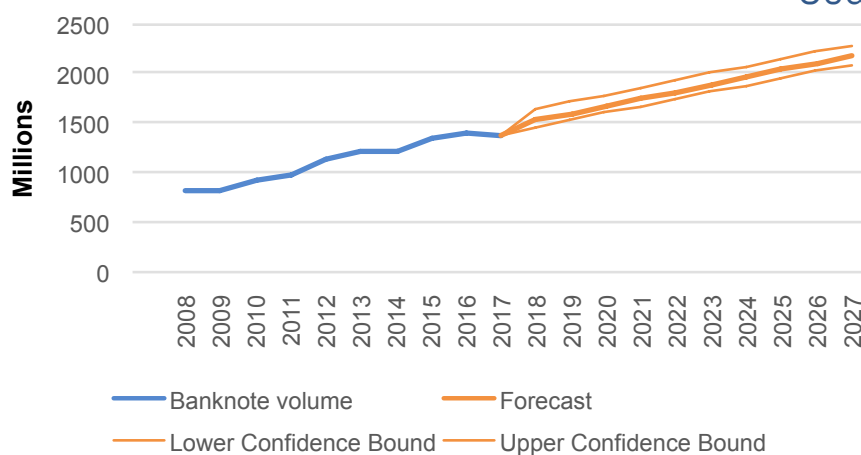
Namibia



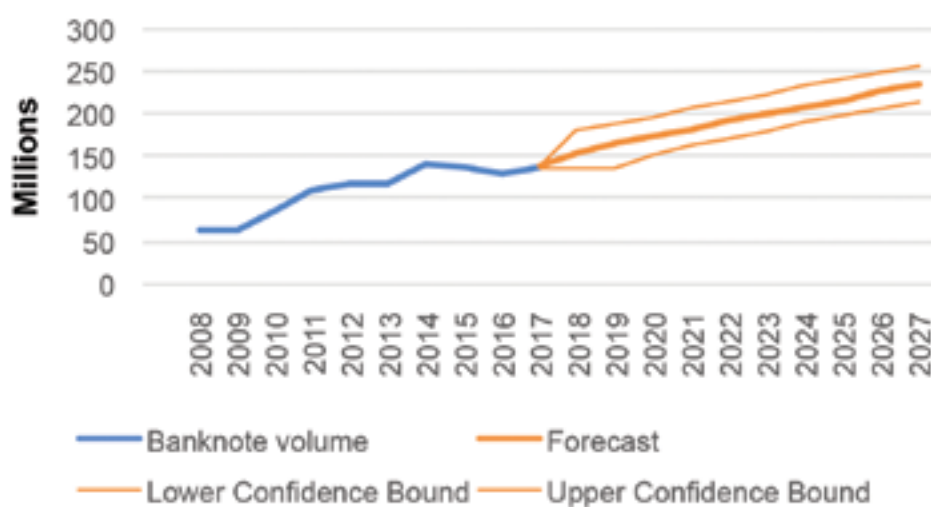
Nigeria



South Africa



Zambia





4

BANKNOTES

4.1 BANKNOTE SOURCING

Of the countries covered in this report, Morocco, Nigeria and South Africa print their own banknotes through a division of their Central Banks. Angola, Namibia and Zambia, on the other hand, use a variety of external printers.

Angola sources its banknotes from an external manufacturer of banknotes and other secure products. Banknotes are sourced through a direct tender process or direct indication. While the current sourcing process was via direct indication, in the future the process will only be done by tender.

In Namibia, banknotes are sourced from pre-approved suppliers. The sourcing is handled through a closed tendering process and this is not likely to change in the near future.

Nigerian banknotes are currently sourced from the local, national printer, Nigerian Security Printing and Minting Company (NSPM) Plc. The banknotes are acquired through a process of direct procurement in line with the Public Procurement Act (PPA). This will not change in the near future. In Morocco, banknotes and coins are sourced from Dar Assikkah (DAS) – the printing works and mint division of Bank Al Maghrib, the Moroccan Central Bank.

To source banknotes, forecasts of yearly demand for each denomination are prepared by the Currency Management Department (CMD) and discussed and validated with DAS. A production and delivery plan is then set by DAS. Budgets and purchasing requirements are also defined by DAS. Adjustments of inventories are set by both DAS and CMD.

South African banknotes are predominately locally printed by the South African Banknote Company (SABN), a subsidiary of the South African Reserve Bank. The banknote sourcing processes consists of annual orders that are placed with the SABN and this process will not change in the foreseeable future.

In Zambia, banknotes are sourced from a variety of external printers and minters. To source banknotes, The Central Bank of Zambia has a 3-year procurement cycle with the aim of procuring banknotes of acceptable quality and at reasonable cost. Printers and minters are selected via a selective international tender process targeted at attracting reputable firms with, among other factors, over 15 years' experience.

Given the nature of the ever-changing environment in which the Central Bank operates, process changes may be made. However, at the moment there are no plans or discussions for changes around this process.

4.2 SECURITY AND SUBSTRATES

All of the Central Banks covered in this report use a variety of security features on their banknotes.

In Angola, in the future there will be changes in the banknote substrates to improve durability. There are no other plans to change security features or note production materials.

The Central Bank of Namibia currently uses a variety of security features on its banknotes. Security features found on the different denominations are standard. When a new family of banknotes was issued in 2012, the security features of all denominations were upgraded to include the most modern technologies such as a security coating, optical variation inks, colour shifting window security thread. The only major differences on the older banknote series are that the N\$100 has a silver foil patch and the N\$200 banknote a gold foil patch, while the lower denominations have none. There are no changes planned for the current banknote substrates or security features.

In Nigeria, the Central Bank currently uses public security features and teller features to ensure the security of notes. The naira notes are protected by a number of security features to enable the recognition of genuine notes. The distinguishing features, which can immediately be recognised by touch and visibility, are raised print, the security thread and the watermark. Other areas such as the portrait, lettering and the denominational numerals on the front and the back are embossed. The raised print provides the facility, while the security thread, which ordinarily looks broken but is not when held against the light, has “CBN” in small lettering printed on both sides of the notes.

The naira notes are also protected against photocopying. There are features that are visible under ultraviolet light, for example, the serial number on each note is black, but turns green under ultraviolet light.

The Central Bank does currently foresee changes in banknote substrates. While the Central Bank’s operations are largely cost effective, banknote substrates that offer increased durability and lower cost would be an incentive to replace existing substrates.

While there are also no plans to change the existing security features, the Central Bank of Nigeria constantly reviews the performance of the security features for vulnerability to counterfeiting to enable it to respond appropriately.

In Morocco, current public security features include a one side intaglio, a watermark, see-through window, and microtexts on all notes. On the 20DH and 50DH notes there is also a colourshift window thread and on the 100DH there is a window thread and optical effect inks, while the 200DH notes feature a motion window thread and optical effect inks. Machine-readable security features are also featured on all notes and include UV inks and magnetic inks.

There are no planned changes in banknote substrates, security features, or note production materials in Morocco for the foreseeable future. If there are any changes, they will be for low denominations, particularly the 20DH note, due to its low resistance in circulation and low return frequency. While there are no concrete plans, the Central Bank may conduct a trial with a commemorative bank note.



Security features currently in use by the South African Reserve Bank include public security features such as substrate, print features, security thread, watermark, micro-print, see-through register, numbering, anti-copy features, colour, raised print, optically variable ink, and optically variable magnetic ink. There are also second level machine-readable security features, including security thread, covert features, OVMI, magnetics, fluorescence, UV and IR.

The SARB has introduced a hybrid substrate on the R10 and R20 Commemorative banknotes and has also introduced the latest optical effect inks on all denominations. While the SARB does not have any plans to make any changes currently, it is constantly scanning the market for suitable substrates and security features that it may incorporate in the future.

In Zambia, security features currently in use include peak pixel where a fish eagle's head is printed in raised ink, a watermark of the fish eagle's head is visible when the banknote is held against the light, and a hologram consisting of a shiny metallic strip with colour-shifting properties showing birds in flight, a coat of arms and denominational value when tilted. Machine-readable security features include micro-lettering, security thread and machine-readable inks.

The Bank of Zambia is in the process of reviewing the entire Currency Family. It is during this review that the Bank will consider changes to the design and composition of the family of banknotes and coins. These security features will be enhanced or changed in line with emerging trends. The Bank may also consider substrate changes during the currency restructuring process.

4.3 COMMUNICATION AND PUBLIC AWARENESS

All of the Central Banks covered in this report have a communication policy designed to educate the public on new banknotes and their security features, as well as good cash-handling practices. These campaigns generally include outreach such as press conferences, print, radio and TV media, leaflets, posters, Central Bank websites and social media.

The Central Banks also ensure that third parties and other stakeholders such as commercial banks, cash management companies, cash handlers and equipment suppliers are aware of any new features. These groups are educated and trained on banknote features and kept abreast of sorting standards.

In South Africa, with the launch of the new commemorative banknotes, the SARB also released a mobile app. This augmented reality app shares not only the design inspirations behind each of the banknotes, but also the technical and security features of the notes.



5 CASH CYCLE

5.1 OUTSOURCING OF PROCESSING

There is a trend towards the increased outsourcing of cash processing across all the countries covered in this report.

Angola

The Central Bank of Angola is currently reducing processing volumes. In addition to the Central Bank, banknotes are processed at commercial bank branches and at the point of sale. As the Central Bank reduces processing volumes, there is increasing participation of commercial banks in processing.

The Central Bank supervises and monitors external processing by defining the characteristics of processing machines and through on-site supervision actions. There will not, however, be significant changes in the organisation of the cash cycle.

Morocco

Overall, Central Bank processing volumes are declining in Morocco. In 2007, the Central Bank processed 771 million notes compared to 473 million notes in 2017.

Over time, the cash management companies are becoming more involved and perform the largest share of note processing. Outside of the Central Bank, 75% of all banknotes are processed at commercial cash centres. Some banknotes are also processed manually at bank branches.

Going forward, the Central Bank will mainly process unfit notes received from cash management companies and handle shredding. The Central Bank monitors and supports external processing through controls on site at commercial bank branches and at cash management companies. Equipment testing is also a priority for suppliers of machines and sorting-machine calibration.

Looking forward, there will be increased involvement of commercial cash centres in the processing and recycling of cash and there will be a reduction of the Central Bank's branches' role in cash distribution and processing.

The Central Bank will instead be more active as a wholesale provider of cash (mainly for new notes and coins). The Central Bank cash department will also be allowed to receive cash inflows directly from cash management companies. There are also plans for the installation of regional cash centres.

Over the next ten years, the cash cycle in Morocco will become more regulated as an update of the current regulation is underway. In the future, the Central Bank will be less involved in quality processing and will concentrate more on processing before shredding. The idea of implementing balance sheet relief mechanisms could be considered in the future to reduce the volumes of inflows and transportation.

The cash cycle will also be more decentralised. The main goal is that note processing is done exclusively by CMCs. This will cause significant changes to the organisation of the cash cycle.

A project is under way to study the feasibility of reducing the Central Bank branches involved in currency management and processing, and the installation of regional cash centres, the creation of two cash depots, and the intervention of the central cash department in receiving cash directly from CMCs.

Namibia

In Namibia, banknotes are processed at the Central Bank and at commercial cash centres. The Bank has not outsourced its sorting mandate, but only allows the commercial banks to sort banknotes before redepositing them with the Central Bank. The Central Bank has a balanced model in terms of currency processing and does not foresee a change in the near future.

Processing is monitored and supervised by way of regular cash centre visits to ensure standards are maintained. The cash cycle in Namibia is very centralised at the moment and is expected to remain so unless major developments in the cash industry warrant otherwise. It is likely, however, that the Central Bank will become less involved in banknote processing in the future, with currency production and issuance being the sole responsibility of the Bank.

Nigeria

Processing that takes place outside of the Central Bank includes that done by commercial banks, which sort notes for their ATMs. The CBN has only one registered sorting company that has been licensed to process banknotes. This mix is changing over time as the CBN is gradually relinquishing the sorting functions to third party service providers and encouraging them to take over the job.

The Bank monitors and supervises external processing through a service level agreement. Machines are configured according to predetermined standards as advised. There is also regular monitoring to ensure compliance. Where there are deviations, service providers are sanctioned.

In ten years' time the CBN is aiming to participate only in the wholesale functions of currency management. It foresees an evolution in the Central Bank's cash distribution model where the Bank will be less involved in banknote processing, and the cash cycle will be more decentralised. This will be enabled by increased usage of cash recyclers and improved and cost-reducing banknote processing systems.

It is also likely that there will be significant changes in the organisation of the cash cycle and that the cash cycle will be more regulated in the next ten years.

South Africa

In South Africa, Central Bank processing volumes are decreasing. Outside of the Central Bank, banknotes are processed by commercial banks at the banks' branches and ATMs, at commercial cash centres, and in a limited capacity at the point of sale. The progressive growth in ATM recyclers means that over time this mix is changing with more processing happening closer to source. The share of cash back is limited compared to ATMs and branch/float pay-outs. The Central Bank monitors and supervises external processing through quality inspection for technical and soiling standards.

In the current partially delegated model, the SARB processes unfit/soiled cash for destruction. This will remain a core function of the Central Bank. The cash cycle has evolved over the past few years, with cash recycling machines making it easier to decentralise processing and it is likely that the trend will continue in this direction.

There are, however, instances where the specialisation of processing, for example in coin processing, is creating more centralised super-centres and less processing at branches and cash hubs, as the super-centres can leverage the economies of scale.

The Reserve Bank does not predict any major changes to the key steps of the cash cycle in the future as there will still be a significant role for cash. Evolution of the Central Bank's cash distribution model will potentially be even more delegated, as processing moves closer to the front end of the cash value chain.

Zambia

In Zambia, the Central Bank processing volumes have decreased as commercial banks are required to sort cash into fit and unfit notes before depositing. The Central Bank levies a charge for unsorted cash to encourage sorting before depositing. Emerging cash processing companies have also contributed to the decrease in volumes.

Outside of the Central Bank, banknotes are processed at commercial banks and in commercial bank centres. This mix is changing over time as commercial banks now lean more towards outsourcing cash management services, resulting in more cash being sorted at commercial cash sorting centres.

The Central Bank monitors and supervises external processing by conducting site inspections and checks to commercial banks and cash management services; it also conducts regular monitoring and training and is constantly observing the quality of banknotes sent to the Central Bank and identifying training needs.

The Central Bank does see an evolution in its distribution model. In the future, it is expected that the cash cycle will be very efficient, with the Central Bank only conducting wholesale activities. Zambia is aspiring to a new level where the Central Bank will only keep two roles: the issuing of new banknotes and destroying unfit banknotes.

The cash cycle will be more regulated in ten years' time, with the aim to develop standards and give the market more autonomy to handle issued cash.

The Central Bank will be less involved in banknote processing as it's currently hiving off activities to cash-cycle participants. In the future, the cash cycle is expected to be more decentralised.

The Bank expects to see significant changes in the cash cycle, as it's establishing direct links with the end users to understand their needs as opposed to providing the commercial banks with what is only convenient for their operations.



5.2 CLEAN NOTE POLICY

Clean Note policies are common across the countries covered in this report. In Morocco, Bank Al Maghrib has a clean note policy as part of the recycling scheme regulation that was introduced in 2010. The controls are operated by the Central Bank branches and enacted at commercial bank branches and at cash management companies' premises to ensure that notes are processed for authentication and for quality before they are reintroduced into circulation. Only fit or new notes can be remitted by banks to their customers either at the counter or through ATMs.

Sorting and authentication machines must also pass a test by the Central Bank before being offered for sale by suppliers. Calibration and testing of authentication and sorting machines at CMCs are done in conjunction with the Central Bank. The Central Bank of Nigeria's clean note policy was formulated in conjunction with relevant stakeholders. It covers the recirculation of notes by commercial banks to ensure they conform to predetermined standards. Both the CBN and service providers sort banknotes into clean and dirty notes in line with predetermined standards.

It operates through a process where notes are processed into fit and unfit. Fit notes are re-circulated while unfit notes are returned to the CBN for authentication and destruction.

Following concerns of a rising incidence of mutilated currencies in the economy, the CBN is also working to enhance the circulation of new naira notes to ensure that the problem of the high incidence of unfit notes in circulation is addressed.

The high volumes of unfit notes in circulation are generally due to the commercial banks avoiding the costs associated with processing and sorting the notes. To counteract this, the CBN temporarily reduced the fee it charges commercial banks for sorting fit and unfit notes from N12 000 per box to just N1 000 per box, for the first three months of 2018.⁴⁰

40. <https://www.thisdaylive.com/index.php/2018/04/25/cbn-seeks-end-to-naira-mutilation/>

The South African Reserve Bank currently has technical defect standards and a soiling standard. This is enforced through a quality inspection model. The quality of banknotes in circulation is managed in terms of Section 14 of the Bank's Act Number 90 of 1989 and is primarily based on two guidelines. Firstly, the used banknotes issued by the branches of the Bank must be capable of being mechanically handled by cash receiving and/or dispensing machines. Secondly, the quality of used banknotes should be acceptable to members of the public when paid to them by the tellers of commercial banks.

In order to manage the quality of banknotes put into circulation, all banknotes deposited at the branches of the Bank are processed on electronic banknote processing machines. In Namibia, there is a clean note policy that is enforced through scheduled visits to the various commercial bank cash centres.

The Bank of Zambia has a clean note policy that promotes the circulation of acceptably good quality banknotes whose appearance and condition uphold the integrity of the Zambian currency and the Central Bank.

The Bank has issued sorting standards that have been shared with commercial banks, major cash handlers and cash management services. In addition, the Bank has conducted training to the participants in order to ensure uniformity in the cash-sorting process. Further, the Bank has held public awareness campaigns aimed at educating the public on good cash-handling practices.

On-going monitoring and training are conducted to ensure that these standards are upheld by all parties.

5.3 INNOVATION AND CHALLENGES IN THE CASH CYCLE

There are a number of trends that could impact the cash cycle in the next few years. The introduction of new substrates or security features is one of the major factors that disrupts the cash cycle as every step of the process has to be recalibrated to accept and verify the new notes. There will also be a period of education, both for people working within the cash cycle and for the general public, to familiarise them with any new features. This can be particularly important in combating counterfeiting by educating people so that they can identify authentic from counterfeit notes.

One of the key challenges of the cash cycle is the liquidity management by the commercial banks. Commercial banks will sometimes prefer to deposit fit notes to the Central Bank for value and put less-fit notes back into circulation. This affects the exchange process and defeats the purpose of the Central Bank as a wholesaler and issuer of fit notes and destroyer of unfit notes.

The general maintenance of sorting standards can also be an issue, particularly if there is high staff turnover at commercial banks and cash management companies. The Central Banks must therefore conduct continuous training and outreach to avoid this.

There will definitely be a trend away from manual processing towards automated systems and machines. This will particularly be evident in conjunction with improvements in automation and processing technology. Technologies such as cash recycling ATMs will also have an impact by reducing processing volumes. This in turn will lead to a lot more sorting at source as Central Banks continue to outsource more of the processing and commercial banks take on more of it.

Another factor that can impact the cash cycle is government legislation on cash usage. As digital payments become more popular, many governments are looking at regulating and restricting the use of cash through withdrawal limits or cash-payment restrictions. For example, in Morocco 20000DH is the maximum amount that can be paid with cash in the formal economy. This is generally done to reduce the number of transactions taking place in the grey economy and to combat money laundering, tax evasion and the financing of terrorism.



6

CONCLUSION

6. CONCLUSION

Overall, cash is generally showing growth across the countries covered by this report. Only in Angola is it expected to decrease in volume, and even then, it is expected to continue to increase in value.

The countries covered in this report can be grouped in different ways: Namibia and South Africa have similar levels of banking penetration and GDP per capita. They also have a similar number of banknotes per person, but because of their different population sizes, South Africa's overall economy and the number of notes in circulation completely dwarf Namibia's.

Nigeria and Zambia are also similar in this way. Both have a very low GDP per capita and similar cash-in-circulation to GDP ratios, but the volume of banknotes in Nigeria is vastly higher, in part due to its much larger population, but also due to its higher number of banknotes per person.

Angola and Morocco have slightly different profiles. They also have similar GDPs per capita that are lower than those of Namibia and South Africa, but higher than Nigeria and Zambia. The ratio of cash in circulation to GDP in Morocco and Angola is, however, much higher than in any of the other countries.

Across the countries covered in this report there is a trend towards the outsourcing of processing in the cash cycle as Central Banks work to streamline the cash cycle and improve the quality of cash in circulation.

Africa as a whole is still very dependent on cash, and with high unbanked populations and large informal economies there is a steady demand for cash across the continent.

While the introduction of digital and mobile payments may disrupt cash in some regions, it is very unlikely this will replace cash, and even in South Africa and Namibia where there is higher financial inclusion and more mature banking infrastructure, cash is still a highly utilised means of transaction.

In Nigeria, Zambia and Morocco, where there is much lower banking penetration, there is an even stronger reliance on cash. This will only increase as governments work to reduce poverty, increase financial inclusion and grow their economies. While all of these may lead to an increase in digital payments it is likely that it will also lead to a concomitant increase in cash as more people are earning and transacting.

DISCLAIMER

The data and information contained in this report are for information purposes only. While the commentary and interpretation in this report are based on data analysis and market experience, the data and information contained in this document may contain personal views and opinions which are not necessarily the views and opinions of the authors or sponsors. Furthermore, while reasonable steps are taken to ensure the accuracy and integrity of the data and information provided, the authors and sponsors accept no liability or responsibility whatsoever if such data or information is incorrect or inaccurate, for any reason. The authors and sponsors do not accept liability for any claims, loss or damages of any nature, arising as a result of the reliance on or use of such data or information by anyone.



Calleo Solutions

Andrew Dean

11 Remington Road,
Wynberg 7800
Cape Town South Africa

T +2721 712 6604

W www.calleo.co.za

E andrew.dean@calleo.co.za
