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THE EVOLVING ROLE FOR ACTUARIES IN BANKING

An overview of Banking in Africa - Opportunities & Challenges

Actuarial Society of South Africa Conference

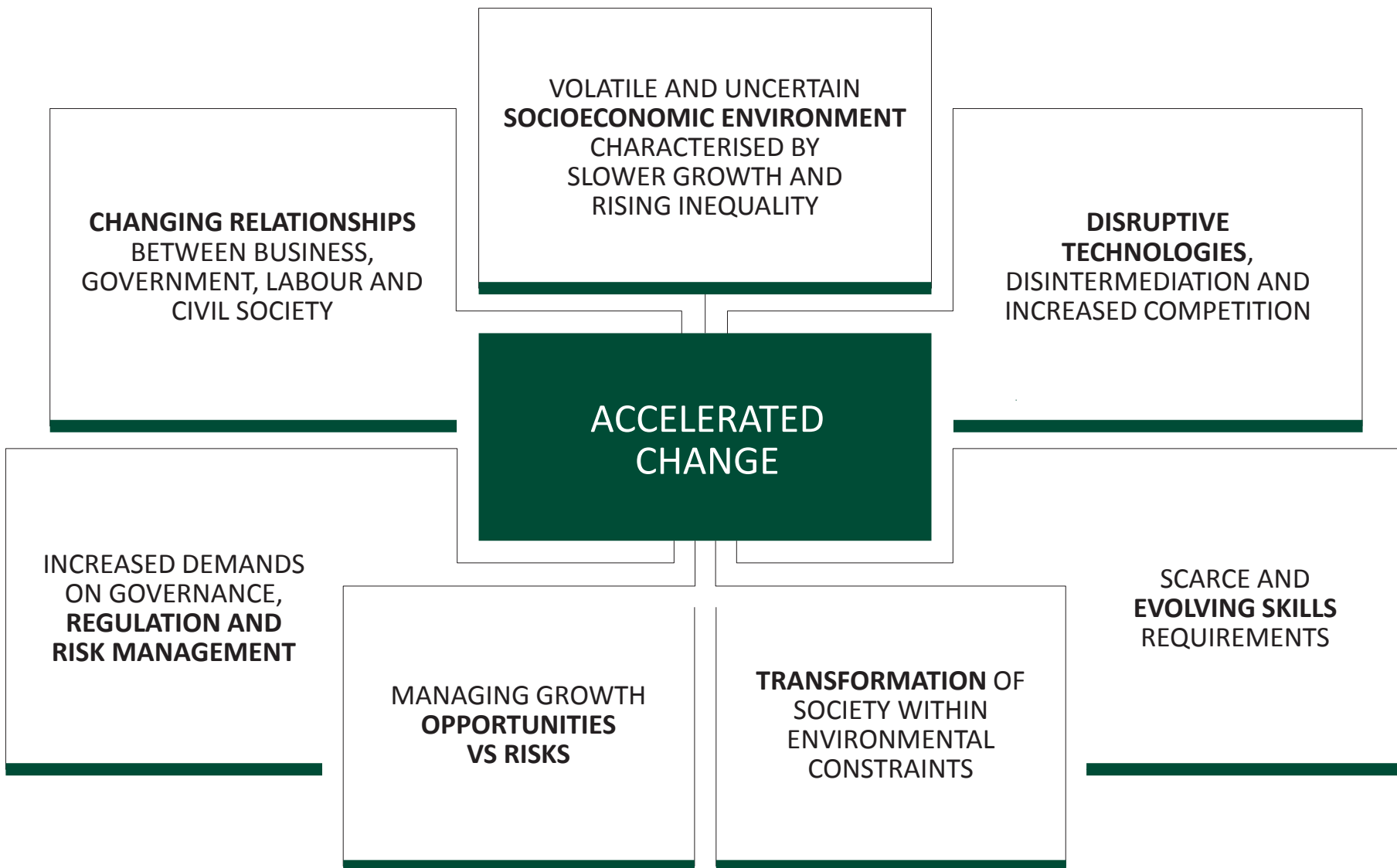
Cape Town
22 November 2016

Grant Kelly
Executive Head: Office of the COO

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- ☐ GLOBAL LANDSCAPE
- ☐ AFRICA AS A MARKET
- ☐ FINANCIAL SERVICES IN AFRICA
- ☐ LEVERAGING OFF THE TECHNOLOGY REVOLUTION
- ☐ NEED FOR BEHAVIOURAL & QUANTITATIVE ANALYSIS
- ☐ PROSPECTS FOR THE FUTURE
- ☐ CONCLUSION

ACCELERATED CHANGE IN A VOLATILE, UNCERTAIN, COMPLEX & AMBIGUOUS (VUCA) WORLD

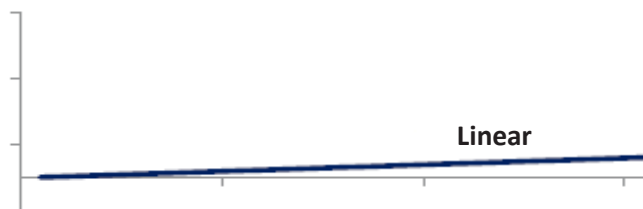


TECHNOLOGICAL INNOVATION IS DRIVING THE SHIFT FROM A CLASSICAL TO AN EVOLUTIONARY SYSTEM

Physical (classical) system

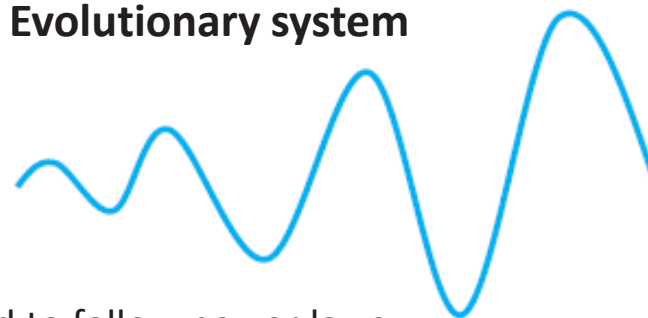


- Trend to mean revert
- Impetus from external shocks
- Oscillations dampened by friction
- “Value”

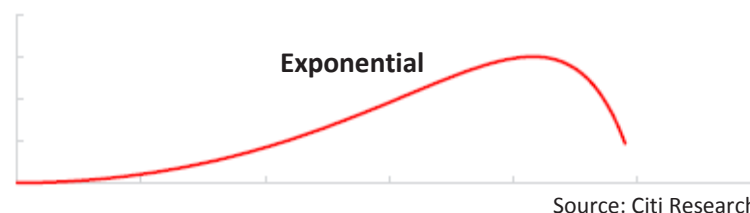


- In a complex, adaptive system:
 - Feedback determines behaviour
 - Interconnections are everything
 - Unintended consequences the norm

Evolutionary system



- Trend to follow power laws
- Impetus from within
- Growth curtailed through famine, pestilence, war
- “Momentum”



- “Extreme” events become more common
- Outcomes become harder to predict
- Anti-establishment sentiment rises

GLOBAL LANDSCAPE

Technology can create and disrupt markets in a manner that is difficult to predict

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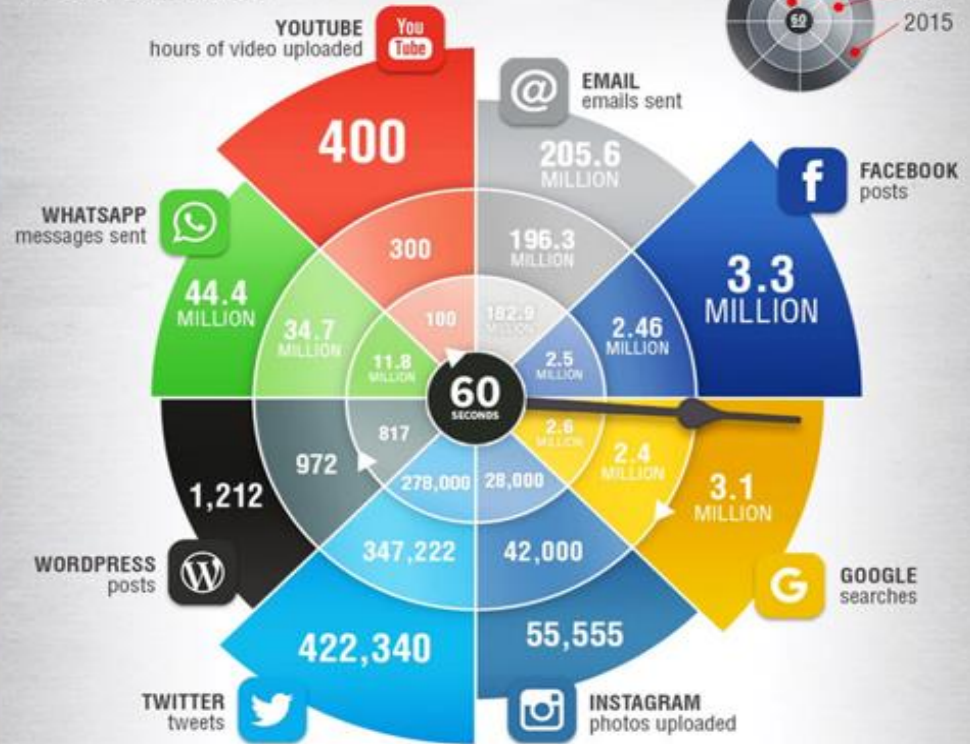
POWER OF TECHNOLOGY IN LEVERAGING BUSINESS MODEL TO CREATE NEW MARKETS, AT GREATER SPEED...

Years to reach 50 million users



89% of the Fortune 500 companies from 1955 are **not** on the list in 2016

What happens on the internet in 60 seconds



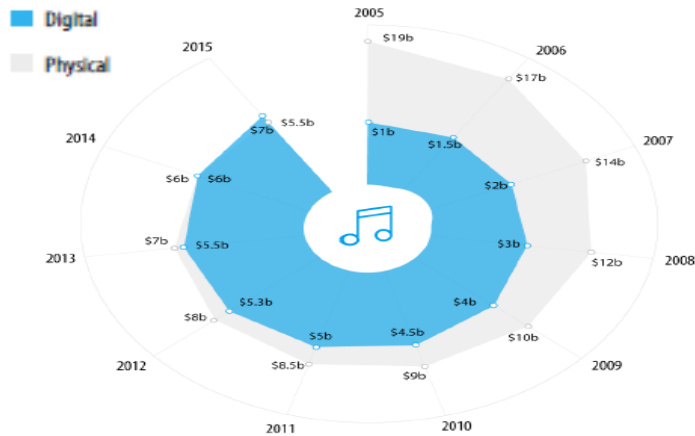
Year-on-year growth statistics are staggering



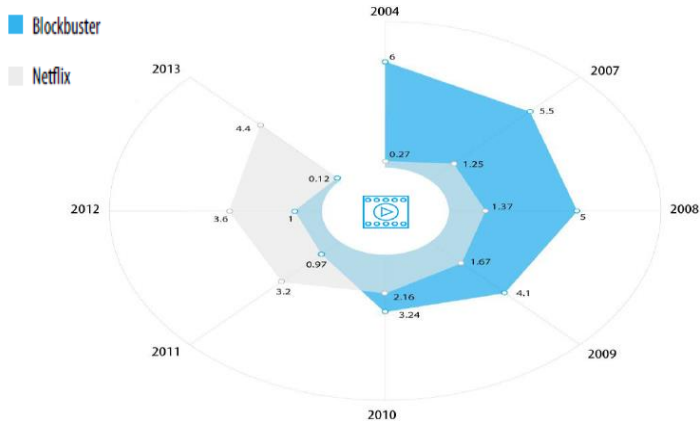
reset the benchmark... 19 days!

... WHILE FUNDAMENTALLY DISRUPTING OTHERS

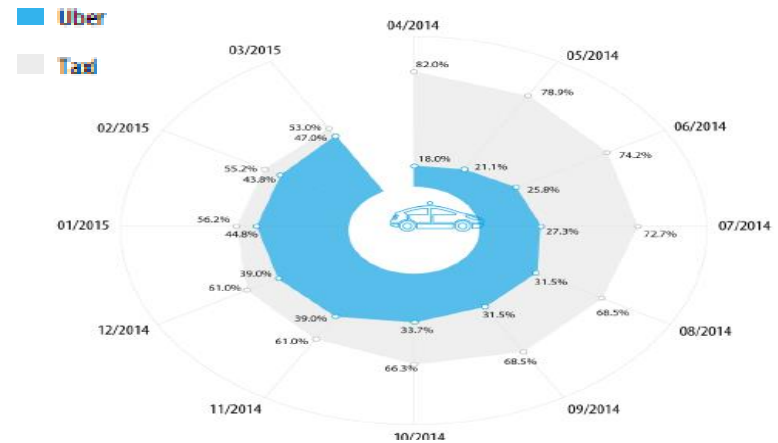
Global music sales (US\$ billions)



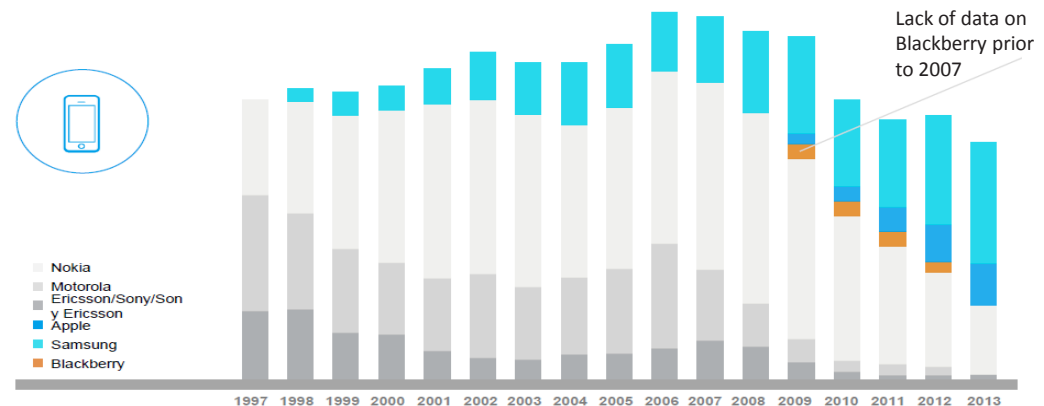
Movie provider revenues (US\$ billions)



US taxi market (Number of rides)



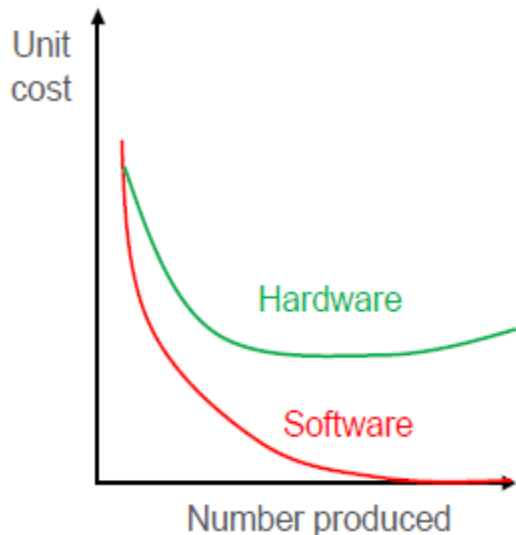
Mobile phone market share (Unit sales)



- Although the inherent demand for goods and services does not always change dramatically, the delivery mechanism to meet market demand can shift extremely rapidly (e.g. taxi industry)

TECHNOLOGY AND DATA IS DRIVING THE ACCELERATED CHANGE

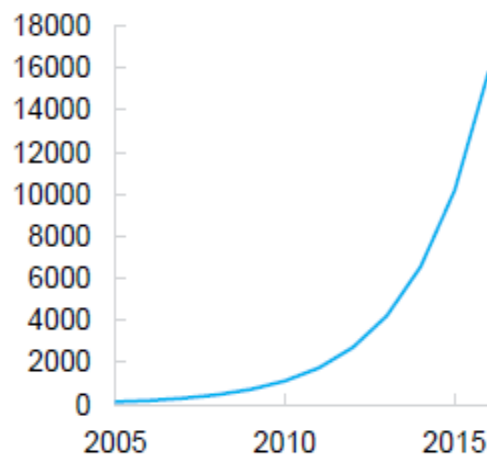
Zero marginal cost
of distribution...



Source: praxtime.com

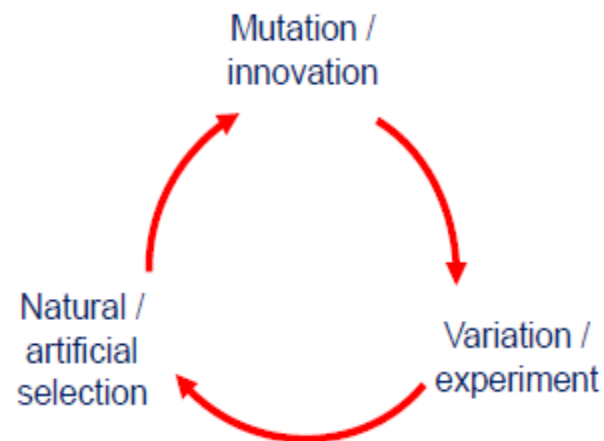
...makes for an exponential
rise in information and
connections...

Global information created, exabytes



Source: Extrapolated from The Economist

...hastening feedback
loops and evolution



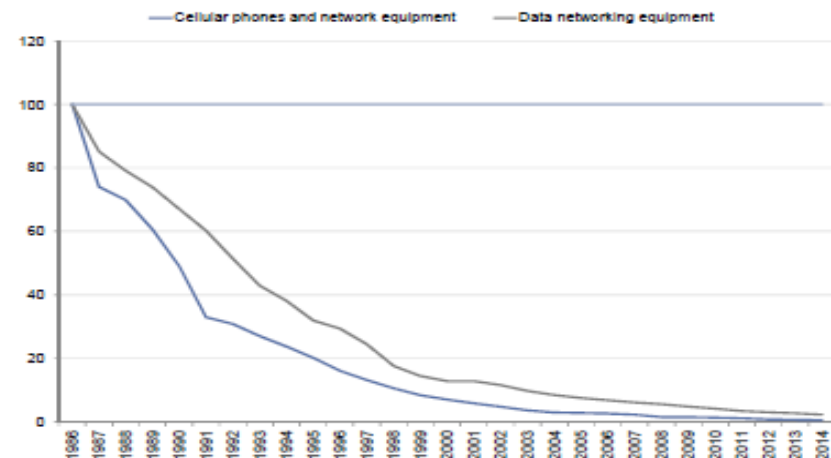
Source: Citi Research

- Cost of hardware and software fall dramatically
 - Processing power and memory capacity doubles roughly every 18 months
 - Non-linear behaviour an increasing factor in our daily lives
-
- Therefore, the **required speed of business response** to market demands **increases** dramatically

THE BUSINESS OF FINANCIAL SERVICES IS SHIFTING TO CREATING VALUE THROUGH DATA AGGREGATION

Everyday low prices

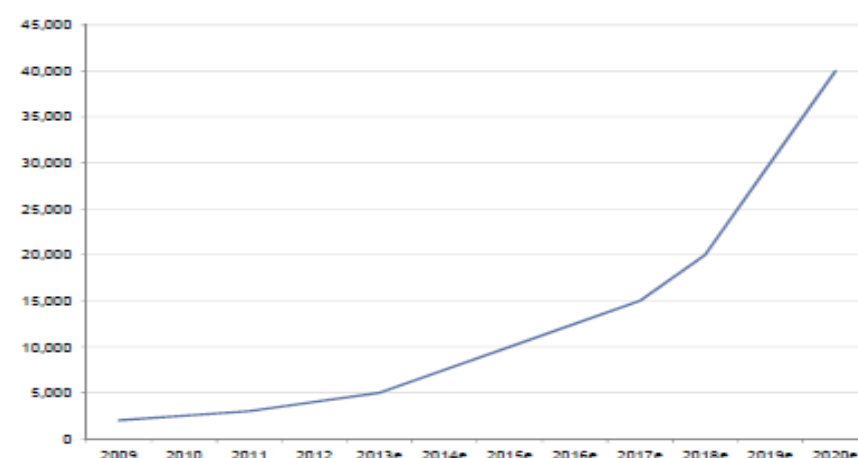
Prices for cellular and data networking equipment



Source: Federal Reserve.

Worldwide data growth projections

Worldwide data, exabytes



Source: IDC "The Digital Universe".

- There are 2 billion people that are currently excluded from the financial services industry globally, according to CSFI (Centre for Study of Financial Innovation)
- The cost of servicing this market through a digital model significantly increases the potential for greater financial inclusion
- However, effective risk management remains the key to success, addressing issues of financial sophistication and regulation
- The fundamental shift in the availability of data is a catalyst for a more inclusive financial services industry, meeting E&Y's "LASIC" principle for digital businesses
 - Low margin, Asset light, Scalable, Innovative, Compliance easy

AFRICA AS A MARKET

The emergence of the fastest growing continent on earth

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A CHANGE OF FORTUNES

2000



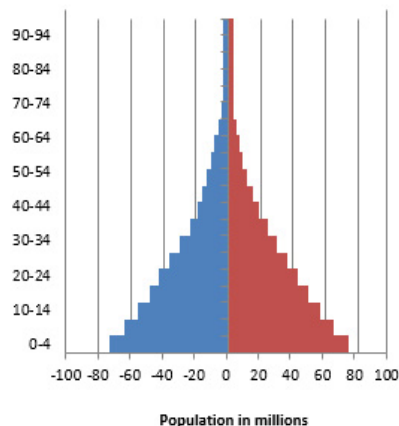
2011



LEVERAGING THE DEMOGRAPHIC DIVIDEND

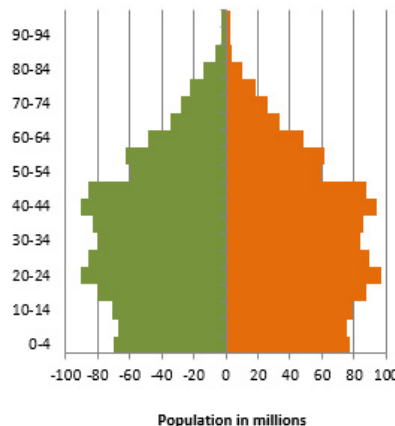
- Total population is currently 1.2 billion, equating to 16% of world's 7.4 billion people
- Demographics – youngest continental demographic profile
 - Median age 19.7 vs worldwide median of 30.4 (2012)
- Fastest growing population in the world
 - Population in 1950 was 229 million (of world population 2.55 billion – less than 10%)
 - By 1990, 630 million (5.28 billion – 12% of world's population)
 - Currently, at 1.2 billion people (16%)
 - By 2060, Africa could account for 2.8 billion of the world's 10 billion people, making up 28% of global population (World Bank)

Sub-Saharan Africa 2012



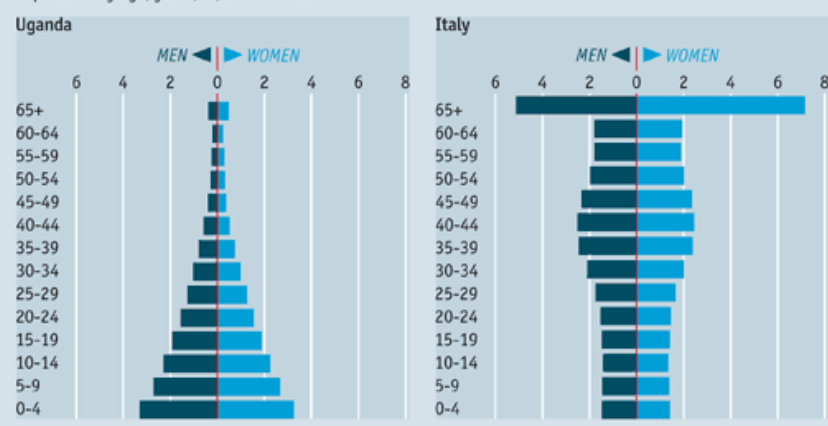
Source: World Bank

East and Southeast Asia 2012



Africa's pyramid, Europe's bulge

Population by age, years, m, 2010 forecast



AFRICA AS A MARKET

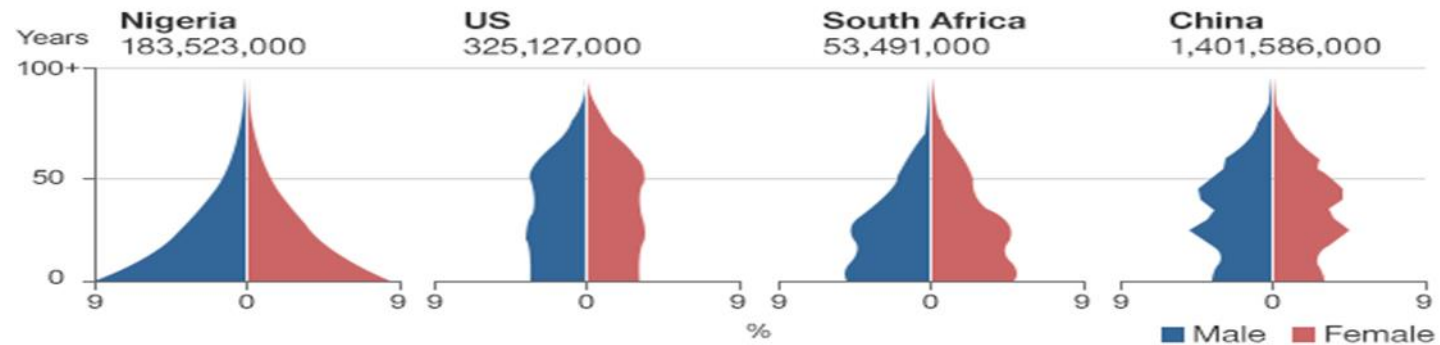
Not facing the challenges of an aging population

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YOUNGEST POPULATION WITH THE BIGGEST POTENTIAL FOR GROWTH

Population projections for 2015



Source: UN, Department of Economic and Social Affairs, Populationpyramid.net

The world's population in all countries will age...

Median population age, 2013–2050



Source: United Nations Population Division, World Population Prospects, 2012 revision.

Population in Europe will decline...

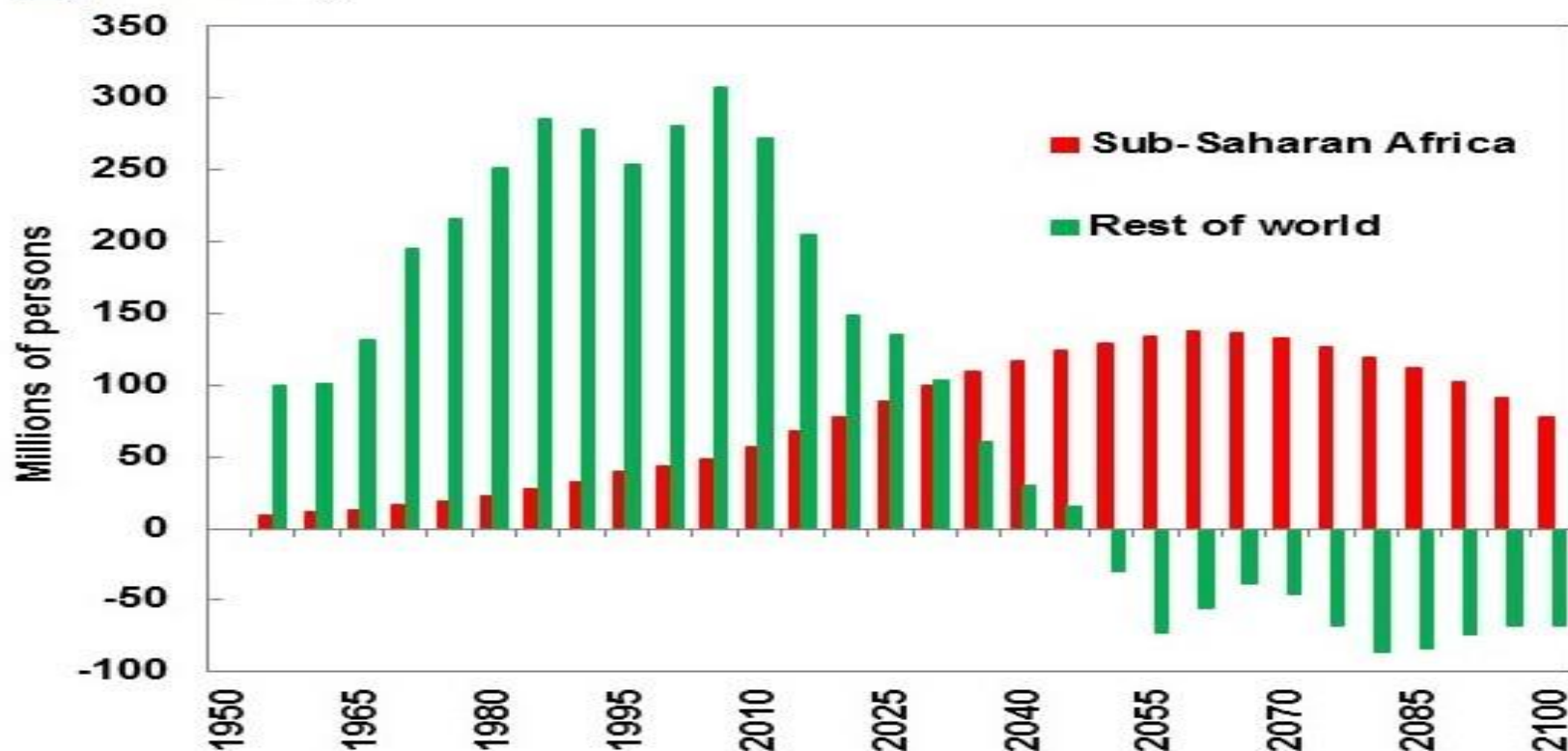
Change in population, 2013–2050



Source: United Nations Population Division, World Population Prospects, 2012 revision.

YOUNGEST POPULATION WITH THE STRONGEST POTENTIAL FOR GROWTH

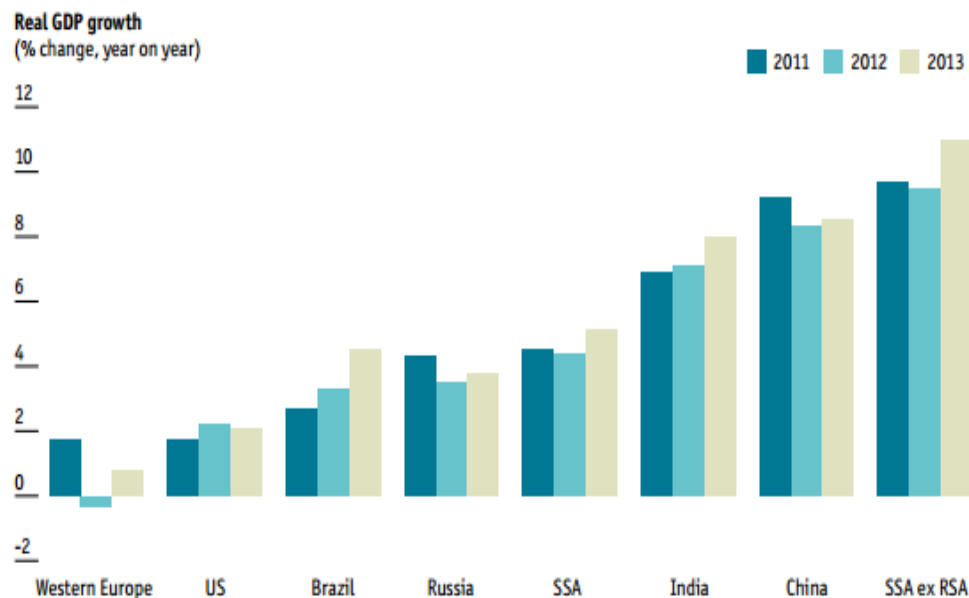
Chart 5
Change in Working Age Population
(ages 15-64)



Source: United Nations, *World Population Prospects*, 2012 Revision.

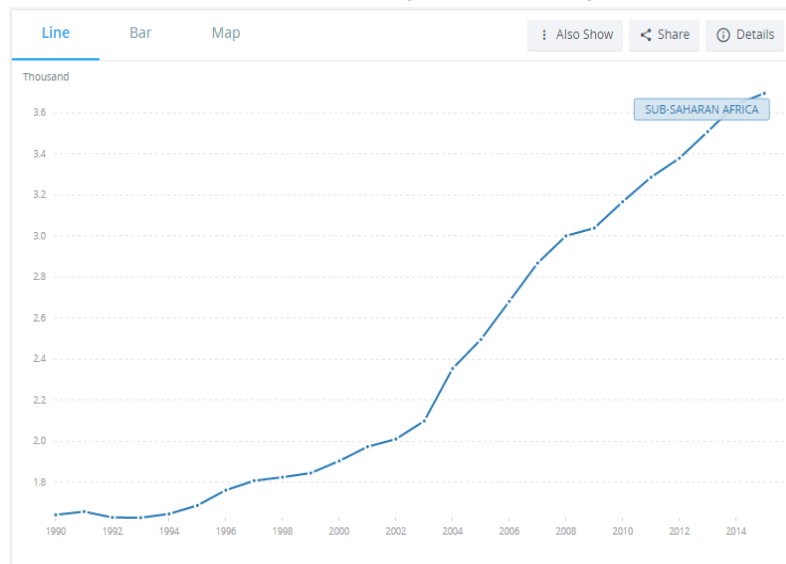
STRONG ECONOMIC GROWTH, ALTHOUGH OFF A LOW BASE

- Africa currently only accounts for 3% of global GDP
 - SSA, excluding RSA, accounts for less than 50% of that (i.e. less than 1.5% of global GDP)
- GDP per capita – one of the fastest growing in the world
 - By 2020 it is forecast that SSA will have over 400 million people with disposable income of over US\$500 per month that are not currently in the formal financial services sector
 - GDP per capita on a PPP basis has risen from US\$1,639 to US\$3,695 between 1990 and 2015
 - GDP per capita (current US\$) has risen from US\$603 to US\$1,571 between 1990 and 2015



Source: The Economist

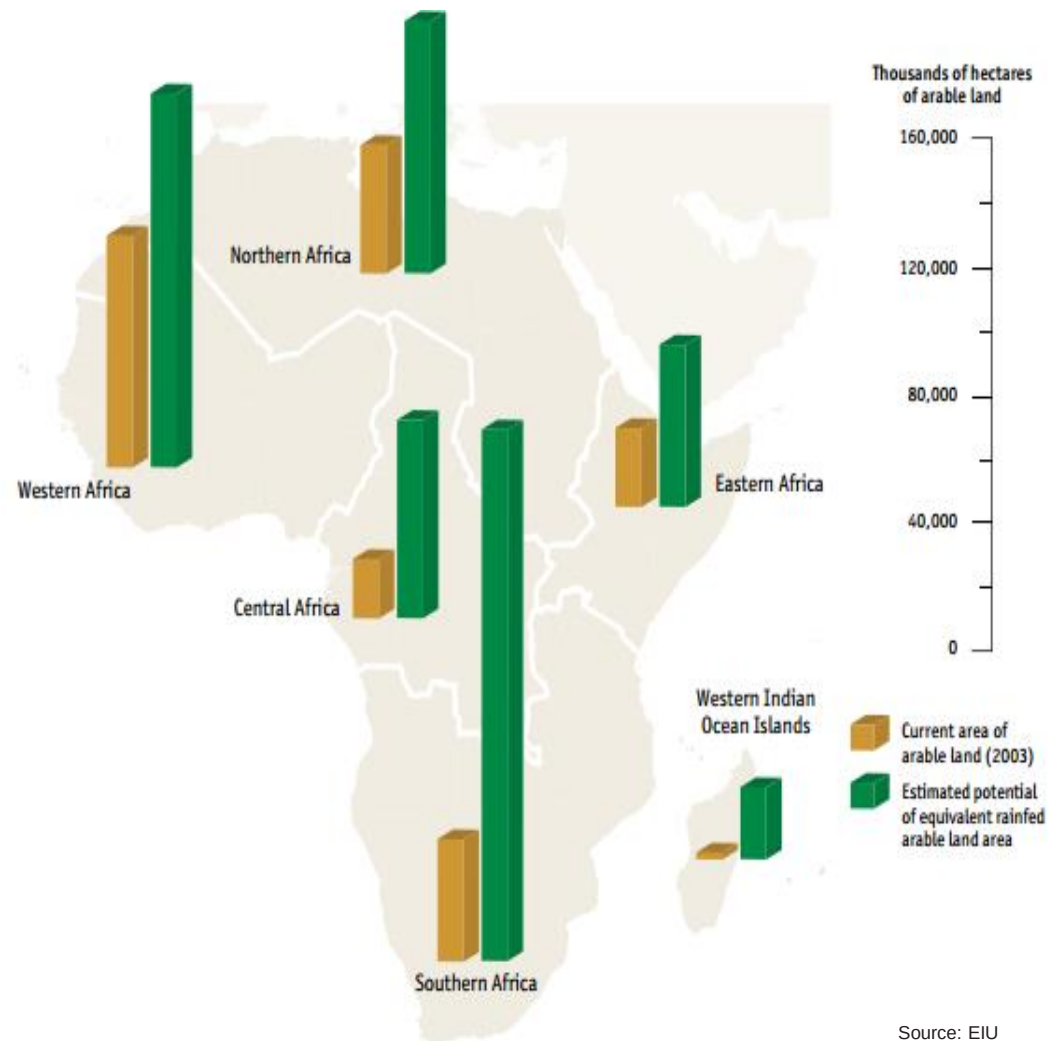
SSA GDP per capita, PPP (current US\$)



Source: World Bank

BIGGEST UNTAPPED SOURCE OF ARABLE LAND, WITH MULTIPLE UNTAPPED SOURCES OF RENEWABLE ENERGY

- Africa's arable land accounts for 40% of arable land globally
 - Yet it accounts for only 10% of cultivated arable land
- There is also a huge need for infrastructure investment, especially power
 - 500 million people have no access to electricity
- Massive opportunity for energy projects, especially renewables
- Renewable energy is forecast to increase to 22% of total power generation by 2030, from 5% today (International Renewable Energy Agency)
- Renewable energy is also more labour intensive (solar is 2x per Kwh than coal)



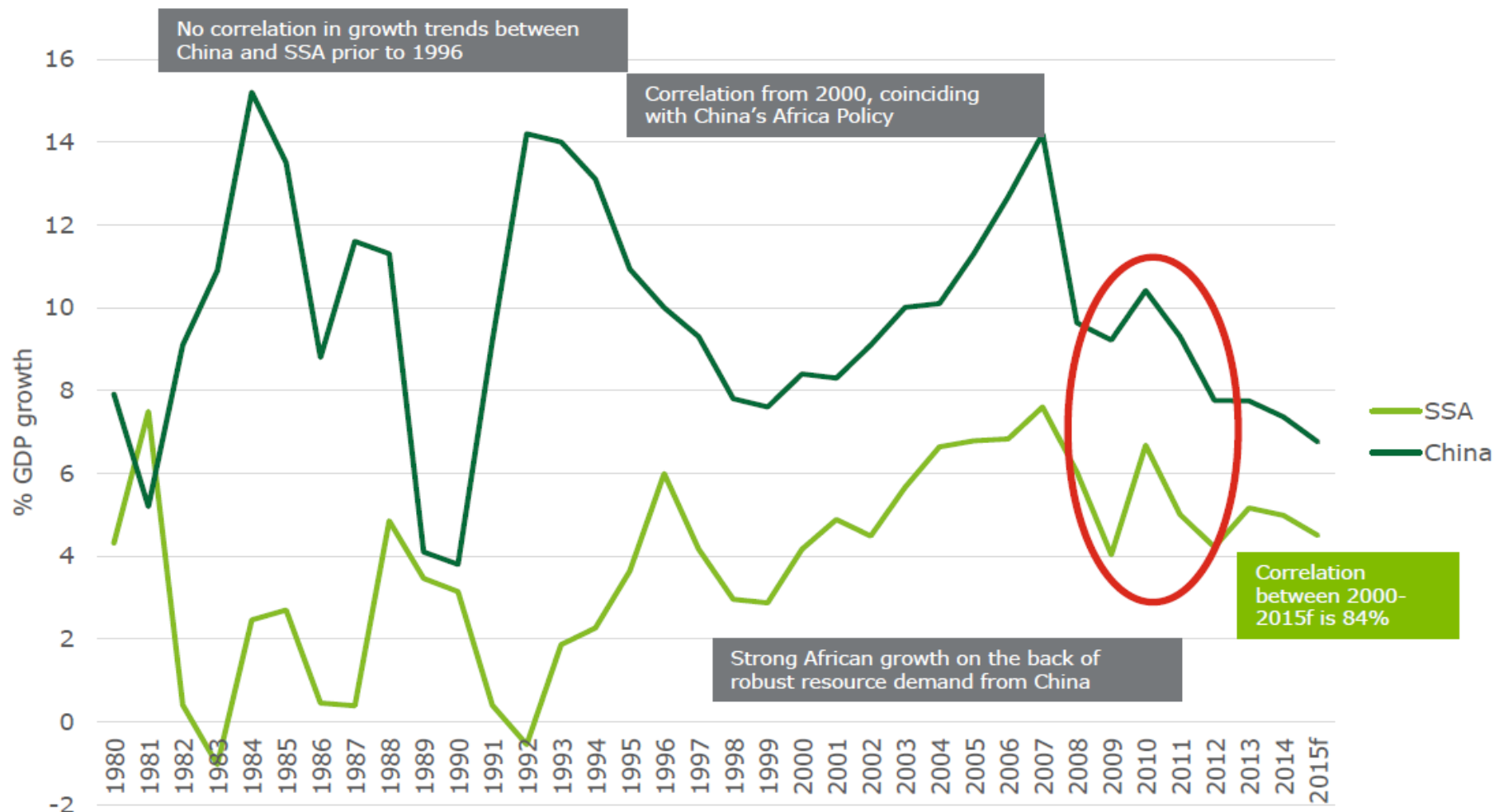
AFRICA AS A MARKET

However, it is not without its risks, both political and economic

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REMAINS TOO DEPENDENT ON COMMODITIES AND HIGHLY CORRELATED TO CHINESE GROWTH



Source: EIU & Deloitte Africa Risk conference

AFRICA AS A MARKET

The cyclicality of many African economies to commodity prices is a key risk

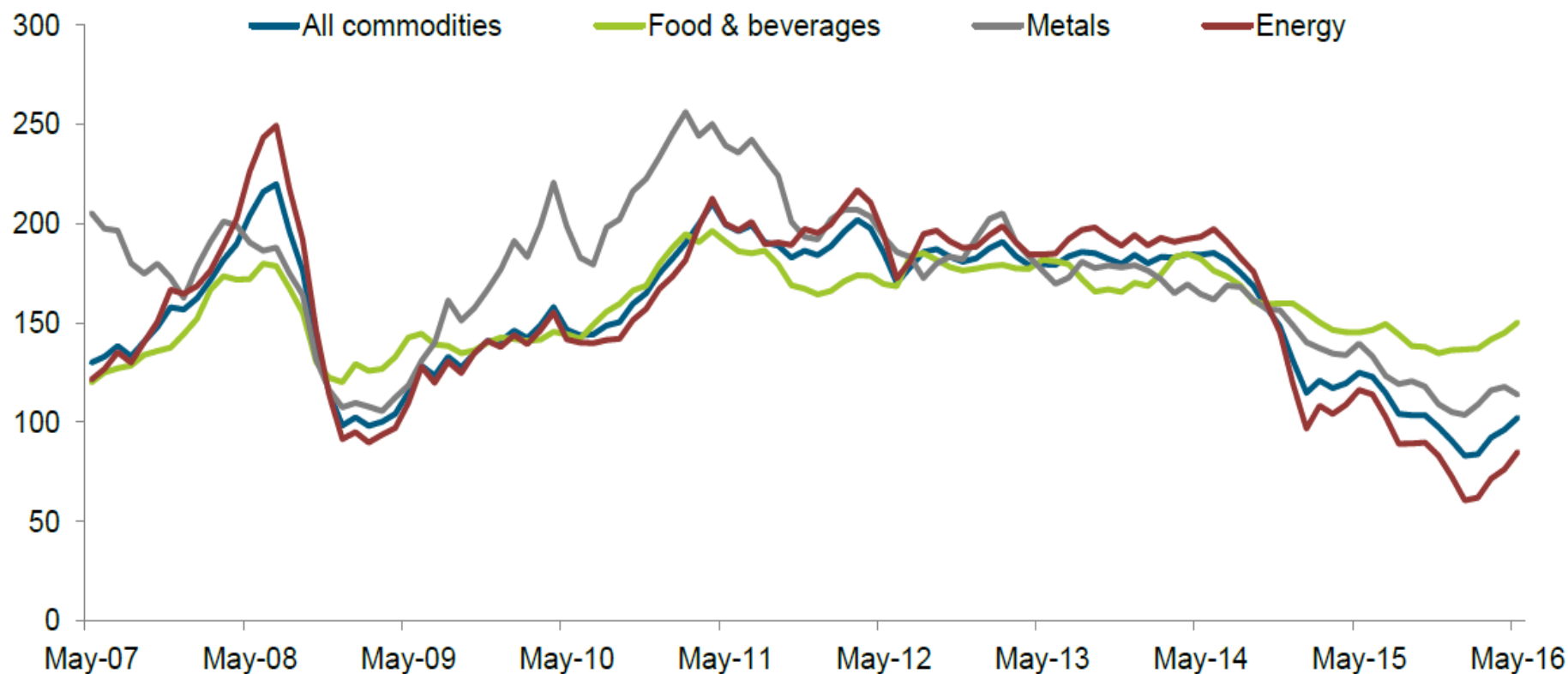
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EFFECTS OF THE SLOWING CHINESE GDP GROWTH AND WEAKER COMMODITY PRICES IS EVIDENT

- The global commodity price boom, driven by China's massive infrastructure investment has slowed
- The weakening of the commodity cycling has been amplified by weak global growth and the slowing in the Chinese economy

Commodity price index, January 2005 = 100



Source: IMF, Ecobank research

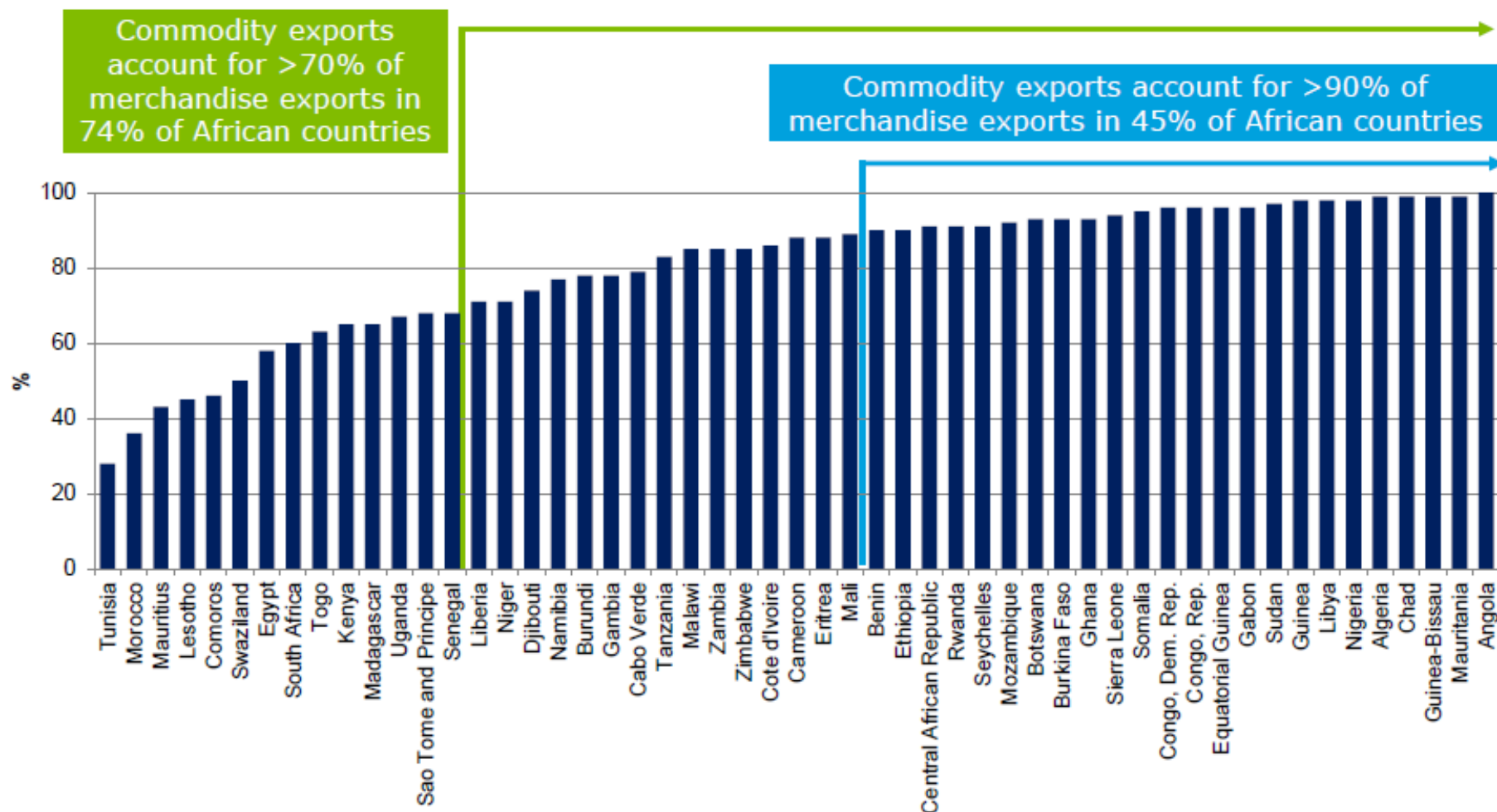
AFRICA AS A MARKET

The lack of diversity in African exports

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COMMODITY RELIANCE EXACERBATES INHERENT CYCLICALITY



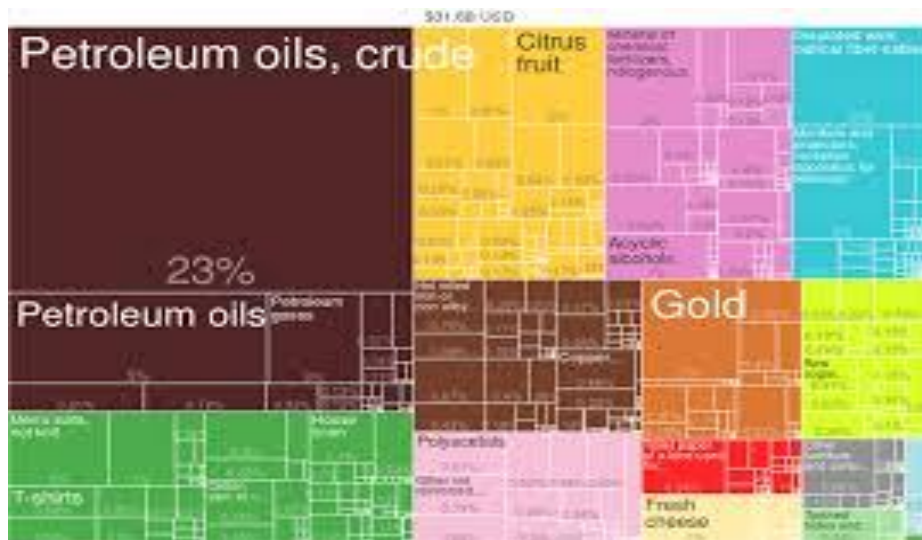
AFRICA AS A MARKET

The lack of diversity in African exports

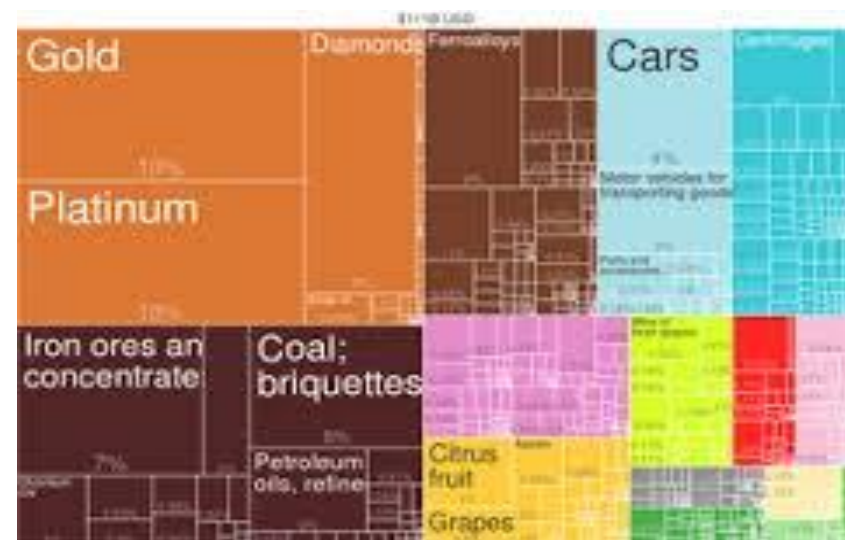
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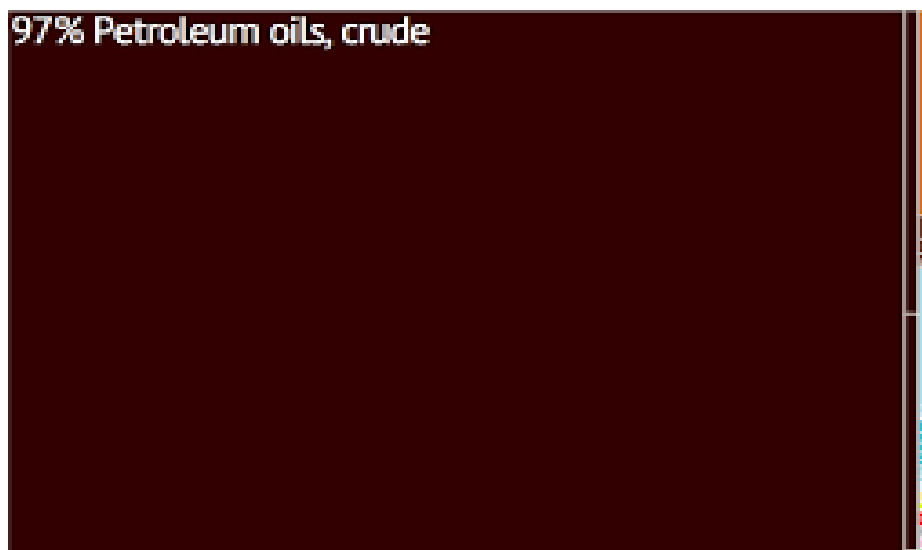
EGYPT



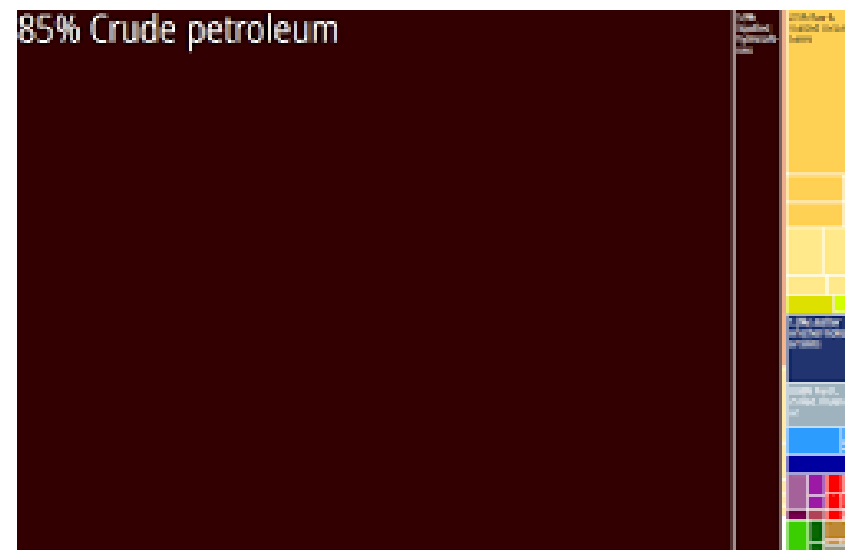
SOUTH AFRICA



ANGOLA



NIGERIA



LIMITED COORDINATION BETWEEN COUNTRIES AND REGIONS

- Very fragmented - 55 countries (of 196 countries in the world)
 - 1 disputed (Saharan Arab Democratic Republic/ “Western Sahara”)
 - Limited meaningful economic and political collaboration
- Longest serving leaders and lack of willingness to transfer power
 - 4 of top 5; 7 of top 10; 14 of top 20 globally
- Human rights record is weak – especially in countries with “longest serving” leaders
 - According to Freedom House, only 10 countries are ranked “Free”
 - North Africa and the Middle East have the worst human rights violations (Amnesty International)
- Governance is weak and corruption remains a challenge
 - 16 of top 30 most corrupt countries
 - And only 1 country (Botswana) in the top 30 (29th) (Transparency International)

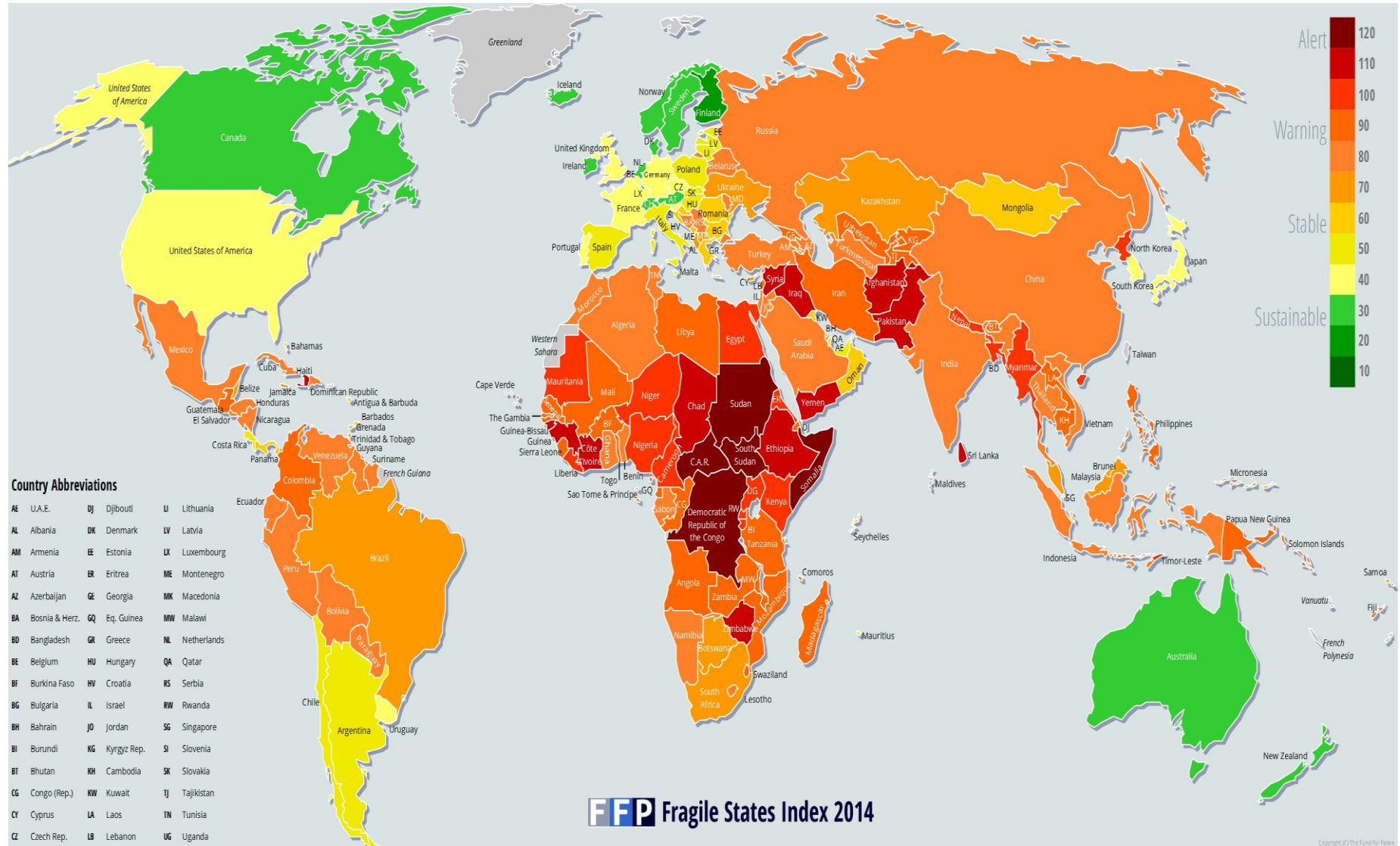
AFRICA AS A MARKET

Political risks are also prevalent

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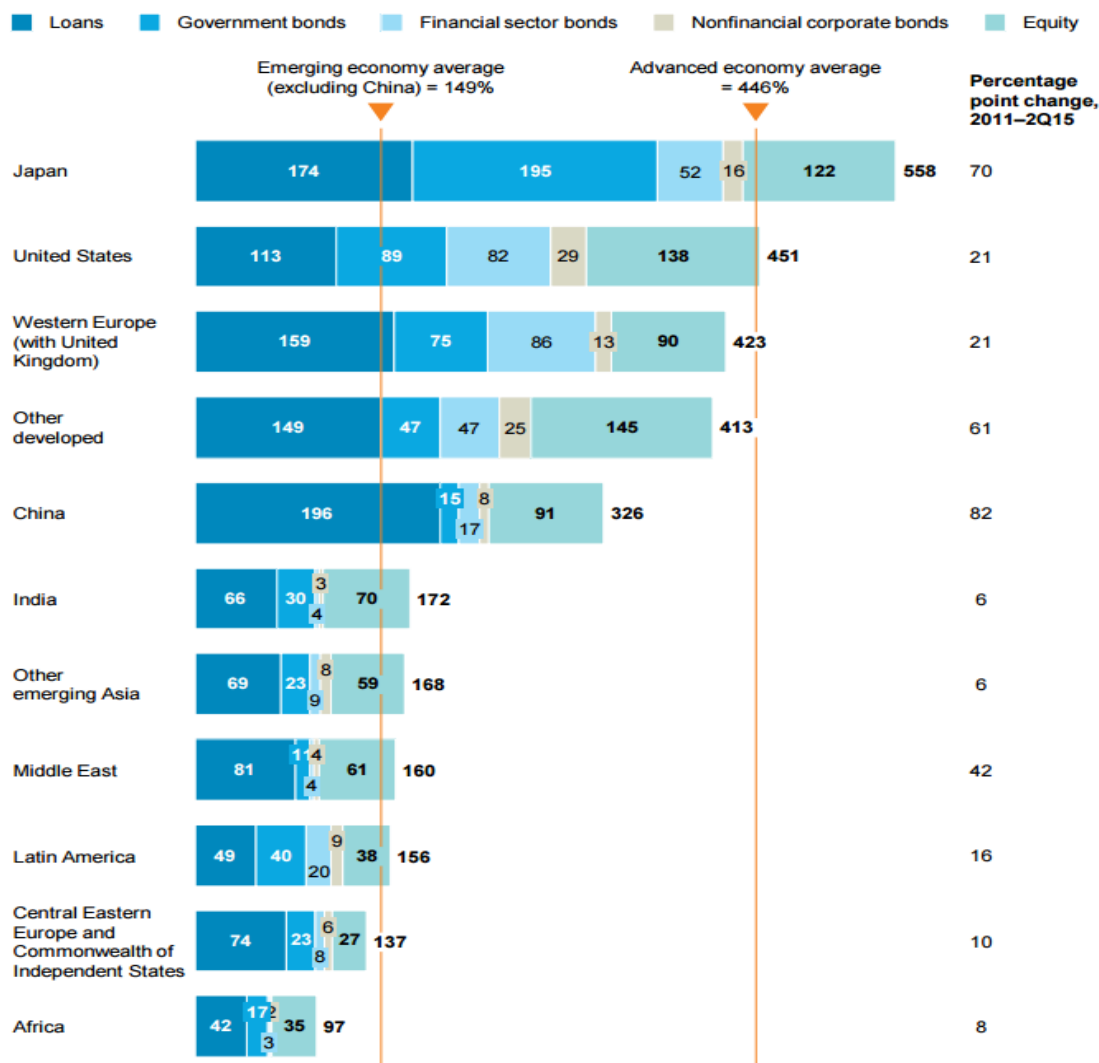
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CENTRAL AFRICA REMAINS THE MOST FRAGILE AND VOLATILE REGION IN THE WORLD



MASSIVE GROWTH POTENTIAL FOR GREATER FINANCIAL DEPTH

Financial depth by region and asset class, 2Q15¹
% of GDP

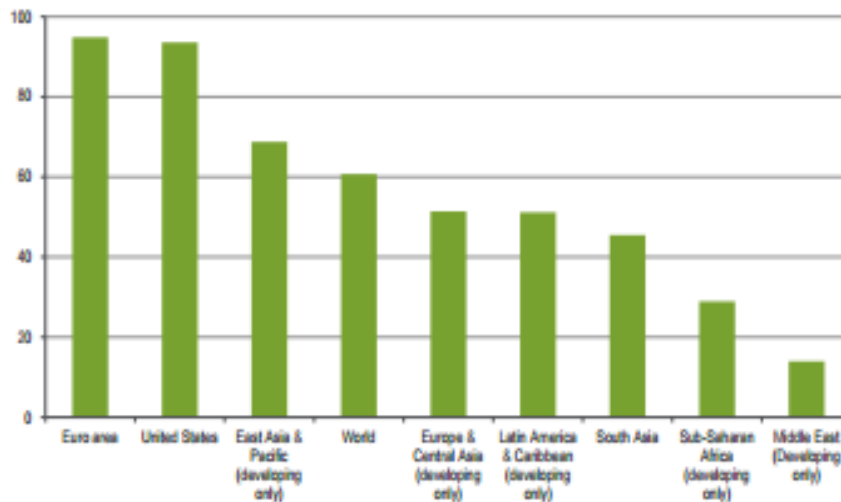


- The average level of “financial depth” in developed markets is:
 - 3x that of emerging markets
 - 4.5x that of Africa
- The potential of greater financial inclusion is huge, especially given the increasing ability to collect the data that facilitates the accurate assessment of risk
- Leveraging off the mobile networks
- Providing digital financial services platforms

POTENTIALLY ONE OF THE GREATEST GROWTH OPPORTUNITIES ON THE PLANET

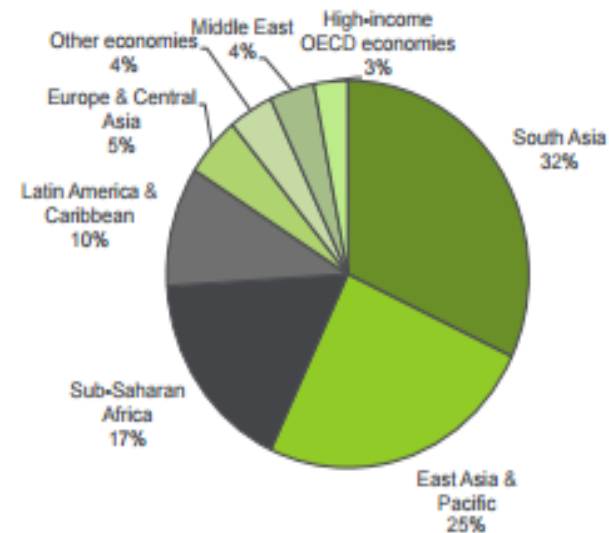
- Current levels of financial inclusion are very low
 - In 2014, only 34% of SSA adults (over 15) had a bank account, up from only 24% in 2011
 - This percentage drops to only 16% that have a formal savings account
 - Whilst only 6% of SSA adults have been granted a formal bank loan
 - The Global average is 60% (for an account), while it is over 90% in certain developed markets

Percentage of Population (15+) with a Bank Account (2014)



Source: World Bank Financial Development Index, Citi Research

Distribution of Unbanked Population By Region (2014)

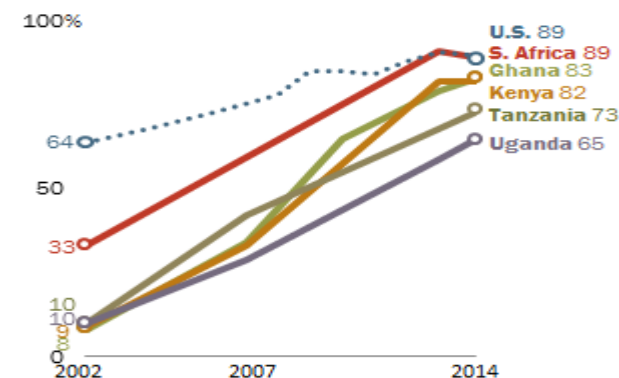


Source: World Bank Financial Development Index, Citi Research

- Although financial services penetration is low, mobile phone penetration has risen exceptionally quickly
- Africa skipped the fixed line stage of development and went straight to digital
 - Africa fixed line penetration has been flat at 1%, Europe's has fallen to 39% (2011)
- Mobile phone penetration had risen to 67% (2014), from less than 25% 10 years ago
 - Currently is estimated at over 70%
 - Smartphone penetration is nearly 50%, and growing rapidly
- SSA leads the world in mobile money accounts
 - 12% of SSA adults vs global figure of 2%
- Africa has the potential to create a new digital financial services business model

Region	2005 (%)	2016 (%)
Europe	~46	~44
Africa	~33	~31
Asia	~23	~26
North America	~16	~16
Latin America	~9	~9
Middle East	~2	~2

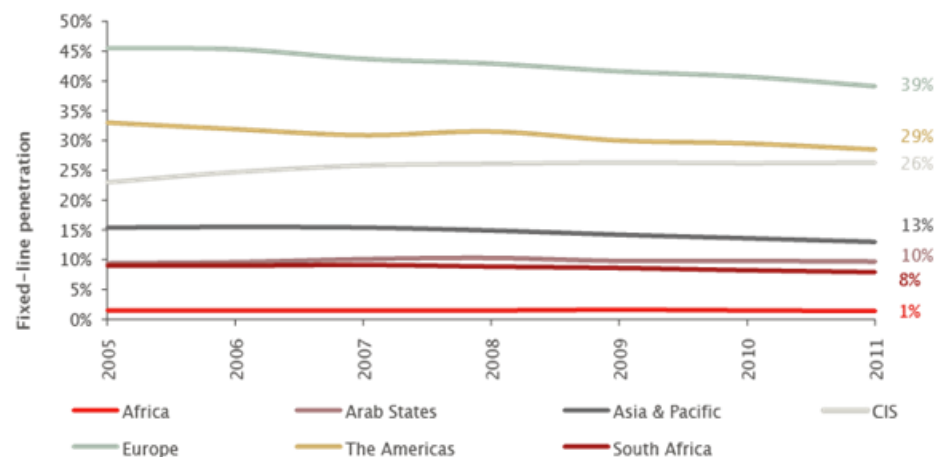
Adults who own a cell phone



Note: U.S. data from Pew Research Center surveys.

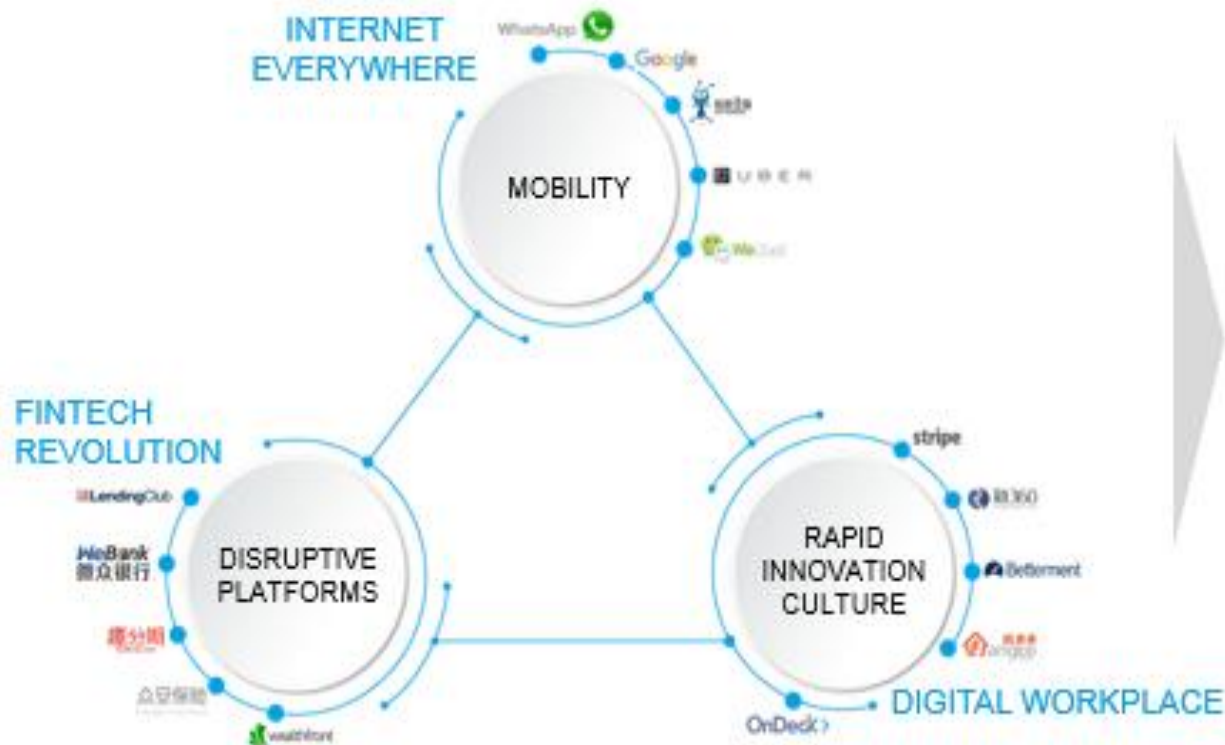
Source: Spring 2014 Global Attitudes survey. Q68.

PEW RESEARCH CENTER



RESPONDING TO THE INCREASING COMMODITISATION OF THE TRANSACTIONAL “UNIVERSAL BANK”

- The marketplace for financial services is undergoing radical change, driven by new technology, new competitors, regulation and changing customer expectations



Source: ESSEX

LEVERAGING OFF THE TECHNOLOGY REVOLUTION

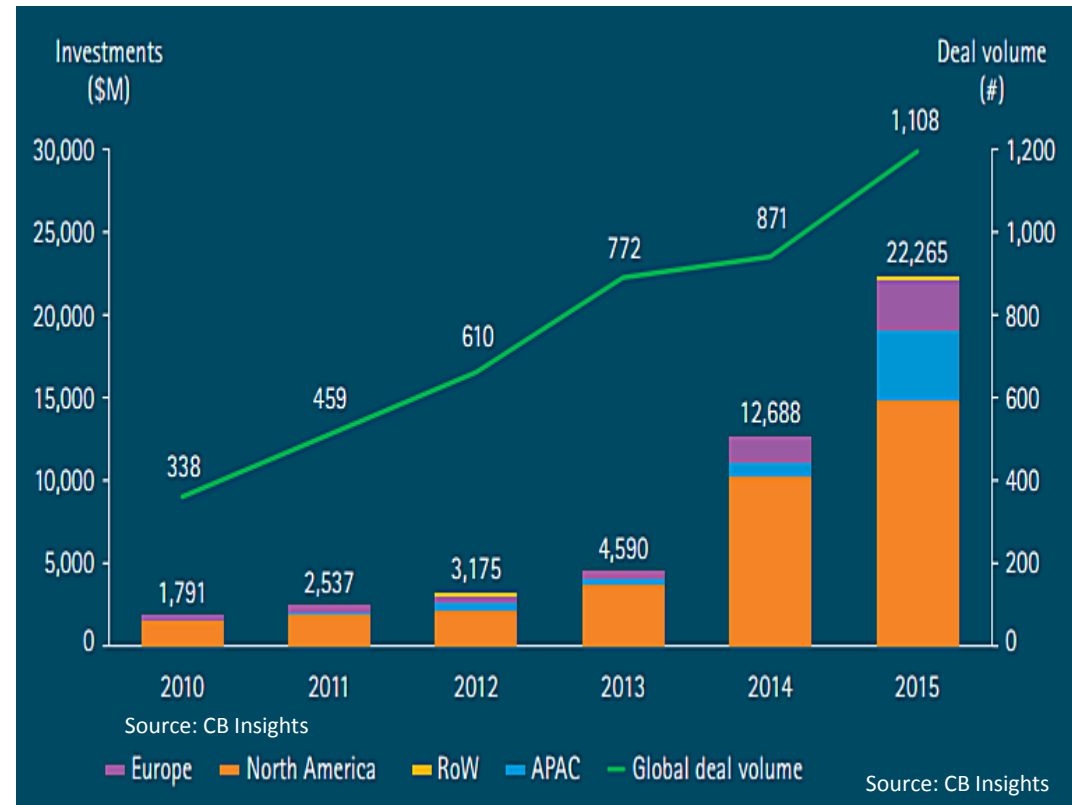
Growing investment in FinTech highlights the changing landscape

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WALL STREET TITANS SHAKE-UP BANKING WITH FINTECH INVESTMENTS

- Growing investment in Fintech is likely to result in accelerated disruption for the Traditional bank
- Benefitting from less of stringent regulation and legacy IT systems
- Fintech start-ups attracting billions of dollars of investment
- Goldman Sachs has estimated the emerging Fintech industry could take more than US\$4.7tn in revenue and \$470bn in profit from traditional financial services companies by 2020



- The sector valuations have also been pushed up, with several start-ups (including Funding Circle and TransferWise) achieving valuations of over \$1bn

Source: FT (2015)

USING TECHNOLOGY AND DATA TO OFFER VIABLE FINANCIAL SOLUTIONS

- The potential:

Changing the lives of 800 million sub-Saharan Africans by providing affordable financial services that meet their needs in an increasingly digital, connected world

- Supporting the evolution of financial inclusion by providing:
 - Basic transactional capability (digital & ubiquitous)... followed by an evolution of needs, including:
 - Savings
 - Unsecured borrowings - creating personal capital
 - Short term secured borrowings - leveraging personal capital to create business capital
 - Longer term secured borrowings – growing business capital
 - Business management advise and support – leveraging business capital to create personal wealth
 - Personal wealth management - growing personal wealth

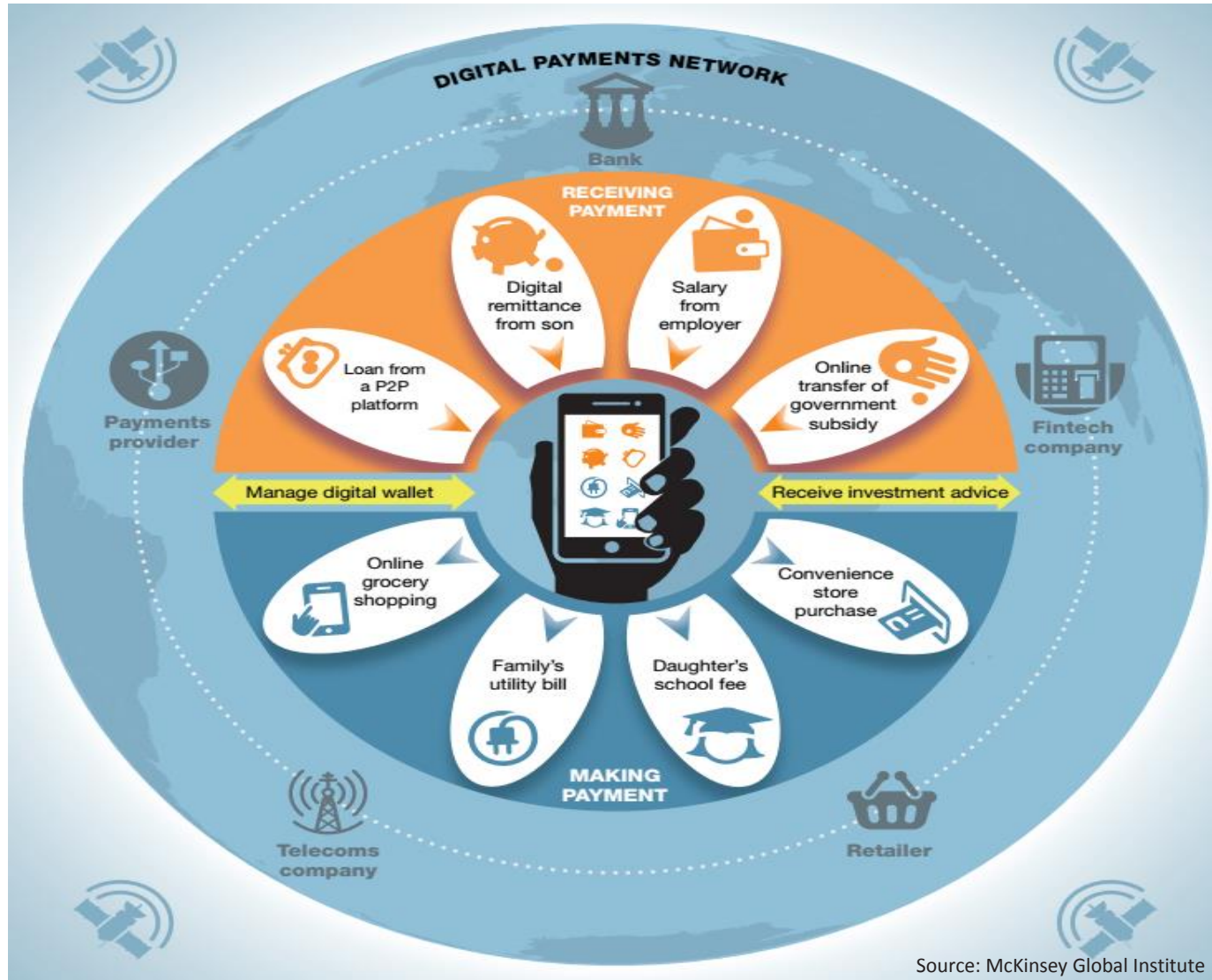
NEED FOR BEHAVIOURAL & DATA ANALYTICS

Creating an inclusive digital financial services sector

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DIGITAL FINANCE: TRANSFORMING THE WAY PEOPLE TRANSACT



ENSURING A LOW COST, DIGITAL, DATA DRIVEN BUSINESS MODEL

The data-analytics revolution under way has the potential to transform how companies organize, operate, manage talent, and create value and advanced data analytics is now a quintessential business imperative – McKinsey Global Institute

- Current reality
 - High levels of financial exclusion
 - Cash is the exclusive means for transactions
 - No safe way to save and invest
 - Transactional costs associated with traditional banking have been prohibitive
 - Poor understanding of client's financial activities prevents access to affordable credit
- What is required
 - Digital finance offers a transformational solution
 - Driven by low cost digital platforms
 - Leveraging off mobile network infrastructure
 - Data driven analytics
- Key capabilities required in financial services - Analytical thinking and Entrepreneurial spirit

ENSURING TECHNOLOGY ENABLES APPROPRIATE DATA ANALYTICS TO ACHIEVE GREATER FINANCIAL INCLUSION

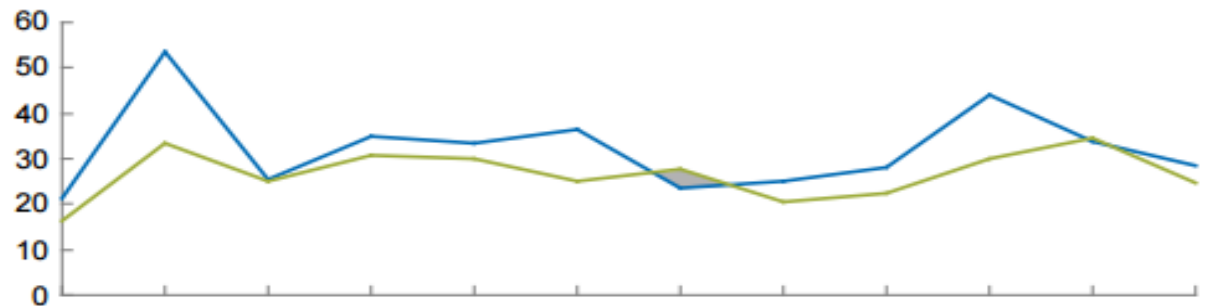
- Savings accounts and credit lines can help to smooth income and expenses
- However, financial services institutions need to be able to understand the credit risk and have insight into transactional behaviour in a cost effective way

Average variation in sample household operational income and expenses over one year, 2014–15¹
\$, constant 2014 exchange rate

Income² Expenses³ Period with expenses > income

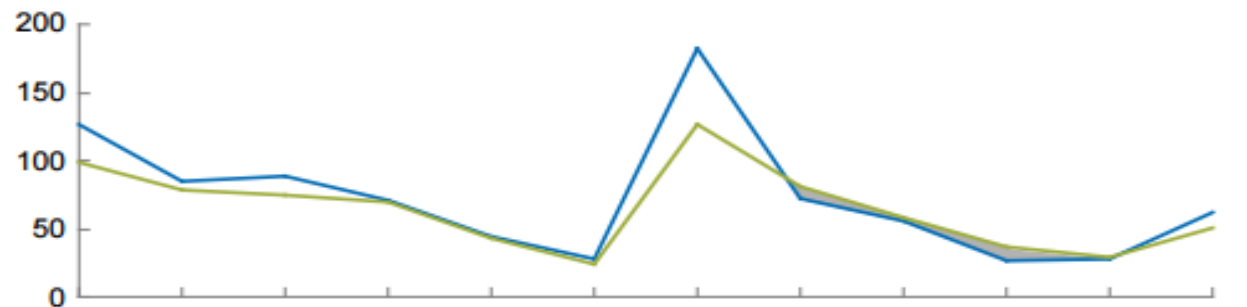
Mozambique

Annual income exceeds annual expenses by \$66.60, but with 2 months when expenses are higher



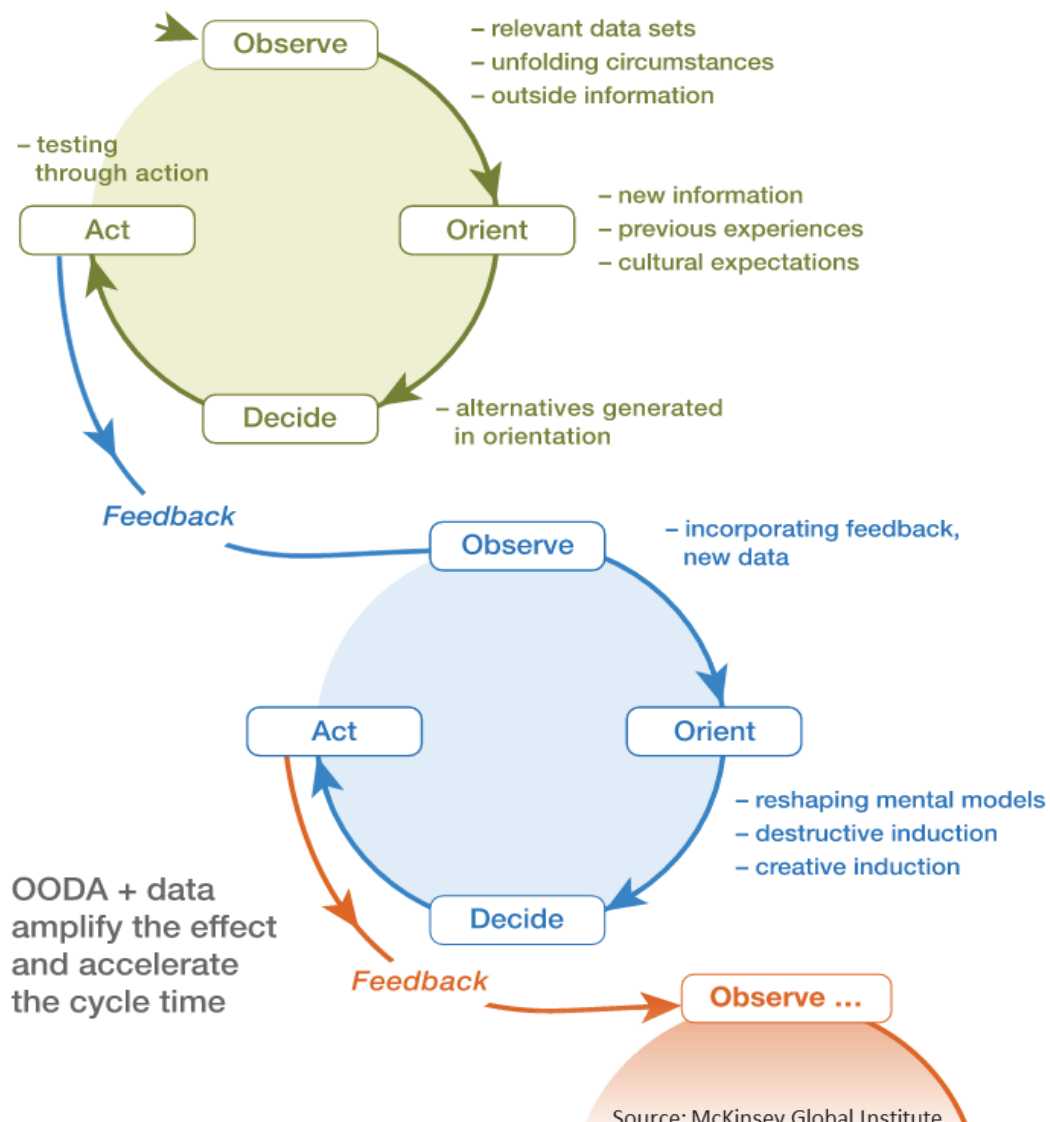
Tanzania

Annual income exceeds annual expenses by \$99.40, but with 4 months when expenses are higher



CREATING BUSINESS INTELLIGENCE CENTRED ON “ACTIONABLE INSIGHTS” USING THE OODA LOOP

- Driving actionable insights through OODA loops – Observe, Orientate, Decide & Act
- However, financial services institutions need to be able to understand the risks, particularly credit risk, and have insight into transactional behaviour in a cost effective way
- Customer feedback loops and the agility to respond to those is key



PROSPECTS FOR THE FUTURE

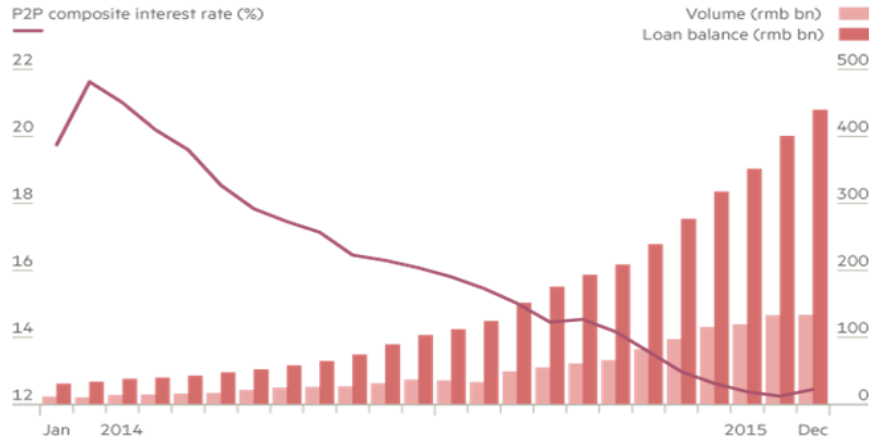
Certain markets moving to a tipping point

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ASIA IS LEADING THE WAY

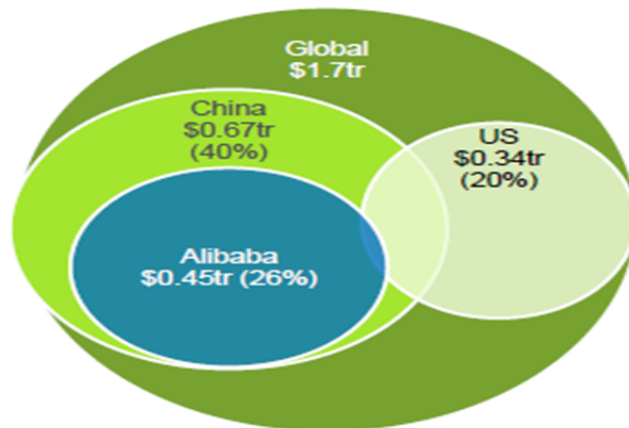
China's P2P lending market has been ballooning



Source: Wind Info

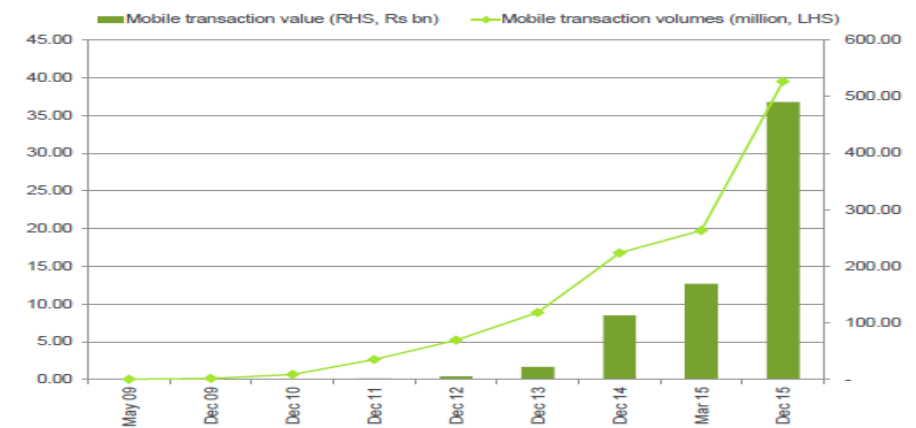
FT

Figure 5. Global E-Commerce Mainly Comes from China & US, 2015



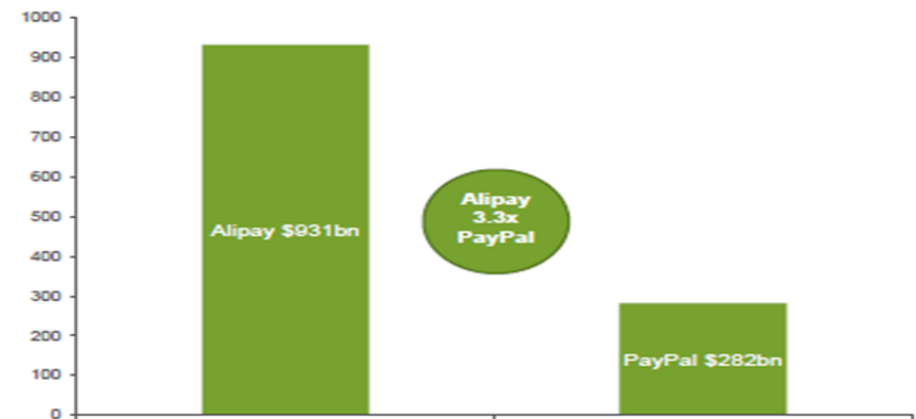
Source: eMarketer, Citi Research; Based on Gross Merchandise Value (GMV)

Figure 9. India – Rising Number of Mobile Banking Transactions



Source: Citi Research, RBI

Figure 6. Alipay Total Payment Volume Bigger than PayPal, 2015 (\$bn)



Source: Company Reports, Citi Research. Alipay TPV 2015 is estimated based on disclosure in 2014 adjusted for growth in Alibaba's gross merchandise volume

- ❑ **AFRICA REMAINS THE BIGGEST POTENTIAL GROWTH OPPORTUNITY ON THE PLANET**
- ❑ **THE NEED FOR FINANCIAL SERVICES IS MASSIVE**
- ❑ **FINANCIAL INCLUSION HAS HUGE SOCIAL BENEFITS ... AND POLITICAL BACKING!**
- ❑ **AFRICAN HAS AN OPPORTUNITY TO “LEAPFROG” TRADITIONAL “UNIVERSAL BANKING”, IN THE SAME WAY IT DID FIXED LINE TELECOMMUNICATIONS**
- ❑ **THE SUCCESS CRITERIA IS LIKELY TO BE BASED ON A MUCH LOWER COSTS TO SERVE DIGITAL, DATA DRIVEN “FINANCIAL SERVICES PLATFORM” MODEL**
- ❑ **TECHNOLOGY IS CORE TO THE BUSINESS MODEL**
- ❑ **DATA ANALYTICS IS THE KEY COMPETITIVE DIFFERENTIATOR**