BUILDING AFRICAN FINANCIAL MARKETS

Capacity Building Seminar

Theme:
"Global best practices to enhance the African Capital Markets"

Casablanca
May 18th & 19th 2017

Hosted by

In Association with

ASEA
PRESENTED BY: MR. TOM KIMARU, NAIROBI SECURITIES EXCHANGE

BUILDING AFRICAN FINANCIAL MARKETS SEMINAR – MAY 18-19, 2017
“GLOBAL BEST PRACTICES TO ENHANCE THE CAPITAL MARKETS”
Introduction
Corporate governance is broadly defined as the system by which organizations are directed and controlled in a manner that promotes corporate fairness, transparency and accountability.

It focuses on the Board and its key purpose of directing affairs of the company.
Introduction

Enron Scandal

Houston, Texas
Corporate Governance Challenges

- Boards want freedom, trust, free hand and no interference in running corporations;

- Directors sitting in too many Boards, some in even competing firms which could end up compromising companies competitiveness; and

- Influence from external sources such as the Government.
Corporate Governance Challenges

- Financial illiteracy on the part of the shareholders. Most shareholders believe that they buy shares to get dividends and if they do not receive dividends they question the performance of the Board;

- Companies failure to educate their shareholders on their operations.
Capital Markets Consideration

- Securities Exchanges
- Regulation & Corporate Governance
- Market Intermediaries
- Listed Companies
- Others
<table>
<thead>
<tr>
<th>Securities Exchange</th>
<th>Market Intermediaries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demutualization of the Exchange</td>
<td>Enabling Regulatory Framework</td>
</tr>
<tr>
<td>Alignment of Board Structure</td>
<td>Define Board Structure and Responsibilities</td>
</tr>
<tr>
<td>Continuous Stakeholder Engagement</td>
<td>Internal Compliance Structure</td>
</tr>
<tr>
<td>Government Ownership</td>
<td></td>
</tr>
</tbody>
</table>
Listed Companies

- Implementation and Oversight
- Board Operations and Control
- Rights of Shareholders
- Shareholder Relations
- Ethics and Social Responsibility
- Transparency, Disclosure & Accountability
- Risk Management & Internal Control System

Other Considerations

- The Companies Act
- Automation of Systems
- Internal Compliance Structure
- Ethical Conduct
- Key Audit Matters
- Code of Governance for the Private & Public Sector
- Code of Governance for Institutional Investors
Predicting rain doesn’t count. Building arks does.

Warren Buffett
Sample Basic Compliance Matrix

<table>
<thead>
<tr>
<th>Compliance Parameters</th>
<th>Score</th>
<th>Compliance</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock brokerage licence has been obtained/renewed.</td>
<td>CMA Licensing Reg</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Security/Bank Guarantee of a minimum of Sh.1.5m is lodged and maintained with the NSE or CDSC.</td>
<td>CMA Licensing Reg</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paid up share capital is maintained at Sh. 50m or more at all times.</td>
<td>CMA Licensing Reg</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum Liquid Capital is Kshs. 30 million or 8% of Liabilities, whichever is higher.</td>
<td>CMA Licensing Reg</td>
<td>16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SCORE SUMMARY**

We confirm having undertaken the checks detailed in this checklist and have instigated remedial action where deficiencies have been identified.

<table>
<thead>
<tr>
<th>Compliance</th>
<th>No Score</th>
<th>Signature</th>
<th>Date</th>
<th>Blanks</th>
<th>TOTAL</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>0</td>
<td></td>
<td>0</td>
<td>0</td>
<td>115</td>
<td>100</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td></td>
<td>0</td>
<td>0</td>
<td>115</td>
<td>100</td>
</tr>
<tr>
<td>Partial</td>
<td>0</td>
<td></td>
<td>0</td>
<td>0</td>
<td>115</td>
<td>100</td>
</tr>
<tr>
<td>N/A</td>
<td>0</td>
<td></td>
<td>0</td>
<td>0</td>
<td>115</td>
<td>100</td>
</tr>
<tr>
<td>16/May/17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Head, Risk & Compliance (The Compliance Officer)

<table>
<thead>
<tr>
<th>STATUS</th>
<th>STATUS RATING &amp; SCORING CRITERIA</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREEN</td>
<td>Satisfactory (Not a single lapse found after all the checks in individual risk component) 95% - 100%</td>
<td>0.00%</td>
</tr>
<tr>
<td>AMBER</td>
<td>Room for improvement (A few lapses in control noted on individual risk component) 75% - 94.9%</td>
<td></td>
</tr>
<tr>
<td>RED</td>
<td>Poor (Serious lapses in controls in individual risk component) Less than 75%</td>
<td></td>
</tr>
</tbody>
</table>

**SCORING**

Yes 0
Partial 0
No 0
Blank 220

**COMPLIANCE CHECKLIST AS OF** 30/Jun/14

**OVERALL COMPLIANCE ASSESSMENT CRITERIA AND RATING**

**STATUS RATING & SCORE**

Blank Status
Thank You
Building African Financial Markets

Capacity Building Seminar

Casablanca
May 18th & 19th 2017

Theme:
"Global best practices to enhance the African Capital Markets"

Hosted by
Casablanca Stock Exchange
In Association with
ASEA
“Unlocking opportunities in Africa pension schemes”

Casablanca, Morocco
May 18-19, 2017

Dr Edward Odundo
odundo@gmail.com
OUTLINE

✓ Introduction
✓ Kenya’s Retirement Benefits Structure
✓ Capacity Building
✓ Real Investment Trusts (Reits)
✓ Private Equity & Venture Capital
✓ Kenya’s Volatile Market
✓ Mitigating Tool
✓ Governance
✓ IOPS Good Practices
INTRODUCTION

For 16 years served as Chief Executive Officer, Retirement Benefits Authority.

Actively involved in the work of the International Organisation of Pension Supervisors (IOPS), an independent international standard setting body in the area of pension supervision and brings together public authorities involved in the supervision of private pension arrangements.

I was the president for the last five years.

IOPS has currently 86 members and observers from 74 countries and territories.
KENYA’S RETIREMENT BENEFITS STRUCTURE

**Non Contributory/Pay As You Go (PAYG)**
- Civil Service Pension Scheme
  - Members ->500,000
  - Assets - US$0
- Public Service Superannuation Act 2012 - DC

**Private Occupational – Employer Based (Voluntary)**
- Schemes > 1,306
- Members > 400,000
- Assets – US$6.29bn

**Individual Contributory Open Schemes**
- Offered by Insurance Companies
  - Schemes ~ 32
  - Members – 162,000
  - Assets -28.8 bn.

**Mandatory National – National Social Security Fund**
- Assets – US$1.56bn
- Members > 2.1 m
- NSSF Act 2013 – Pension & Provident

**Pension System**
The retirement benefits regulator in Kenya, Retirement Benefits Authority, works with the National Treasury to protect members’ benefits, widen pension coverage and expand investment opportunities for pension funds.

Kenya has a new investment guideline, which today comprises 14 different investment assets classes into which pension funds are allowed to invest.
Building African Financial Markets (BAFM) Capacity Building Seminars offer a superb opportunity to securities exchanges and regulators to learn about best practices and market developments from different jurisdictions.

Casablanca Stock Exchange and African Securities Exchanges Association (ASEA) brought the continent’s securities and pensions experts.

This pool of experts will greatly enhance this year’s interactive training sessions on key topical subjects touching on African capital markets.
We specifically provided for REITs as an asset class into which retirement benefits schemes can invest up to 30% of their portfolio.

We also introduced exchange traded derivatives and the separation of listed and un-listed corporate bonds and commercial paper approved by the Capital Markets Authority, the regulator for capital markets.

The introduction of REITs gave option for pension funds seeking to invest in real estate, but would not be well endowed to acquire the whole of the estate but can own part of it.
REITs are traded, they are more liquid compared to direct real estate investments. REITs regulations in force since 2013 categorised REITs into two types.

There has been a learning curve for investment in this asset category but it is now picking up.

- **D-REIT**
  - Development & Construction
  - Mainly housing.

- **I-REIT**
  - Income producing real estate.
In 2016/2017 Financial Year, we introduced private equity and venture capital as another new investment asset class in the investment schedule.

Retirement benefits schemes in Kenya can now invest up to 10% of their portfolio in private equity and venture capital that are licensed by Capital Markets Authority.

This new development provides new investment opportunities for Kenya’s pension funds where they would be able to generate higher risk-adjusted returns for members of pension schemes.
Kenya’s financial market is normally greatly affected by market volatility and pension schemes being significant investors in the market have been greatly affected by this volatility.

To address this problem and enhance portfolio diversification, there were calls by the pension industry players to introduce a new investment category of investment that was uncorrelated with local market volatility.

One such product was private equity.
Main advantage of alternative investments as a mitigation tool is the ability to pursue improved risk adjusted returns of investment portfolios.

It enhances diversification and provides a more efficient investment mechanism for gaining exposure to certain assets and thereby allowing for improvement in the risk adjusted return of an investment portfolio.

However, this comes at a cost.

Non-traditional investments in most cases very complex, involving multiple-management layers, illiquid and opaque, and often with inherent risky strategies.
More scrutiny, analysis and monitoring of risks on a regular (almost daily basis) is therefore needed compared to other financial products.

These assets are also more expensive to manage and can be difficult to justify for small pension funds that do not have knowledge and skills to invest in such instruments and manage additional risks.
Non-traditional investments require strong internal governance practices, with a governing board that has sufficient understanding of investment strategy and risks handling functions with well developed internal control processes.

These are the key elements to effectively manage investments in alternative assets and reap the gains they promise.

We have to also keep in mind cost considerations, because the alternative investments are more expensive to manage, as insourcing of skilled investment managers represent a cost and external managers usually charge annual commissions on Assets under Management (AUM) on returns obtained.
In 2010, the International Organisation of Pension Supervisors (IOPS) approved a set of “Good Practices in the Risk Management of Alternative Investments by Pension Funds.”

Was designed to provide guidance to pension funds as to what sort of risk management arrangements pension supervisors expect pension funds using these products and instruments to have in place.
OECD and IOPS evaluated exposure of pension funds to alternative investments and derivatives in the OECD and IOPS jurisdictions.

They reviewed the regulatory framework governing alternative and derivative investments, market practices and the state of risk-management pension funds employ in relation to these instruments.

Objective was to come up with the Good Practices on Pension Funds’ use of Alternative Investments and Derivatives, which were issued in 2011.
These Good Practices and Principles serve as a benchmark reference for all countries or jurisdictions.

Take into account country-specific conditions and circumstances, including the extent to which regulations permit the use of such investments is very relevant.

Regulatory and supervisory authorities should ensure they maintain a good understanding of these products through training and employing experts.

Regulators should work closely with industry to offer practical guidance on the best investment practices for investment of pension assets in alternatives and derivatives.
Useful websites:

www.rba.go.ke
www.cma.or.ke
www.centralbank.go.ke
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Capacity Building Seminar

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Hosted by Casablanca Stock Exchange
In Association with ASEA
THE ROLE AND IMPORTANCE OF DERIVATIVES MARKETS

BUILDING AFRICAN FINANCIAL MARKETS

Capacity Building Seminar

Casablanca May 18th 2017
Léon Bitton
AGENDA

• WORLD DERIVATIVES PANORAMA
• THE CASE FOR EXCHANGE TRADED DERIVATIVES
• ROLE AND IMPORTANCE OF DERIVATIVES
• BEST DERIVATIVES INTERNATIONAL PRACTICES
• LESSONS TO BE LEARNED FOR AFRICAN MARKETS
Data based on the number of contracts traded and/or cleared at 76 exchanges worldwide compiled by FIA. All data as of Dec. 31, 2016.

*Other consists of exchanges in Greece, South Africa and Turkey.
World Exchange Derivatives Market Panorama
Ten Year Volume Trend For Global Futures

Source: FIA
World Exchange Derivatives Market Panorama

Ten Year Volume Trend For Global Options

Source: FIA
GLOBAL OTC DERIVATIVES MARKETS
AMOUNTS OUTSTANDING, IN TRILLIONS OF US DOLLARS

Interest Rate
$438 T

Foreign Exchange
$86 T

Credit
$12 T

Equity
$7 T

Commodity
$2 T

Other
$0.1 T

Source: BIS
## World Derivatives Market Panorama

### Volume Ranking of Derivatives Exchanges

<table>
<thead>
<tr>
<th>RANK</th>
<th>EXCHANGE</th>
<th>JAN-DEC 2016</th>
<th>JAN-DEC 2015</th>
<th>% CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CME Group</td>
<td>3,942,202,299</td>
<td>3,531,776,304</td>
<td>11.6%</td>
</tr>
<tr>
<td>2</td>
<td>National Stock Exchange of India</td>
<td>2,119,462,820</td>
<td>3,031,892,784</td>
<td>-30.1%</td>
</tr>
<tr>
<td>3</td>
<td>Intercontinental Exchange</td>
<td>2,037,932,884</td>
<td>1,998,960,757</td>
<td>1.9%</td>
</tr>
<tr>
<td>4</td>
<td>Moscow Exchange</td>
<td>1,950,145,218</td>
<td>1,659,441,587</td>
<td>17.5%</td>
</tr>
<tr>
<td>5</td>
<td>Eurex</td>
<td>1,727,766,695</td>
<td>1,672,648,483</td>
<td>3.3%</td>
</tr>
<tr>
<td>6</td>
<td>Shanghai Futures Exchange</td>
<td>1,680,711,841</td>
<td>3,031,892,784</td>
<td>-46.0%</td>
</tr>
<tr>
<td>7</td>
<td>Nasdaq</td>
<td>1,575,700,250</td>
<td>1,648,958,123</td>
<td>-4.4%</td>
</tr>
<tr>
<td>8</td>
<td>Dalian Commodity Exchange</td>
<td>1,537,479,768</td>
<td>1,116,323,375</td>
<td>37.7%</td>
</tr>
<tr>
<td>9</td>
<td>BM&amp;Fbovespa</td>
<td>1,487,305,788</td>
<td>1,358,592,857</td>
<td>9.5%</td>
</tr>
<tr>
<td>10</td>
<td>CBOE Holdings</td>
<td>1,184,553,418</td>
<td>1,173,934,104</td>
<td>0.9%</td>
</tr>
<tr>
<td>11</td>
<td>Zhengzhou Commodity Exchange</td>
<td>901,297,047</td>
<td>1,070,335,606</td>
<td>-15.8%</td>
</tr>
<tr>
<td>12</td>
<td>Korea Exchange</td>
<td>692,990,540</td>
<td>794,935,326</td>
<td>-12.8%</td>
</tr>
<tr>
<td>13</td>
<td>BSE India</td>
<td>543,058,508</td>
<td>614,894,523</td>
<td>-11.7%</td>
</tr>
<tr>
<td>14</td>
<td>JSE Securities Exchange</td>
<td>479,202,245</td>
<td>488,515,427</td>
<td>-2.2%</td>
</tr>
<tr>
<td>15</td>
<td>BATS Exchange</td>
<td>448,443,108</td>
<td>397,881,184</td>
<td>12.7%</td>
</tr>
<tr>
<td>16</td>
<td>Hong Kong Exchanges and Clearing</td>
<td>344,642,173</td>
<td>359,364,547</td>
<td>-4.1%</td>
</tr>
<tr>
<td>17</td>
<td>Japan Exchange</td>
<td>337,357,333</td>
<td>361,495,935</td>
<td>-6.6%</td>
</tr>
<tr>
<td>18</td>
<td>Miami International Securities Exchange</td>
<td>247,112,479</td>
<td>252,605,427</td>
<td>-2.2%</td>
</tr>
<tr>
<td>19</td>
<td>Multi Commodity Exchange of India</td>
<td>245,077,515</td>
<td>216,346,961</td>
<td>13.3%</td>
</tr>
<tr>
<td>20</td>
<td>ASX</td>
<td>242,625,869</td>
<td>234,181,853</td>
<td>3.6%</td>
</tr>
<tr>
<td>21</td>
<td>Taiwan Futures Exchange</td>
<td>241,678,556</td>
<td>264,495,660</td>
<td>-8.6%</td>
</tr>
<tr>
<td>22</td>
<td>TMX Group</td>
<td>201,119,409</td>
<td>179,942,000</td>
<td>11.8%</td>
</tr>
<tr>
<td>23</td>
<td>Singapore Exchange</td>
<td>172,421,585</td>
<td>183,870,944</td>
<td>-6.2%</td>
</tr>
<tr>
<td>24</td>
<td>Euronext</td>
<td>126,241,982</td>
<td>135,515,683</td>
<td>-8.6%</td>
</tr>
<tr>
<td>25</td>
<td>Rosario Futures Exchange</td>
<td>113,367,851</td>
<td>73,870,916</td>
<td>53.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RANK</th>
<th>EXCHANGE</th>
<th>JAN-DEC 2016</th>
<th>JAN-DEC 2015</th>
<th>% CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>Borsa Istanbul</td>
<td>107,253,507</td>
<td>88,880,168</td>
<td>20.7%</td>
</tr>
<tr>
<td>27</td>
<td>Thailand Futures Exchange</td>
<td>69,576,164</td>
<td>48,538,899</td>
<td>43.3%</td>
</tr>
<tr>
<td>28</td>
<td>London Stock Exchange Group</td>
<td>54,065,044</td>
<td>48,879,243</td>
<td>10.6%</td>
</tr>
<tr>
<td>29</td>
<td>Tel-Aviv Stock Exchange</td>
<td>52,097,656</td>
<td>66,054,567</td>
<td>-21.1%</td>
</tr>
<tr>
<td>30</td>
<td>Tokyo Financial Exchange</td>
<td>52,086,497</td>
<td>48,966,442</td>
<td>6.3%</td>
</tr>
<tr>
<td>31</td>
<td>Metropolitan Stock Exchange of India</td>
<td>46,756,617</td>
<td>59,040,199</td>
<td>-19.4%</td>
</tr>
<tr>
<td>32</td>
<td>MEFF</td>
<td>45,354,344</td>
<td>47,819,205</td>
<td>-5.2%</td>
</tr>
<tr>
<td>33</td>
<td>Tokyo Commodity Exchange</td>
<td>26,917,289</td>
<td>24,399,068</td>
<td>10.3%</td>
</tr>
<tr>
<td>34</td>
<td>The Order Machine</td>
<td>23,788,784</td>
<td>26,015,228</td>
<td>-8.6%</td>
</tr>
<tr>
<td>35</td>
<td>National Commodity &amp; Derivatives Exchange</td>
<td>20,339,532</td>
<td>29,545,534</td>
<td>-31.2%</td>
</tr>
<tr>
<td>36</td>
<td>Dubai Gold &amp; Commodities Exchange</td>
<td>19,669,786</td>
<td>14,505,316</td>
<td>35.6%</td>
</tr>
<tr>
<td>37</td>
<td>China Financial Futures Exchange</td>
<td>18,335,855</td>
<td>321,590,923</td>
<td>-94.3%</td>
</tr>
<tr>
<td>38</td>
<td>Athens Derivatives Exchange</td>
<td>15,470,716</td>
<td>14,653,105</td>
<td>5.6%</td>
</tr>
<tr>
<td>39</td>
<td>Malaysia Derivatives Exchange</td>
<td>14,226,034</td>
<td>14,060,527</td>
<td>1.2%</td>
</tr>
<tr>
<td>40</td>
<td>Mexican Derivatives Exchange</td>
<td>12,940,498</td>
<td>16,987,688</td>
<td>-23.8%</td>
</tr>
<tr>
<td>41</td>
<td>OneChicago</td>
<td>12,391,455</td>
<td>11,714,015</td>
<td>5.8%</td>
</tr>
<tr>
<td>42</td>
<td>Oslo Stock Exchange</td>
<td>11,440,304</td>
<td>13,718,702</td>
<td>-16.6%</td>
</tr>
<tr>
<td>43</td>
<td>North American Derivatives Exchange</td>
<td>8,745,912</td>
<td>5,809,225</td>
<td>50.6%</td>
</tr>
<tr>
<td>44</td>
<td>Warsaw Stock Exchange</td>
<td>7,975,137</td>
<td>8,205,097</td>
<td>-2.8%</td>
</tr>
<tr>
<td>45</td>
<td>CEE Stock Exchange Group</td>
<td>7,808,435</td>
<td>8,603,499</td>
<td>-9.2%</td>
</tr>
<tr>
<td>46</td>
<td>Pakistan Mercantile Exchange</td>
<td>3,481,167</td>
<td>3,890,968</td>
<td>-10.5%</td>
</tr>
<tr>
<td>47</td>
<td>Minneapolis Grain Exchange</td>
<td>2,185,098</td>
<td>2,315,186</td>
<td>-5.6%</td>
</tr>
<tr>
<td>48</td>
<td>Dubai Mercantile Exchange</td>
<td>1,949,658</td>
<td>1,709,888</td>
<td>14.0%</td>
</tr>
<tr>
<td>49</td>
<td>New Zealand Futures Exchange</td>
<td>1,834,170</td>
<td>1,811,241</td>
<td>1.3%</td>
</tr>
<tr>
<td>50</td>
<td>Bolsa de Valores de Colombia</td>
<td>1,403,564</td>
<td>1,048,199</td>
<td>33.9%</td>
</tr>
<tr>
<td>51</td>
<td>Indonesia Commodity &amp; Derivatives Exchange</td>
<td>558,409</td>
<td>575,896</td>
<td>-3.0%</td>
</tr>
<tr>
<td>52</td>
<td>Eris Exchange</td>
<td>474,094</td>
<td>660,462</td>
<td>-28.2%</td>
</tr>
<tr>
<td>53</td>
<td>Osaka Dojima Commodity Exchange</td>
<td>447,734</td>
<td>412,875</td>
<td>8.4%</td>
</tr>
<tr>
<td>54</td>
<td>Mercado a Termino de Buenos Aires</td>
<td>275,676</td>
<td>245,318</td>
<td>12.4%</td>
</tr>
<tr>
<td>55</td>
<td>ELX Futures</td>
<td>0</td>
<td>177</td>
<td>-100.0%</td>
</tr>
</tbody>
</table>

**Legend:** Developed Markets, Emerging Markets, Frontier Markets

Source: FIA
Demand for derivatives is increasing worldwide. Key drivers for growth: globalization of finance, regulatory modernization, technological advances and market participants sophistication.

Exchange-traded derivatives have become a universal tool for expressing market views, hedging (risk transfer), active portfolio management and arbitrage - an integral component of modern capital markets.

Derivatives help increase liquidity in the cash market and attract foreign investor interest.

In recent years, Emerging and Frontier markets exchanges have successfully launched derivatives.

Without derivatives, emerging and Frontier Markets are at risk of becoming marginalized in the global markets.
Created in partnership with Chip and Dan Heath, authors of the bestselling book Made To Stick, this template advises users on how to build and deliver a memorable presentation of a new product, service, or idea.
TIMING OF LAUNCH OF A DERIVATIVES MARKET

- Derivatives emerge when markets become more sophisticated and liquid... and in turn they contribute to stimulate liquidity and attract more sophisticated investing and foreign investors to the cash market.

- Liquidity requires more listed companies, more float, more investors... will happen with economic growth. In the meantime, Government can help promote capital markets growth by facilitating specific market enhancements, such as:
  - Securities Borrowing and Lending and Short Selling
  - Clearinghouse-Depository integration
  - Exchange Traded Funds (ETF)
Derivatives markets tend to be associated with more developed economies and deeper financial markets.
• Derivatives markets tend to be associated with larger financial markets that have attained a liquidity threshold.
Exchange-traded derivatives are intrinsically designed to *transfer risk and to aid in price discovery*

- Allows hedgers to protect their positions and speculators to take leveraged positions
- A derivatives exchange matches buyers and sellers without taking any principal positions
- The derivatives clearinghouse guarantees that traders meet their obligations.
ROLE AND BENEFITS OF DERIVATIVES

• Derivatives are *synthetic* expressions of underlying prices of financial securities or asset classes:

  ➢ Contracts that mimic or “summarize” the economics of the underlying assets/asset classes

  ➢ They allow investors to express their views and trade quickly and efficiently, at lower cost than if they were trading cash securities and much faster
DERIVATIVES APPLICATIONS

DERIVATIVES ARE A CONVENIENT, LOW COST WAY OF EXPRESSING OVERALL MARKET VIEWS

1. SYNTHETIC EXPOSURE: cheaper than an index fund, investors can go long or short

2. DIRECTIONAL VIEW: ability to trade quickly at low cost

3. HEDGING: investors can hedge a long or short exposure in the stock market

4. ARBITRAGE: Steady opportunities for arbitrage between index futures and cash

5. LEVERAGE: “down-payment” (initial margin) of around 5-10% of notional investment
## Categories of Exchange Traded Derivatives

### Sequence Mostly Traded Worldwide

**FIA 2016 Exchange Traded Volume**

*(in # contracts)*

**January-December**

<table>
<thead>
<tr>
<th>Category</th>
<th>Futures 2016</th>
<th>Options 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Futures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest Rates</td>
<td>2,889,578,233</td>
<td>4,446,638,718</td>
</tr>
<tr>
<td>Equity Index</td>
<td>2,670,848,349</td>
<td>655,325,685</td>
</tr>
<tr>
<td>Currency</td>
<td>2,415,080,282</td>
<td>632,507,745</td>
</tr>
<tr>
<td>Energy</td>
<td>2,057,483,642</td>
<td>156,679,849</td>
</tr>
<tr>
<td>Non-Precious Metals</td>
<td>1,866,899,966</td>
<td>82,633,634</td>
</tr>
<tr>
<td>Agriculture</td>
<td>1,849,276,230</td>
<td>11,803,841</td>
</tr>
<tr>
<td>Individual Equity</td>
<td>1,226,366,031</td>
<td>10,447,489</td>
</tr>
<tr>
<td>Precious Metals</td>
<td>300,333,194</td>
<td>11,803,841</td>
</tr>
<tr>
<td>Other</td>
<td>615,962,591</td>
<td>299,569</td>
</tr>
<tr>
<td><strong>Future Total</strong></td>
<td>15,891,828,518</td>
<td>9,327,877,756</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Futures 2016</th>
<th>Options 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Options</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equity Index</td>
<td></td>
<td>4,446,638,718</td>
</tr>
<tr>
<td>Individual Equity</td>
<td>3,331,541,226</td>
<td>655,325,685</td>
</tr>
<tr>
<td>Currency</td>
<td></td>
<td>632,507,745</td>
</tr>
<tr>
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<td></td>
<td>299,569</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Option Total</strong></td>
<td></td>
<td>9,327,877,756</td>
</tr>
</tbody>
</table>
Most derivatives markets have equity, IR, FX products

Typical “launch sequence” of products driven by local market conditions…market volatility “spawns” derivatives:

• FX volatility ➔ FX derivatives at CME in the ‘70s
• IR volatility ➔ IR derivatives at CME in the 80s, BM&F ‘90s
• Bull markets in Asia ➔ Equity index derivatives in India, SE Asia etc.
Derivatives contribute to improved market liquidity and increased capacity of the financial system to effectively price and bear risk.

Derivatives allow market participants to manage their financial risks more easily.

Derivatives markets not only support economic and financial efficiency, but also contribute to improved financial stability since they allow for the wider dispersion of risks across the financial system and help improve cross-border capital flows.

Overall, derivatives contribute to a well-functioning capital market and to a more efficient financial system, one which leads to stronger economic growth over time.
BENEFITS OF A DERIVATIVES EXCHANGE

- **Transparency**
  - Price discovery

- **Security**

- **Anonymity**

  - **Liquidity**
    - Price signal
    - and reduced cost

- Increase transparency, by providing incremental price information
- Increase security, thanks to clearinghouse
- Because derivatives are designed to transfer risk rather than to transfer funds, the regulatory framework for derivatives can differ from that of the stock market
KEY SUCCESS FACTORS FOR A DERIVATIVES PRODUCT

**Success** = Active, Liquid Contract

**Underlying Market**
- Large volume and/or growing market
- Multiple products
- Standardizability

**Market Participants**
- Critical mass of ultimate participants
- Market data availability
- Clearing infrastructure

**Market Participants**
- Free markets
- No concentration of market power
- Favorable regulation (no artificial constraints) and tax treatment
- Reasonable costs
- Delivery infrastructure
### Detailed Evaluation Criteria for New Products

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feasibility and Relevance of the Idea</strong></td>
<td></td>
</tr>
<tr>
<td>There is a large pool of committed natural</td>
<td></td>
</tr>
<tr>
<td>users for this product (commercial hedgers)</td>
<td></td>
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<tr>
<td>The underlying instrument’s volatility is</td>
<td></td>
</tr>
<tr>
<td>high, creating demand for hedging tools</td>
<td></td>
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<tr>
<td>The product can be easily commoditized and</td>
<td></td>
</tr>
<tr>
<td>standarized via exchange</td>
<td></td>
</tr>
<tr>
<td><strong>Analysis of the Cash Market</strong></td>
<td></td>
</tr>
<tr>
<td>The cash market has a strong size and good</td>
<td></td>
</tr>
<tr>
<td>liquidity</td>
<td></td>
</tr>
<tr>
<td>The cash market has a positive and increasing</td>
<td></td>
</tr>
<tr>
<td>growth rate</td>
<td></td>
</tr>
<tr>
<td>The cash market is very transparent</td>
<td></td>
</tr>
<tr>
<td><strong>Liquidity and Market Making</strong></td>
<td></td>
</tr>
<tr>
<td>There is a very large pool of speculators and</td>
<td></td>
</tr>
<tr>
<td>liquidity providers</td>
<td></td>
</tr>
<tr>
<td>Market makers expressed a strong interest in</td>
<td></td>
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<tr>
<td>this product</td>
<td></td>
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<tr>
<td>There is an efficient distribution network at</td>
<td></td>
</tr>
<tr>
<td>our disposition</td>
<td></td>
</tr>
<tr>
<td><strong>Barriers and Risks of the Initiative</strong></td>
<td></td>
</tr>
<tr>
<td>There is no or very little resistance to</td>
<td></td>
</tr>
<tr>
<td>acceptance by key participants</td>
<td></td>
</tr>
<tr>
<td>The regulatory and fiscal barriers are very</td>
<td></td>
</tr>
<tr>
<td>low or inexistent</td>
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<tr>
<td>The resources required are significantly low</td>
<td></td>
</tr>
<tr>
<td>or null</td>
<td></td>
</tr>
<tr>
<td><strong>Strategic Planning</strong></td>
<td></td>
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<tr>
<td>There is a low degree of concentration in the</td>
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<tr>
<td>underlying market</td>
<td></td>
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<tr>
<td>The underlying index is not based on a</td>
<td></td>
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<tr>
<td>benchmark or a potential benchmark</td>
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<tr>
<td>The product is unique from the competition</td>
<td></td>
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<tr>
<td>and has no existing substitute</td>
<td></td>
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<tr>
<td>The product doesn’t cannibalize any revenues</td>
<td></td>
</tr>
<tr>
<td>from MX’s products</td>
<td></td>
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<tr>
<td>The product is cost efficient relative to the</td>
<td></td>
</tr>
<tr>
<td>cash/pte/competing exchanges in the market</td>
<td></td>
</tr>
<tr>
<td>The product is strongly aligned with our</td>
<td></td>
</tr>
<tr>
<td>business strategy and objectives</td>
<td></td>
</tr>
<tr>
<td><strong>Financial Evaluation</strong></td>
<td></td>
</tr>
<tr>
<td>The NPV of the project is strongly positive</td>
<td></td>
</tr>
<tr>
<td>The IRR of the project is strongly higher</td>
<td></td>
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<tr>
<td>than the WACC</td>
<td></td>
</tr>
</tbody>
</table>
Derivatives Exchange case studies:
Montreal Exchange (TMX Group)

- TMX Group operates Canadian cash and derivative markets and Clearing Houses for multiple asset classes including equities, fixed income and energy.

- TMX Group provide listing markets, trading markets, clearing and Depository facilities and Data products.

- Focus: Technology driven, client centric with a discipline innovation strategy.

- Market Cap: Approx 4 billions.

- Derivatives trading: approx 100 millions contracts traded yearly.

- TMX unique dual purpose - to grow and prosper as a public company while also being a catalyst for economic development and remaining globally competitive.

- 1999: The Montreal Exchange becomes the unique Canadian financial derivative market following agreement with TSX. TSX becomes the unique Canadian stock market.


- 2001: Creation of a Foreign trading access status to provide direct access to international participants.

- 2007: Montreal Exchange becomes a public company.

- 2008: TMX group is created (TSX and MX).
In 1985, Brazil’s leading stock exchange, Bovespa, opened a derivatives exchange, Bolsa de Mercadorias e Futuros (BM&F), modeled after the Chicago Mercantile Exchange (CME). BM&F started as an open outcry exchange, with several hundred members, including large brokers, banks and “locals”

Initial contracts: FX future, Bovespa stock index, Interest rate future and several agricultural futures (coffee, sugar, cotton, etc.)

Brazil’s volatility in the 1980s and 1990s stimulated enormous growth in derivatives volumes. By 1995, BM&F was one of the world’s top 5 derivatives exchanges.

To deal with the high credit risk in Brazil, BM&F developed one of the most sophisticated and prudent risk management frameworks among exchanges: gross margins required, no netting; members must report to the clearinghouse the identity and position of ultimate beneficiary of each trade; highly capitalized exchange and associated clearinghouse.
Derivatives Exchange Case Studies
Brazil

Exchange customers included several hundred Brazilian banks and asset managers and a very significant number of foreigners, attracted by the opportunity of “trading Brazil” through derivatives. BM&F became very successful. Although incorporated as a non-profit, BM&F was very profitable. It distributed profits in the form of rebates to members and it built up a very significant equity base. Starting in 2000, BM&F transitioned gradually from open outcry to electronic trading.

In 2007, both BM&F and BOVESPA demutualized and in early 2008, they had IPOs. CME took a 10% equity stake in BM&F. BM&F acquired Bovespa in 2008, to create BM&F Bovespa.

In 2015, BM&F Bovespa acquired CETIP, Brazil's fixed income depository and OTC trading platform to create B3.
Derivatives Exchange Case Studies
Thailand

In 2004-2005, The Stock Exchange of Thailand (SET) set up a derivatives market: Thailand Futures Exchange (TFEX) and Thailand Clearinghouse (TCH)


Initial products: Stock Index Future, Stock Index Options

By 2009, TFEX reached targeted volume of around 10,000 contracts/day, or 2.5 million / year; Around 15,000 clients, mostly retail: As of 2009, volume was 57% retail, 26% local institutions and 17% foreigners.

Liquidity was primed by a group of market-makers and extensive use of cash – futures arbitrage. TFEX introduced high initial margin to reduce the need for daily margin calls and possible credit risks

By 2016, TFEX reached annual volume of 69 million contracts. This represents an annual compound growth rate of almost 50%

Product range currently includes: Stock index futures and options, single stock futures, gold futures, government bond futures, US Dollar futures and energy
In 1998, the Mexican stock exchange (BMV) set up a derivatives market: Mexican Derivatives exchange (MexDer) and a derivatives clearinghouse Asigna.

Market launched in 1998

Initial products: Interest rates, FX, equity derivatives

Liquidity was primed by a group of market-makers and stimulated by an aggressive effort to bring foreigners:
MexDer entered an alliance with CME and offered remote memberships to CME members
An order routing arrangement with CME Globex made it very convenient for remote members

By 2016, MexDer reached annual volume of almost 13 million contracts.

Product range currently includes: Stock index futures and options, single stock futures, interest rate futures covering the entire Mexican yield curve, US Dollar futures and corn futures

In February 2017 MexDer and CME terminated their order routing arrangement. Foreigners now must use a Mexican clearing member to access the market
Most African exchanges are still at early stage of development: derivatives markets are likely to bloom in only a few countries

For derivatives exchanges to take off, several conditions must be met:

- Sufficient market size and depth e.g. market cap/GDP
- Volatility – need for risk management/opportunity to speculate
- Sufficiently large trader community:
  - Hedgers, e.g. pension funds, mutual funds, banks, government bond dealers
  - Speculators e.g. foreign players, active local traders, including retail, hedge funds, futures funds
- Sufficient market liquidity i.e. turnover ratio
- Sufficient interest among brokers

Products: equity index future and option, interest rate future, FX future, some commodities

Countries likely to succeed in building derivatives markets in the near term: Morocco and Nigeria seem most likely

Possibility of regional derivatives markets e.g. CFA region
THANK YOU!

LEON
BITTON

For further information:
bittonleon@gmail.com
**ABOUT LEON BITTON**

Léon Bitton is a seasoned professional with over 36 years of experience in Financial Markets. Mr. Bitton served as Vice-President, Research and Development at the Montréal Exchange (part of Canada’s TMX Group) and has led the research and development efforts related to all the Exchange current listed derivatives products. He has played a key and pivotal role in shaping the Canadian Derivatives market through its transition from a mutually owned enterprise to a large publicly traded company. He was also the driving force behind the establishment of the first regulated Carbon market in Canada.

Mr. Bitton is now the CEO of the international consulting firm LBA Finance that he recently founded and he is affiliated with the CBM Group, a Management consulting firm specialized in financial services, based in New York.

Mr. Bitton acted as Member of several Boards such as the Board of the Canadian Research Center CIRANO, the Board of the Association des MBA du Québec, the Board of MITACS (Mathematics of Information Technology and Complex Systems), the Board of the Canadian Depository for Securities (CDS) and of the Canadian Derivatives Clearing Corporation (TCO). He also performs regularly as a speaker for various associations and organizations in the financial and environmental sectors.

Mr. Bitton holds a Master degree from the University of Québec in Montreal with a collaboration from the Florida International University.
ABOUT THE CBM GROUP

• Management consulting firm specialized in financial services, based in New York, led by Andre Cappon acappon@thecbmgroup.com

• Since its founding in 1992, CBM Group has advised 60+ leading financial institutions in North America, Europe, Latin America and Asia. Clients include: banks, securities firms, insurance companies, exchanges

• Key exchange clients include: BM&F BOVESPA (Brazilian exchanges), Euronext, TMX (Canadian exchanges), London Stock Exchange (LSE), NASDAQ OM, Philippine Stock Exchange, Santiago Stock Exchange (Chile), Merval (Argentina)

• Practice focus:
  – Capital markets infrastructure: exchanges, clearinghouses, depositories, interdealer brokers, market data providers, rating agencies
  – Wealth management: asset managers, distributors of investment and insurance products
  – Risk management: credit risk models, market risk models
BUILDING AFRICAN FINANCIAL MARKETS

Capacity Building Seminar

Casablanca
May 18th & 19th
2017

Theme:
"Global best practices to enhance the African Capital Markets"

Hosted by
Casablanca Stock Exchange

In Association with
ASEA
La technologie Blockchain, impacts sur les marchés financiers

Mohamed Horani
Président Directeur Général
Emergence de l’économie collaborative, vers une souveraineté individuelle ou démocratie P2P
## Tendances technologiques 2017 (Gartner)

### Intelligence artificielle et apprentissage automatique

- Applied Artificial intelligence and advanced machine learning
- Intelligent Apps
- Intelligent Things

### Digital

- Virtual Reality and Augmented Reality
- Digital Twins
- Blockchains and Distributed Ledgers

### Mesh

- Conversational Systems
- Digital Technology Platforms

- Mesh App and Service Architecture
- Adaptive Security Architecture

### Interactions entre le monde physique et le monde numérique

**Intelligence artificielle et apprentissage automatique**

**Digital**

**Mesh**
Tendances technologiques 2017 (Gartner)
La Blockchain et autres Registres Distribués, une technologie disruptive pour tous les secteurs d’activité
La Blockchain, une technologie au service d’une économie de la transaction sans intermédiaires

Une technologie adaptée aux activités de transfert P2P

• d’argent, de biens, de droits d’utilisation, de propriété, et de tout actif,…

Une technologie pouvant intégrer des clauses contractuelles

• Contrats intelligents permettant l’exécution automatique des dispositions contractuelles
• Interface avec l’Internet des Objets pour connecter le monde numérique au monde physique
Les Organisations Décentralisées Autonomes (DOA), instrument de coordination automatique

La DAO est un programme informatique qui scelle dans une blockchain l'ensemble des règles qui régissent une organisation.

Doter l’organisation des propriétés de la Blockchain : sécurité, transparence, fluidité.

Elle peut s’apparenter à une matrice qui articule une multitude de smart-contracts.
Typologie des blockchains

Blockchain publique  Blockchain consortium  Blockchain privée

La chaîne de consortium : un bon compromis entre un modèle décentralisé et sans confiance institutionnelle d’une chaîne publique, et un modèle centralisé et dépendant d’un tiers de confiance d’une chaîne privée.
La puissance de la Blockchain ne se limite pas à des transactions statiques

Blockchain 1.0 : les crypto-monnaies (Bitcoin)
- Transactions en ligne sans intermédiaire

Blockchain 2.0 : les contrats intelligents
- En plus des transactions financières, cette technologie permet de créer des applications décentralisées grâce à un langage de programmation propre

Blockchain 3.0 : Applications futures
- Extension à de nombreux domaines d’activité, y compris au sein des gouvernements qui pourront offrir des services publics de manière automatique et décentralisée
Le Bitcoin, une crypto-monnaie et un système de paiement P2P basée sur une blockchain publique

L’inventeur du Bitcoin est Satoshi Nakamoto, le pseudonyme de la personne ou du groupe de personnes qui, de 2009 à 2010, a conçu et créé le Bitcoin.

Satoshi Nakamoto fut le seul mineur en activité. Sa fortune serait proche du million de bitcoins (USD 1,5 Milliards au 4 mai 2017).

La gouvernance du Bitcoin est assurée par la Fondation Bitcoin créée en Septembre 2012 pour normaliser, protéger et promouvoir l’utilisation du bitcoin.

L’unité de compte est le bitcoin (Sigle BTC), divisible jusqu’à la huitième décimale.

Le système est conçu de manière à limiter le nombre de bitcoins émis à 21 millions d’unités.

Satoshi Nakamoto?

C’est pas moi ...

Auteur du livre blanc intitulé “Bitcoin : A Peer-to-Peer Electronic Cash System”
Le Bitcoin, une crypto-monnaie et un système de paiement P2P sans tiers de confiance

- Le consensus distribué remplace le tiers de confiance : Consensus as a Service (CaaS).
- La puissance de calcul des nœuds (plus de 7000) est au cœur de la sécurité et de l’économie du Bitcoin...
le BitCoin fut d’abord adopté par des cyber-anarchistes, et devint un outil de blanchiment et d’évasion fiscale.

Le marché Bitcoin au 4 mai 2017

<table>
<thead>
<tr>
<th>Description</th>
<th>Valeur</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenu total des mineurs (USD)</td>
<td>$2,921,277,23</td>
</tr>
<tr>
<td>% de gains grâce aux frais de transaction</td>
<td>13,4%</td>
</tr>
<tr>
<td>% du volume des transactions</td>
<td>0,51%</td>
</tr>
<tr>
<td>Coût par transaction (USD)</td>
<td>$10,24</td>
</tr>
<tr>
<td>Nombre de transactions</td>
<td>285,193</td>
</tr>
<tr>
<td>Volume estimé des transactions (BTC)</td>
<td>381,279,941,983,12 BTC</td>
</tr>
<tr>
<td>Volume estimé des transactions (USD)</td>
<td>$571,597,399,17</td>
</tr>
</tbody>
</table>
Sidechains, des chaînes auxiliaires interopérables entre elles et avec une chaîne mère comme le Bitcoin

Les sidechains permettent de transférer des bitcoins et autres actifs d'un grand livre entre plusieurs chaînes de blocs.

le Bitcoin est au marché des crypto-monnaies, ce qu'est le dollar au Forex

Une sidechain est créée avec un stock initial de sidecoins verrouillés

Le déverrouillage des sidecoins se fait par le verrouillage de bitcoins ou autre crypto-monnaie mère, avec un taux de conversion à parité (1:1), avec une preuve cryptographique de verrouillage.

Le procédé de cette preuve s'appuie sur le protocole "Simple Payment Verification" décrit dans le papier fondateur de Satoshi Nakamoto.

Les sidecoins ne sont utilisables qu'après une période de contestation.

Adam Back, inventeur du Hashcash, le procédé de "proof of work", et co-fondateur de la start-up Blockstream en 2014.
La Blockchain 2.0, représentée par Ethereum

- Une société suisse, créée en 2014.
- La première version publique a été publiée en août 2015.
- Permet de créer des contrats intelligents sous forme de logiciels capables d’exécuter automatiquement certaines actions en fonction de conditions prédéfinies.
- Une blockchain publique avec une taille illimitée des blocks.
- Transition de la preuve de travail (Proof of Work) à la preuve d’enjeux (Proof of Stake).
- Les mineurs de la blockchain d’Ethereum ne valident pas uniquement des transactions mais exécutent le code provenant des différentes applications du contrat intelligent.
- Ethereum a mis sur pied une crypto-monnaie, l’Ether, pour rémunérer les mineurs.
- La capitalisation Ethereum est supérieure à 2 milliards d’euros.
Exemples de contrats intelligents Ethereum

• **Slock.it** : ambitionne de devenir la future infrastructure de l’économie collaborative.
  - Elle développe son offre en combinant les avantages de la Blockchain et ceux de l’Internet des objets.
  - Elle propose par exemple des verrous spéciaux pour les portes qui peuvent être débloqués par une personne qui aurait loué un appartement, via son téléphone mobile.

• **Arcade City** : envisage de détrôner Uber.
  - Ubérisation d’Uber.

• **The DAO** : souhaite devenir la première organisation décentralisée sur la Blockchain.
  - Créée en mai 2016 pour réunir des fonds, sous forme d’Ether, afin de financer des projets utilisant la chaîne de blocs d’Ethereum.
  - The DAO a pu collecter plus de 12 000 000 d’Ether (soit 15 % de la monnaie totale émise pour un total de plus de 150 millions d’euros).
  - Les membres de The DAO ont la possibilité de voter pour le choix des start-ups à financer.
Les contrats intelligents ne sont pas inattaquables

Ethereum : The DAO a été piratée par des hackers.

• Ils détournèrent, le 17 juin 2016, près d'un tiers des encours (64 M $) en respectant les propres règles de The DAO.

• La communauté Ethereum et ses membres fondateurs ont décidé de liquider le fonds d'investissement et de reprogrammer la chaîne de blocs pour recréditer le fonds d'investissement des fonds volés.

• Cependant, environ 15 % de la puissance de calcul des mineurs de l'Ether a refusé d'implémenter ce changement.

• Scission en deux chaînes de blocs distinctes (hard fork) : l'une officielle et soutenue par les développeurs (l'Ether avec pour symbole : ETH), et l'autre non-officielle avec pour monnaie l'Ether classique (symbole : ETC) dans laquelle les hackers conservent la monnaie détournée de The DAO.
La Blockchain Ripple, un système de règlement instantané des paiements de banque-à-banque

- 15 clients parmi les plus grandes banques dans le monde
- La technologie remplace la messagerie sécurisée Swift et les réseaux de paiement interbancaires et interzones.
- L’opération, qui nécessite un délai de deux à six jours, est avec Ripple instantanée.
- Ripple est beaucoup moins chère.
- Ripple utilise une devise pivot pour effectuer les échanges, sa crypto-monnaie baptisée XRP.
- Ripple est volatile, mais moins que le Bitcoin ou l’Ether.
- Ripple oblige les banques à pré-alimenter les comptes intermédiaires de liquidités dans chaque pays.
La Blockchain, pour améliorer et optimiser l’infrastructure des marchés financiers…

- Prouver la solvabilité des acteurs,
  - Application de certaines règles prudentielles par des smart contracts.

- Améliorer la confiance dans les marchés,
  - Inscription des bilans comptables des parties sur une blockchain commune incontestable.

- Raccourcir les délais nécessaires de certaines opérations,

- Automatiser certaines actions comme l’émission d'actions ou la distribution de dividendes…
La Blockchain, pour une distribution automatique des dividendes

Inscrire un contrat intelligent dans la blockchain

• Déclencher la distribution à l’annonce des résultats, si la marge nette est positive.
• Prévoir un certain pourcentage des bénéfices à distribuer.
• Envoyer directement aux actionnaires, à une date programmée, les montants nets de leurs dividendes.
• Dividendes en monnaie nationale ou son équivalent en crypto-monnaie.
La Blockchain, plusieurs applications sont possibles, mais à déployer avec prudence…

Nasdaq développe un projet DLT pour l’enregistrement et le transfert de valeurs non-cotées (Système LINK - Octobre 2015) :

• La technologie permet d’enregistrer les transactions sous la forme d'un livre ouvert sur Internet, où les utilisateurs servent eux-mêmes de garants, en complément d’ExactEquity, la solution cloud de gestion d’actifs,
• Évitant ainsi de commencer par des marchés cotés avec de forts volumes transactionnels.

Nasdaq propose un dispositif DLT de vote d’actionnaires pour les e-résidents estoniens (Février 2016).

• L’Estonie dispose d’un système d’identité numérique nationale ouvert aux non-résidents et aux citoyens d’autres pays.

La bourse australienne ASX a déployé une blockchain prototype qui coexiste avec les infrastructures en place « CHESS » (Novembre 2015):

• Elle réduit ainsi le risque d’une transition prématurée.
• Cette approche participative permet aux différents acteurs d’évaluer les bénéfices et les conséquences de cette technologie avant une prise de décision finale.
La Blockchain transformera la gestion d’actifs

- Le Depository Trust and Clearing Corporation (DTCC), "le comptable Wall Street", a annoncé avoir testé (Avril 2016) avec succès un cas d’usage dans lequel la technologie blockchain permet de mieux gérer des CDS. 4 banques sont partenaires de l’opération : Bank of America, Merrill Lynch, Citi, Credit Suisse, et J.P. Morgan.

- La banque espagnole Santander estime que la technologie blockchain permettra aux banques d’économiser 20 milliards de dollars par an en réinventant le back-office.
Les banques multiplient les expériences en interne et/ou au sein de consortiums

Le consortium R3 (environ 70 institutions financières comme Goldman Sachs, BNP Paribas)

- Travaux sur des projets de contrats intelligents comme la lettre de crédit en plaçant la transaction sur un livre privé partagé. Les acteurs peuvent suivre les données en temps réel. Les lettres de crédit sont signées et garanties électroniquement.

- La réduction des coûts de traitement a favorisé l'augmentation des volumes, et pourrait se traduire à terme par une croissance de 15% des revenus des banques.

Insatisfaits de la gouvernance, des membres fondateurs comme Goldman Sachs, Morgan Stanley et Santander ont quitté le consortium.

- Les banques ont dorénavant acquis suffisamment de compétences et de connaissances pour monter leurs propres projets et se distinguer de leurs concurrents.

- Ces consortiums risquent d'avoir une durée de vie limitée ou devront changer de mission (normalisation, interopérabilité, ...).
### Défis technologiques de la Blockchain


2. La performance du système Bitcoin est très faible : 1 block toutes les 10 minutes et 3 à 7 TPS (Transactions Par Seconde).

3. La menace potentielle d’attaque des 51%.

4. Risque d’obsolescence des algorithmes de chiffrage et risques de développement d’ordinateurs quantiques.

5. L’irréversibilité des transactions qui sont inéffacables.

6. La définition de standards est nécessaire pour assurer une interopérabilité entre plateformes Blockchain.
Les défis économiques de la Blockchain

La disparition des intermédiaires et les gains en crypto-monnaies réalisés par les mineurs constituent un nouveau paradigme économique.

L’impact sur la structure des marchés et des secteurs économiques ne sera pas neutre sur les ressources humaines.

La fiscalité des transferts de crypto-monnaies et des gains réalisés dans ces nouvelles monnaies.
Les défis de la gouvernance de la Blockchain

La gouvernance des systèmes de blockchain publique est assurée par des fondations.

- Les décisions sont prises à la majorité et ne sont pas opposables à la minorité qui peut décider de quitter le système.

- Bitcoin : un désaccord sur la taille des blocks entre les équipes de développement dure depuis 2 ans et menace l'avenir du Bitcoin, avec un risque de fork (scission).
Les défis juridiques de la Blockchain

L’anonymat et les exigences réglementaires (KYC)

La lutte contre les utilisations illicites afin d’améliorer l’image de la technologie blockchain souvent associée au Dark Web.

La problématique du « Code is Law » et l’opposition entre la loi humaine et la loi informatique :

• Les contrats intelligents sont censés être des accords autonomes non soumis à des interprétations par des entités ou des juridictions extérieures. Le code lui-même est censé être l’arbitre ultime de « l’accord » qu’il représente.
La technologie blockchain est promue à un avenir certain, mais demeurera encore quelques temps un domaine d’expérimentation...

- Travailler sur des POC en partenariat avec des entreprises technologiques;
- Coopérer avec ses confrères dans son secteur d’activité;
- Etre une force de proposition pour les régulateurs et les organes de contrôle;
- Participer à des prototypes et adopter l’approche "learn by doing";
BUILDING AFRICAN FINANCIAL MARKETS

Casablanca
May 18th & 19th 2017

Capacity Building Seminar

Theme:
"Global best practices to enhance the African Capital Markets"

Hosted by
Casablanca Stock Exchange

In Association with
ASEA
London Stock Exchange Group
Supporting Capital Markets Worldwide

Doug Sheffield
Senior Manager Global Business Development
London Stock Exchange Group
SMEs: Creating Growth

SMEs are the drivers of economic growth across developed and developing economies

- SMEs make up the majority of businesses in most economies
- SMEs create employment and GDP growth
- An exchange can help channel capital and resources to productive private sector initiatives

AIM - LSE’s SME market

- 3,500+ SME companies joined since 1995
- £100bn capital raised
- Estimated contribution to UK GDP in 2009 £21bn
- Around 570,000 full-time equivalent jobs

Source: Grant Thornton Report
Data as at 2010
LSEG provides markets and services to support companies throughout their funding ladder requirements.

Supporting SMEs funding & growth.

Strategic consideration:
- **Concept & seed stage**: £50-500k
- **Early Stage**: £100k-1m
- **Expansion**: £1m-1.5bn
- **Consolidation & further capital raising**: £1.5bn-10bn
- **Diversification of investors, M&A and International Expansion**: £10bn+

**Funding Ladder**

- **Seed Capital**
- **Business Angels**
- **Venture Capital**
- **Private Equity**

- **Supporting SMEs funding & growth**
Companies to Inspire Series

- LSEG’s celebration of some of the fastest-growing and most dynamic SMEs
- The series includes Europe and Britain
- March 2017 launched the **Companies to Inspire Africa** report
- Companies to Inspire Africa covers **343 companies** across **43 African countries**
ELITE Overview

ELITE accelerates long-term growth by offering access to a diverse network, a range of funding options, and a dedicated training programme.

What?
ELITE is a programme that helps fast-growing private companies prepare and structure for further growth through sharing experiences, access to financing opportunities and education.

Who?
ELITE serves the most exciting and ambitious businesses with a strong business model, clear growth strategy and the commitment to implement useful changes for development.

How?
ELITE offers an innovative approach through training and access to a diverse community of companies, entrepreneurs, investors and corporate advisers.
Throughout their engagement, ELITE companies access a vibrant community that facilitates long-term structured engagement with business and financial stakeholders.
ELITE has over **550** companies enrolled and is growing rapidly.

- **557** Companies
- **26** Countries
- **150+** Partners

![Graph showing growth over years](image-url)
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BUILDING AFRICAN FINANCIAL MARKETS

Capacity Building Seminar

Theme:
"Global best practices to enhance the African Capital Markets"

Hosted by
Casablanca Stock Exchange

In Association with
ASEA
“Fearing the float?”
Exchange rate regimes and capital markets development
May 2017
Unleashing the potential of local currency capital markets...

Objective: improve the mobilisation and allocation of resources

Create a diversified local investor base

Bridge between international investors and local issuers

Establish well-governed institutions (law, monetary policy)
Exchange rate policy matters...

Exchange rate regime since 1980 in African countries with largest market capitalisation

Fixed rate regimes lose ground…

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**Market capitalisation...**
- >USD100bn
- USD 30bn - 100bn
- USD 6bn - 30bn

**CFA Franc Zone:** Benin, Burkina Faso, Cote d’Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo.

The economic growth argument

GDP growth of intermediate exchange rate regimes

GDP growth of fixed exchange rate regimes

GDP growth of floating exchange rate regimes

Floating exchange rate regimes are conducive to risk management practices and the mobilisation of local savings ...

- **Demand** (derivatives, money market)
- **Monetary autonomy**
- **Local Currency Saving**
It all starts with money markets…

Well developed money and capital markets facilitate:

- Monetary policy implementation
- Risk mitigation
- Fixed income development
- Building of a local investor base

Diagram:

- Money Markets
- Foreign Exchange & T-Bill Market
- Government Bond Market
- Corporate Bond & Equity
- Derivatives

EBRD’s support (I)

Building the curve

Money market indexes
Assist in the re-definition or definition of money market indices

Modelling of sovereign yield curves
Support stakeholders in developing a model and regularly publishing a sovereign yield curve

Creating the instruments

Development of short term debt frameworks
Support the creation of debt instruments best adapted to the local money market constraints

Derivatives and repos
- Diagnostic assessment
- Legal advisory support: close out netting and security taking are key subjects
- Training and Workshops
- Cooperation with ISDA and ICMA
EBRD’s support (II)

Building the capacity

Central Bank Modernisation
forecasting and modelling, communication

Training programme focused on
• Debt instruments
• Risk management including FX risk

Reinforcing the infrastructure

Payment systems and securities depositories
improve a country’s investment profile
EBRD’s support (III)

Preparing roadmaps for money market and capital market development

• Latest example: Jordan (January 2017)
BUILDING AFRICAN FINANCIAL MARKETS

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ENHANCING EMERGING MARKET VENUE LIQUIDITY
BAFM CONFERENCE

18 MAY 2017
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Overview

• This report was jointly created and produced in 2016 by Oliver Wyman and the World Federation of Exchanges

• The purpose of the report is to illustrate the importance of liquidity in exchanges and assess how regulators and exchanges can grow liquidity

• Relevant for exchanges at all stages of the growth cycle
  – Early-stage typically focused on core market enhancements such as electronification and attracting local issuers and investors
  – Mid-stage focused on transitioning towards disclosure-based listing regimes and attracting international issuers and investors
  – Maturing focused on alignment of capabilities and standards with international best practices
Growing liquidity can become a virtuous cycle, with increasing benefits for both investors and issuers.

**Benefits of increasing market liquidity**

- **Impact of higher liquidity on issuers**
  - Lower cost of equity
  - More productive investments
  - Higher return on invested capital
  - More equity investment
  - Greater capital accumulation

- **Impact of higher liquidity on investors**
  - Higher investment returns
  - More productive investments
  - Lower cost of equity
  - More equity investment
  - Greater capital accumulation
While investors, issuers, and exchanges are direct beneficiaries from increased liquidity there is also wider economic uplift.

**Benefits to market participants**

**Investors**
- Lower cost of trading
- Ability to trade in and out of assets
- Lower price volatility
- Improved price formation

**Issuers**
- Reduced cost of raising capital
- More accurate share price valuations
- Wider investor base

**Exchanges**
- Increased volumes & thus revenues
- Greater public confidence in the market
- Support expansion of product offering

**Wider economic benefits**

- Positive cycle helps increase funding to corporates
- Helps drive economic growth, increasing employment, enriching individuals and the economy
- Has a tiered impact as well, as benefits flow through supply chains
- Additional transparency and disclosure improves confidence in the market and listed firms
Increasing liquidity can be approached in three ways: diversifying the investor base, increasing the pool of securities, or improving the market environment.

1. **Promoting the development of a diverse investor base**
   Includes both retail and both local and international institutional investors in order to promote a mix of different investment horizons and perspectives.

2. **Increasing the pool of securities and associated financial products**
   Encouraging a greater variety of high quality products available to trade on the venue.

3. **Investing in the creation of an enabling market environment**
   Improving efficiency in the trading and post-trade processes to reduce transaction and settlement costs.
Promoting the development of a diverse investor base

<table>
<thead>
<tr>
<th>Objective</th>
<th>Levers</th>
<th>Market stage</th>
<th>Relative impact</th>
<th>Ease to implement</th>
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<td>Early</td>
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<td>Grow retail investor base</td>
<td>Tax incentives</td>
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<td></td>
<td>Investor education</td>
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<td></td>
<td>Professional and regulated intermediaries</td>
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<td></td>
<td>Simplified market access</td>
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<tr>
<td>Incentivize local institutional investors</td>
<td>Remove regulatory barriers</td>
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<td></td>
<td>Tax incentives</td>
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<td>Attracting international investors</td>
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<td>Tax incentives</td>
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Promoting the development of a diverse investor base

Case study – Attracting retail investors to the Stock Exchange of Thailand has been achieved through a multi-faceted approach with a focus on education.

Number of retail trading accounts

Perspectives

- The Stock Exchange of Thailand (SET) and its market authorities have dramatically increased retail participation through a number of initiatives:
  - Exempting transactions on the exchange from capital gains tax
  - Introducing a “banker-to-broker” program in 2011, which allowed investors to open securities brokerage accounts at commercial bank branches
  - Fully liberalized broker fees in 2012, associated with a sharp increase in trading volumes
  - Providing securities firms with access to an online trading platform that they make available to their clients, to allow them to place orders with their securities brokers using mobile devices

Investor Composition at end of 2015

- Local investors: 59%
- Foreign investors: 22%
- Proprietary traders: 10%
- Local institutions: 10%
Promoting the development of a diverse investor base

Case study – The Shanghai–Hong Kong Stock Connect bridge has been highly successful in bringing in international investors

Inflows to China and Hong Kong via stock connect
Aggregate quota usage, RMB BN

Impact on Liquidity
Shanghai Stock Exchange

Hong Kong Stock Exchange

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Increasing the pool of securities and associated financial products

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<th>Market stage</th>
<th>Relative impact</th>
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<td>Specifying appropriate admission criteria</td>
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<td>Move to disclosure based approach</td>
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<td>Align with international standards</td>
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<td><strong>Launch ETFs</strong></td>
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<td><strong>Launch derivatives</strong></td>
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<td><strong>Create regional marketplace</strong></td>
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Increasing the pool of securities and associated financial products
Case study – The National Stock Exchange of India successfully launched its derivatives market in 2000

NSE India case study
Derivatives – number of contracts & open interest
Increasing the pool of securities and associated financial products

Case study – Brazil introduced a tiered market structure that provided a step ladder for adherence to higher levels of corporate governance.

**Brazilian equity markets – overview of reformed market structure**

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Description</th>
<th>Traditional</th>
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<th>Level 2</th>
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<td><strong>Improved disclosure</strong></td>
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<td>• Disclosure of insiders’ and controlling shareholders’ transactions</td>
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<td>• Internationally recognised reporting standard, IFRS or US GAAP (Novo Mercado listings only)</td>
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<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Corporate governance and shareholder rights</strong></td>
<td>• Tag-along rights for all shareholders (at the full price of the deal)</td>
<td>☒</td>
<td>☒</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>• Board of directors must have at least 5 members, all with mandates of up to two years, and 20% of them independent</td>
<td></td>
<td>☒</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>• At least 25% free float and corporate issues arbitrated via dedicated Arbitration Panel</td>
<td></td>
<td>☒</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Only voting shares allowed</strong></td>
<td>• Shareholders of Level 2 participants entitled to voting rights in some key situations (e.g. M&amp;A)</td>
<td>☒</td>
<td>☒</td>
<td>☒</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>• Novo Mercado participants can only issue voting shares (i.e. no non-voting preferred shares allowed)</td>
<td></td>
<td>☒</td>
<td>☒</td>
<td>✓</td>
</tr>
</tbody>
</table>
Increasing the pool of securities and associated financial products

Case study – The Latin American Integrated Market (MILA) provides an excellent example of a regional marketplace

Average number of EOB trades

Average market cap
US$ MM

Begin harmonising regulations
MILA formally launched
Investing in the creation of an enabling market environment

<table>
<thead>
<tr>
<th>Objective</th>
<th>Levers</th>
<th>Market stage</th>
<th>Relative impact</th>
<th>Ease to implement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Early</td>
<td>Mid-stage</td>
<td>Maturing</td>
</tr>
<tr>
<td><strong>Improving market trading technology</strong></td>
<td>Electronification</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dematerialization</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Direct market access</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Algorithmic execution</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Co-location services</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Support for algorithmic trading firms</td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td><strong>Enhancing market and reference data</strong></td>
<td>Improved real-time and historical data</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Analytics and tools</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Index capabilities</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td><strong>Implement market-maker schemes</strong></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Implement short-selling and securities lending and borrowing</strong></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Investing in the creation of an enabling market environment
Case study – The impact of the shift to electronic trading on liquidity

Value traded and market capitalization of BM&F Bovespa: TN BRL

Value traded and market capitalization of NSE: BN INR

Electronic trading only
High speed trading

Algo trading permitted
DMA introduced
Smart order routing introduced

Market capitalization
Value traded

Source: Oliver Wyman analysis, WFE data
There are four factors to consider when considering which levers are most appropriate to enhance liquidity:

1. **Current level of market maturity**
   - Some levers have prerequisites or require a certain level of market maturity.

2. **Composition of the local investor base**
   - Each market has a unique investor composition which influences the choice of levers.

3. **Strength of regulatory and government relationships**
   - Some levers require close collaboration with other markets.
   - Often need regulatory approval or changes in tax/legal arrangements.

4. **Links to other local and international markets**

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BUILDING AFRICAN FINANCIAL MARKETS

Casablanca
May 18th & 19th 2017

Capacity Building Seminar

Theme:
“Global best practices to enhance the African Capital Markets”
BlockChain

Vers la fin des métiers de l’intermédiation

Ghassan CALLAS
cghassan@dxc.com
BlockChain
Perspectives d’applications
Sommaire

- L’univers BlockChain
- BlockChain, Architecture et Solutions
- BlockChain, Digitalisation des processus
J’ai commencé par miner pour une pool sans le savoir… (oui, je ne suis pas toujours très réveillé !) Et au final quand j’ai compris que je minais pour une pool j’ai essayé de la rejoindre avec mon compte et compagnie mais je n’ai pas réussi. J’avais un crash du ethminer à chaque fois que je terminais mon DAG.

Bref après j’ai miné indépendamment pendant approximativement 7 heures avant de ne plus avoir de place sur mon C: alors que j’avais localisé la chaine sur mon F:… Passons, le résultat a été que j’ai miné certes… Mais je n’ai pas fait un seul Ethereum sur “mon wallet”.

Regardons ce témoignage
L’univers BlockChain

Dapps
Applications décentralisées
Etherum Wallet

Blockchain est une technologie disruptive

Smart contracts “App sur Ethereum”

Blockchain privé

Une technologie de stockage distribuée

1. Transparente
2. Sans organe de contrôle
3. Sécurisée et Infaisible
4. Seulement le droit en écriture pas de suppression ni modifications

Command Line Interface (CLI)
Etherum
1. Geth (Go)
2. Parity (Rust)
3. Testrpc (Javascript) qui est un client orienté développement

Blockchain privée

Internet des objets (IoT)
Internet des objets
"Capteurs utilisés par Blockchain"

Plus besoin d’intermédiaire
Remplace le tiers de confiance

Internet of Things (IoT)

Remplace Tiers de confiance
Cadre juridique ?

Dapps
Applications décentralisées

Distributed Ledger Technology (DLT)

ABRA
Money Transfer

Machines hors contrôle

Ordonner les faits
« Preuve de travail »
« Mineurs »
« Oracle »

ZooZ
cevoiturage

Bitcoin
Etherum
Cryptocurrencies

Identity
Management
Factome
Acolyte

Real Estate

Blockchain est une technologie disruptive

Smart contracts “App sur Ethereum”

1. Transparente
2. Sans organe de contrôle
3. Sécurisée et Infaisible
4. Seulement le droit en écriture pas de suppression ni modifications

User:~ geth
--version

"name": "node",
"engine": {
"Ethash": {
"params": {
"gasLimitBoundDivisor": "0x0400",
"minimumDifficulty": "0x020000",
"difficultyBoundDivisor": "0x0800",
"durationLimit": "0x0a",
"blockReward": "0x4563918244F40000",
"registrar": "",
"frontierCompatibilityModeLimit": "0x0"
}
},
"params": {
"accountStartNonce": "0x0100000",
"maximumExtraDataSize": "0x20",
"minGasLimit": "0x1388",
"networkID": "0x100"
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"genesis": {
"seal": {
"ethereum": {
"nonce": "0x00006d6f7264656e",
"mixHash": "Machines hors contrôle"
}
}
}
Dapps
Applications décentralisées
Etherum Wallet
Blockchain est une technologie disruptive
Distributed Ledger Technology (DLT)
Smart contracts "App sur Ethereum"

Remplace tiers de confiance
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Blockchain privé
Une technologie de stockage distribuée

Blockchain

Identity Management Factom Acolyte

Digital Content / Documents Factom Harmony

Real Estate

Machines hors contrôle

L'univers BlockChain
L’univers BlockChain

Pour voir claire … 
…. Quatre niveaux d’analyse

Architecture BlockChain
BlockChain, Architecture & Solutions

4 - Cadre juridique, Éthique et réglementaire
Consensuel pas besoin de tiers de confiance

3 - Offre de solutions & Services
Bitcoin, ZooZ, Locations, time sharing…

2 - Plate-forme applicatives
Création d’une blockchain privée / Développement des Smart Contrats

1 - Infrastructure & Technologies
Stockage et transmission sécurisés de l’information

Plus besoin d’intermédiation
Remplace le tiers de confiance
Blockchain est une technologie disruptive
Remplace tiers de confiance
Cadre juridique ?

ABRA
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Ethereum Wallet

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Ethereum
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Smart contracts
“App sur Ethereum”

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Internet des objets
“Capteurs utilisés par Blockchain”

Distributed Ledger Technology
DLT

Une technologie de stockage distribuée
## BlockChain, Architecture & Solutions

<table>
<thead>
<tr>
<th><strong>– Cadre Juridique, Éthique et réglementaire</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Consensuel pas besoin de tiers de confiance</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>– Offre de solutions &amp; Services</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bitcoin, ZooZ, Locations, ABRA, ...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>– Plate-forme applicatives</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Création d'une blockchain privée / Développement des Smart Contrats</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>– Infrastructure &amp; Technologies</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Stockage et transmission sécurisés de l’information</td>
</tr>
</tbody>
</table>

### 1. **La blockChain est en voie de reconnaissance légale**
- Registre d’échange de titres non coté : Article 34 ter de la loi Sapin II du 14 juin 2016

### 2. **Pas de problème majeur à traduire un contrat reconnu par une institution légale en un smart contrat. L’usage d’un smart contrat sera limité à un usage technique et consensuel.**

### 3. **Transparente**

### 4. **Sécurisée et Infalsifiable**

### 5. **Seulement le droit en écriture pas de suppression ni modifications**

### 6. **Socle Technologique prêt à l’utilisation en mode collaboratif (copropriété consensuelle).**

### 7. **Le recours en cas d’un smart contrat (programme) et en l’absence d’un contrat légal peut être compromis (valeur devant un juge ?).**

### 8. **La possibilité d’audit du rôle et tâches d’un Oracle dans le processus d’exécution de transaction doit être envisageable dans la perspective de légalisation des smart contrats.**

### 9. **La réglementation de la BlockChain au niveau international est inexistante. Cela reste consensuel.**

### 10. **Problèmes posés par les smart Contrats : Qui signe derrière un pseudonyme ? Comment formaliser l’acceptation au-delà de l’automate smart Contrat ?**

### 11. **Arbitrage Usage Vs technologie pas clair**

### 12. **La technologie est récente et n’est pas à ce jour mature pour une adoption massive.**

### 13. **A l’heure actuelle, les protocoles des blockchains ne sont pas encore matures et de nouveaux protocoles de blockchains émergent régulièrement pour répondre aux problèmes posés par les protocoles les plus anciens.**

### 14. **Pas d’interaction avec le mode extérieur. Nécessité de s’appuyer sur un oracle pour réaliser un appel à un service extérieur (un oracle est un service chargé d’entrer manuellement une donnée extérieure).**

### 15. **La mise en place d’oracle revient à faire réintroduire un tiers de confiance (personne ou société tierce).**

### 16. **Le recours à un Oracle introduit un risque de piratage et de fraude.**

### 17. **Pas adapté pour le haut débit transactionnel. Par exemple, bitcoin a une limitation de 7 transaction/ Seconde (et proche de la saturation) comparé au réseau visa qui connait des pics de 20 000 transactions par seconde.**

### 18. **En principe sécurisée, néanmoins des attaques sérieuses ont eu lieu. Un pirate est parvenu à se constituer un portefeuille comprenant une monnaie virtuelle, l’Ether. Environ 50 millions de dollars auraient été ainsi obtenus (17 juin 2016).**

### 19. **L’analyse d’un éventuel incident est très complexe.**
BlockChain, Digitalisation des processus

Dans ce contexte, la maturité de l’offre BlockChain et la multiplication d’applications construites autour de BlockChain permettent d’élargir le champs du possible pour :

- Simplifier la digitalisation des processus
- Réduire considérablement la nécessité de faire intervenir des tiers de confiance.

Par exemple la construction d’une plate-forme commune pour le Trade Finance s’inscrit dans cette démarche.

Grâce à la BlockChain, l’ensemble des acteurs peuvent intervenir sur le même dispositif pour accomplir leur tâche et suivre l’état d’avancement du processus.

Plusieurs banques ont entrepris la réalisation d’un POC ou d’une solution pour l’utilisation de la BlockChain pour créer une plate-forme collaborative dans le cadre du Trade Finance :

- Bank Of America Merry Lunch
- Deutsche Bank, HSBC, KBC, Natixis, Rabobank, Société Générale et UniCredit ont signé un accord cadre à Bruxelles dans lequel elles se sont engagées à participer au développement et à la commercialisation d’une nouvelle offre baptisée Digital Trade Chain (DTC).
BlockChain, Digitalisation des processus

Au-delà des processus du financement, la plate-forme Trade finance basée sur la BlockChain peut couvrir la totalité du périmètre des processus du commerce international et permet d’embarquer l’ensemble des acteurs.
Thank you.

Merci
BUILDING AFRICAN FINANCIAL MARKETS

Casablanca
May 18th & 19th
2017

Capacity Building Seminar

Theme:
"Global best practices to enhance the African Capital Markets"
Can The Stock Market Bridge The Gap Between Green Finance and the Development Needs?

Medhat Nafei, PhD.
General Manager, Risk Management, EGX
19th of May 2017.
Contents

Introduction

Sustainable Development Needs

Financing Development Needs
  Green Finance Schemes
  Developments in Green Finance Market
  Green Finance Challenges

Role of Exchanges in promoting green finance
  Things in progress at EGX
Increasing development needs in Africa drives us to consider diversifying sources of financing development needs and facilitate access to these sources.

Radical shift in green finance with The Paris Agreement following the COP21, and the new global trends in Green Finance Industry.

Although challenges facing green finance, exchanges can play a very crucial role in promoting green finance, (Trading Platforms, Guidelines, Products, Indices).
Sustainable Development Needs

**African Development Needs**

- **Africa GDP%**
  - 2014: 5.1%
  - 2015: 3.4%
  - 2016: 1.5%
  - 2017: 2.6%

- **Located in Africa**
  - 75% of the world’s poorest countries

- **Poverty Rate in Egypt (Jun 2016)**
  - 2014: 2.2%
  - 2015: 4.2%
  - 2016: 4.3%
  - 2017: 3.4%
### African Development Needs

<table>
<thead>
<tr>
<th>Source</th>
<th>Estimated per year</th>
<th>Scope of estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNCTAD (2014)</td>
<td>$210 billion</td>
<td>Basic Infrastructure, Food Security, Health, Education and Climate Change Mitigation</td>
</tr>
<tr>
<td>World Bank (2015a)</td>
<td>$93 billion</td>
<td>INFRASTRUCTURE</td>
</tr>
<tr>
<td>Schmidt-Traub (2015)</td>
<td>$614–$638 billion</td>
<td>Incremental financing needs related to SDG</td>
</tr>
</tbody>
</table>
African Development Needs (Cont')

Traditional/ Conventional Finance

- **Official Development Assistance**: developed countries should devote 0.7% of their GNI to ODA.

- **Infrastructure Fund Africa 50**, African Development Bank ($100 billion for infrastructure)

- **The World Bank** approved $9.3 billion for Africa in 2016 (109 projects)

- **International Bond Market (Eurobond)** Egypt raised $4 billion in Eurobond sale in Jan 2017.

- **IMF Extended Fund Facility** of US$12 billion for Egypt in Nov 2016.
African Development Needs

Green Finance

- **World Bank**: 128 green bonds in 18 currencies, totaling approximately USD 9.7 billion equivalent.
- **Morocco Invests USD 100 million** in World Bank Green Bonds (solar power projects with total capacity of at least 170 megawatts)
- **The European Investment Bank** (EIB) has issued the largest amount of green bonds to date (over $17bn) and was the largest issuer of green bonds in both 2014 and 2015.
Egypt Sustainable Development Needs

- Egypt 2030 Sustainable Development Strategy.
- Egyptian Economy is facing macroeconomic instability, internal and external imbalances.
- The government is targeting a budget deficit of 10.1% in 2016/17, compared to 11.5% in 2015/16.
Egypt Sustainable Development Needs (Cont')

<table>
<thead>
<tr>
<th>Egyptian Mega Projects</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suez Canal Corridor Development Project, including:</strong></td>
<td></td>
</tr>
<tr>
<td>- 7 tunnels below Suez Canal, including 3 in Portsaid for cars and railway</td>
<td>$4.2 billion</td>
</tr>
<tr>
<td>- Establishing power generating plant and water desalination station</td>
<td>$500 million</td>
</tr>
<tr>
<td>- Major industrial zone near El-Sokhna port over an area of 200km²</td>
<td></td>
</tr>
<tr>
<td>- Technology valley in Ismailia</td>
<td></td>
</tr>
<tr>
<td><strong>National Roads Project:</strong> Developing a wide array of new roads and highways, and the maintenance of existing roads.</td>
<td>EGP 36 billion</td>
</tr>
<tr>
<td><strong>Establishing New Cities:</strong></td>
<td></td>
</tr>
<tr>
<td>• The New Administrative Capital</td>
<td>EGP12.7 billion</td>
</tr>
<tr>
<td>• The New Alamein City</td>
<td>EGP 1 billion</td>
</tr>
<tr>
<td>• East Port Said City</td>
<td></td>
</tr>
<tr>
<td>• The New Ismailia City</td>
<td></td>
</tr>
</tbody>
</table>
## Egypt: Sustainable Development Needs

<table>
<thead>
<tr>
<th>Egyptian Mega Projects</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>The National Electricity Project</td>
<td>EGP 400 billion</td>
</tr>
<tr>
<td>National Project for Aquaculture</td>
<td>EGP 650 million</td>
</tr>
<tr>
<td>National Project for the Development of Sinai:</td>
<td>EGP 50 billion</td>
</tr>
</tbody>
</table>

Diversifying Sources for Financing Infrastructure Projects and the Budget Deficit.
Contents

- Introduction.
- Sustainable Development Needs
  - Financing Development Needs
    - Green Finance Schemes
    - Developments in Green Finance Market
    - Green Finance Challenges
- Role of Exchanges in promoting green finance
  - Things in progress at EGX
Financing Development Needs

Green Finance Schemes

- Low-cost debt (concessional finance) from DFIs, compared with commercial bank loans.
- The Public Sector has also provided loans through financial intermediaries such as commercial banks (Fund to provide loans, grants and subsidies to promote energy efficiency).

- Raise capital to finance, or refinance, investments in low-carbon or otherwise environmentally beneficial projects.
- Corporate, bank or government entity.
Financing Development Needs

Green Finance Schemes (Cont')

☑ Specific and relatively small subset of the larger GB market.
☑ Infrastructure Project Developers can use it to attract long-term debt financing from the international or domestic bond markets.

☑ Creating Project Bond requires,

1. Creating a special purpose vehicle, Supported by;
2. The degree of equity from a sponsor, Based on;
3. An assessment of the financial viability of the underlying projects.
Financing Development Needs

Developments in Green Finance Market:

- The Paris Agreement following the COP21.
- Marrakech Pledge for fostering green capital Markets in Africa aiming at:
  - Enabling the development of an effective ecosystem.
  - Supporting the development of green financial instruments.
  - Promoting transparency and accessible information on green finance and climate-resilient investments in Africa.
- The SSE Green Finance Advisory Group
Developments in Green Finance Market:

- Issuance of Green bonds in 2016 recorded, over US$81 billion
- $150 billion estimated issuance in 2017.
- Poland became the first issuer of a SOVEREIGN GREEN BOND

The green bond market 2012-2016

Source: Climate bonds initiative, Report 2016
Financing Development Needs

**Green Finance Challenges:**

- Lack of Clarity in Green Definitions; *Labelled vs. unlabelled*

  - Labelled Green: $118bn
  - Unlabelled Climate aligned: $576bn

- Internalizing Environmental Externalities;
- Information Asymmetry, and
- Inadequate Analytical Capacity.
Introduction.

Sustainable Development Needs

Financing Development Needs

Green Finance Schemes

Developments in Green Finance Market

Green Finance Challenges

Role of Exchanges in promoting green finance

Things in progress at EGX
### Role of Exchanges in Promoting Green Finance

- Provide boards for green products:
  - Luxembourg Green Exchange (Platform dedicated exclusively to green securities)
- List green bonds to create liquidity and provide exit
- List green and socially responsible mutual funds and trade its certificates
- Develop ESG indices and trade ETFs on these indices:
  - S&P/EGS ESG Index (Egypt),
  - Socially Responsible Investment (SRI) Index (JSE)
Raising awareness among listed companies and member firms through:

- Sustainability Reports, Workshops,

Establish a green channel in the IPO process:

- Simplify the IPO review or filing procedures.

Launch a National Green Development Fund:

- The fund could provide a valuable link in the financial system by providing equity that can be leveraged to enable access to other financing channels such as bank loans.
Things in Progress at EGX:

- Negotiating with Reputable Financial Institution to issue first Green Bond at EGX (New and Existing Greenfield Projects).
- The SSE Green Finance Advisory Group.
- The Model Guidance for Reporting on ESG Performance & SDGs
- First Annual Sustainability Report, in accordance with GRI4-Core Reporting
- Integrating ERM efforts into sustainability reporting mechanism.
Role of Exchanges in Promoting Green Finance

Things in Progress at EGX:

- Integrating Enterprise Risk Management Integrated Framework (COSO) and Sustainability Reporting

Risk Identification → Risk Analysis

- Measurement
- Forecasting

Risk Mitigation
- Transfer
- Hedge
- Diversify
- Set Controls

Risk Monitoring

Feedback

Risk Acceptance
In 2015, a comprehensive review conducted for the administrative and operational procedures included the environmental impact of EGX operations.
EGX Sustainability Efforts

- **2004**: 2nd ROSC report
- **2010**: UN- SSE Initiative
- **2012**: EGX embedded sustainability into its strategy
- **2013**: SWG-WFE
- **2014**: EGX issued EGX Model Guidance for Reporting on ESG Performance.
- **2015**: EGX became Vice Chairman in SWG
- **2016**: EGX Sustainability Advisory Committee (EGX-SAC)

**Membership**
- S&P/EGX ESG Index

**Commitments**
- EGX embedded sustainability into its strategy
- SWG-WFE
- SSE Model Guidance on Reporting ESG Information to Investors, launched 8th of Sep 2015

**EGX initiative**
- Ringing the bell for Gender equality, March (Then yearly commitment)
EGX Sustainability Efforts

2017

SSE GREEN FINANCE ADVISORY GROUP

EGX Annual Sustainability Report

Membership

EGX initiative
Thanks
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In Association with ASEA