The Future of Sukuk between Malaysia and Indonesia
Based On System Dynamics

Dr IR. H. Roikhan Mochamad Aziz
State Islamic University (UIN) Syarif Hidayatullah Jakarta
Jl. Juanda No.99 Ciputat Indonesia
Tel +6281-319913.199
Fax +6221-7290576
Email: roi@centrin.net.id, roikhanmochamadaziz@gmail.com,
roikhanmochamadaziz@yahoogroups.com, www.roikhanmochamadaziz.com

Abstract

Comprehensive conclusion resulted on System Dynamics method is the value Indonesia Sukuk (IS) in year 2015 would higher than the value of Malaysia Sukuk (MS). Although during year 2002-2006 as the beginning of IS development (BapepamLK Decree, Kep-386/BL/2007) the market capitalization is very low than MS (Securities Commissions, Quarterly Report, Kuala Lumpur, SC, 2007). IS policy analysis can be effected by sensitivity of Bank Indonesia Certificate (SBI) and their market share, also IS prospect will be reached by structural intervention through tax incentives and Sovereign Sukuk (SBSN) issues (Indonesia Sovereign Act, No. 19 / 2008).

Keywords: Sukuk, System Dynamics

Introduction

In year 2008, world economy is experiencing fundamental change to uncertain economy. This happened to all countries then following into financial crisis. The reason of financial crisis occurred in the world, because current economic system failed to predict the sign of crisis that is knocking over the world. Then, conventional economic and financial science looks for economic model in new paradigm on new approach and more comprehensive. This matter is conducted to get better solution in face of economics problem. One of the solutions is developing financial system based on interest rate free or without usury which is recognized in Islamic economic concept as mudharabah. Islam also has financial system and will be the solution for this situation where economic system is not working properly. This related with the meaning of the word ‘Islam’. Islam means safe or consist of solution for all problems. Islam can give contribution to make new paradigm and to solve current world problem by comprehensive approach that recognized in Islam as Kaffah. In other word, Islam has also comprehensive approach.

1 Roikhan Mochamad Aziz. Sinlammim Kode Tuhan. (Jakarta: Esa Alam, 2006), h.142.
2 (QS. Al-Baqarah [2]: ayat 208)
Concept of System Thinking

An available approach to study real world is system approach. This system approach, the complex world will be studied in the small unit that represent almost all parts from the complex world. In the system terminology, there is model to draw the real world by taking some representatives data into one simple form. After elements and process parts, then following process can be identified, characterized and the reassembly in a unity of structure to have target and product itself. The definition of system is the part of real world from various elements at particular time and place. This system model includes component and process which interact one another base on concept of goal design.

System thinking or kaffah thinking represents approach method that related with other parts in one system, not independent unit, because all elements has connection chain as a part in one whole system. System thinking approach based on environmental elements that related to some objects as a one unity, representing system in some parts, can’t be dissociated, and influencing each other. System thinking has new paradigm such as comprehensive solution (by think global, and act local).

System thinking or comprehensive approach is independent relation among elements (between object and environment) on dynamic circumstances, non linier, and far from equilibrium with asymmetric information. The meaning of comprehensive is to explain system by means totally, there is connections and can’t be separately. In Islam, the concept of system and comprehensive is recognized by word Kaffah.

O ye who believe enter into Islam whole-heartedly; and follow not the footsteps of the satan for he is to you and avowed enemy. System and comprehensive can be understood by some people. And Kaffah also can be understood by some people only, according to first sentence of “Ya ayyuhal ladzina amanu”.

Transformation of Thinking

During 200 years, since revolution industry in year 1800. The world is dominated by linier thinking concept, extrapolation at 2 points, denying metaphysics element, eliminating x factor, separating between science and religion. This secular concept had been inserted in Adam Smith Theory and Malthus Theory. This theory was representing the approach of economics by linearity the world. For conventional generation, this theory can be adopted in economic system to increase the growth of economy and to support the development performance for the whole world. But in complex world in current situation with world crisis recently, the theory of black box can’t become solution to the future of the world. For example, food for human being, nowadays food is not for human being only.

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Some food such as CPO has already been consumed by man and also by machine. By this complexity problem, the world need new concept to resolve the complex problem like this. And the world already has waited for third concept, or the end of the day concept, as new paradigm which match with current generation. Forrester from Massachusetts Institute of Technology (MIT) has filled the empty concept by System Dynamics that representing method of System Thinking. Islam scholars are filling the blank of new paradigm with mudharaba concept, and Sinlammim concept, and also other concept.

**System Dynamics**

System Dynamics method becomes new concept to improve an existing theory. And Sinlammim method is new paradigm to have new theory based on al-Quran and Hadis. In the form of pyramid that divided by 3 parts, there are 3 levels of thinking approach to picture assimilation from Islamic concept into system thinking. On the top pyramid shows theory of System Thinking, in the middle of pyramid represents System Dynamics method, and on the ground there is Powersim as a tool.

The basic differentiation in System Dynamics can be seen on function of operator and designer. As illustration of operator function is a pilot. Pilot of an airplane can only use all materials in plane system. Pilot only think about how to do the best practice for the part of the system. And who think about the system of the plane? This is the differentiation System Dynamics: designer is the person to responsible the system of airplane. Designer can create the safety plane and user friendly plane to fly even for younger pilot. Approach in System Dynamics has a deep philosophy to push economic scholar making new model to picture the system of particular economics system. It means in the system thinking, economists always create something new to develop and generate the best model of the economic system. Concept of System Thinking such as System Dynamics method represents more comprehensive approach which is different with en existing methodologies that have been used by researcher and academician for 200 years. In general there are six steps to analyze problem in System Dynamics perspective, those are identifying and definition of problem, conceptualization of system, analysis formulation, simulation and analysis validation, policy analysis and sensitivity, and also implementation analysis.

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Software as a tool to be used in this research is Powersim version 2.5d, then upgraded to better version that is Powersim 2005. In general existing symbol of Powersim software is not different with other software base on System Dynamics method as seen in the standard symbols that used Powersim to create formula in Stock Flow Diagram (SFD) consist of four forms: constant, auxiliary, level and rate.

**Macro Economy Indicator in Indonesia**

Macro economy has given contribution to grow marketable securities, for instance stability level for economic growth, inflation control, strong IDR, and increasing index. Recent years, government has tried to solve the long economy crisis by giving stable situation in fiscal and monetary system. Stability economy can be seen in increasing economy indicator to have better situation.

<table>
<thead>
<tr>
<th>No</th>
<th>Indicator</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Development GDP (%)</td>
<td>4.38</td>
<td>4.88</td>
<td>5.13</td>
<td>5.62</td>
<td>4.97</td>
</tr>
<tr>
<td>2</td>
<td>Inflation (%)</td>
<td>10.03</td>
<td>5.06</td>
<td>6.4</td>
<td>17.11</td>
<td>10.29</td>
</tr>
<tr>
<td>3</td>
<td>Interest Rates (% annually)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. SBI 1 month</td>
<td>12.9</td>
<td>8.1</td>
<td>7.4</td>
<td>12.75</td>
<td>11.75</td>
</tr>
<tr>
<td></td>
<td>b. Deposit 1 month</td>
<td>12.8</td>
<td>7.7</td>
<td>6.4</td>
<td>11.98</td>
<td>11.1</td>
</tr>
<tr>
<td>4</td>
<td>Reserves (USD Miliar)</td>
<td>32.0</td>
<td>36.3</td>
<td>35.93</td>
<td>34.72</td>
<td>39.77</td>
</tr>
<tr>
<td>5</td>
<td>IDX Index</td>
<td>424.9</td>
<td>742.5</td>
<td>1,002</td>
<td>1,162</td>
<td>1,582</td>
</tr>
<tr>
<td>6</td>
<td>Forex IDR (Rp/US$1)</td>
<td>9,311</td>
<td>8,600</td>
<td>8,939</td>
<td>9,000</td>
<td>9,000</td>
</tr>
</tbody>
</table>

Source: Statistic Center Bureau (BPS), 2007

**Sukuk in Indonesia**

IDX in 2002-2006 has 17 sukuk emissions, and the regulatory, BapepamLK, has approved 20 sukuk until November 2007.

a) Mudharaba Sukuk Indosat Year 2002 value 175 Billions IDR  
b) Mudharaba Sukuk Subordinasi Bank Muamalat Year 2003 value 200 Billions IDR  
c) Mudharaba Sukuk Bank Bukopin Year 2003 value 45 Billions IDR  
d) Mudharaba Sukuk Bank Syariah Mandiri Year 2003 value 200 Billions IDR  
e) Mudharaba Sukuk Berlian Laju Tanker Year 2003 value 60 Billions IDR  
f) Mudharaba Sukuk Ciliandra Perkasa Year 2003 value 60 Billions IDR  
g) Mudharaba Sukuk PTPN VII Year 2004 value 75 Billions IDR  
h) Mudharaba Sukuk I Matahari Putra Prima Year 2004 value 150 Billions IDR  
i) Ijara Sukuk Sona Topas Tourism Industry Year 2004 value 55 Billions IDR  
j) Ijara Sukuk Citra Sari Makmur I Year 2004 value 100 Billions IDR  
k) Ijara Sukuk Indorent I Year 2004 value 100 Billions IDR  
l) Ijara Sukuk Berlina I Year 2004 emisi oleh PT Berlina Tbk value 85 Billions IDR  
m) Ijara Sukuk I Humpuss Intermoda Transportasi Year 2004 value 125 Billions IDR  
n) Ijara Sukuk Apexindo Pratama Duta I Year 2005 value 240 Billions IDR
o) Ijara Sukuk Indosat Year 2005 value 285 Billions IDR.
p) Ijara Sukuk I Ricky Putra Globalindo year 2005 value 125 Billions IDR.
q) Ijara Sukuk PLN I year 2006 value 200 Billions IDR

Macro Economy Indicator in Malaysia

Although located in the same geographical South East Asia, both countries Indonesia and Malaysia have passed monetary crisis in year 1997. But not Malaysia has stability economy stronger than Indonesia. This matter can be read from national economy data that Gross Development Product (GDP) according to constant price of year 1987 experiencing of a good growth level for year 2006 about 5.7%. Beside that, Malaysian Government also controls inflation for more than 5 years (2002-2006) then inflation rate not exceed more than 3%. Other macros economic that influence the marketable securities are Malaysia Index and Malaysia Ringgit.

Sukuk in Malaysia

Bursa Malaysia has big penetration for sukuk among other countries in Asia Region. While Indonesia has big market for sukuk, cause this country had many conventional debts and has many underlying assets to support sukuk issues. Islamic Capital Market (ICM) has given some types of aqad in sukuk, such as qardhul hasan mudharaba, bai’ bitsaman ajil, murabaha, musyaraka, bai’ istisna, and ijara. Investors can buy sukuk in primary market, then investors can bring marketable securities into secondary market. Main function in this regular market in Malaysia is to facilitate investors for sell and buy existing Islamic marketable securities before maturity date.

Table 2: Corporate Securities Issues Malaysia

<table>
<thead>
<tr>
<th>Tahun</th>
<th>Securities</th>
<th>Bonds</th>
<th>Sukuk</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>Issue</td>
<td>137</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Value (RM Billions)</td>
<td>38.362</td>
<td>17.654</td>
</tr>
<tr>
<td>2003</td>
<td>Issue</td>
<td>87</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Value (RM Billions)</td>
<td>35.279</td>
<td>12.048</td>
</tr>
<tr>
<td>2004</td>
<td>Issue</td>
<td>75</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>Value (RM Billions)</td>
<td>32.679</td>
<td>15.161</td>
</tr>
<tr>
<td>2005</td>
<td>Issue</td>
<td>52</td>
<td>64</td>
</tr>
<tr>
<td></td>
<td>Value (RM Billions)</td>
<td>31.952</td>
<td>34.321</td>
</tr>
<tr>
<td>2006</td>
<td>Issue</td>
<td>49</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>Value (RM Billions)</td>
<td>35.436</td>
<td>39.953</td>
</tr>
</tbody>
</table>

Source: Central Bank (BNM), 2007

Bursa Malaysia, implements their regular exchange type that is bai’ al-dayn aqad. Bai’ means sale, and dayn means debt. So that bai’ al dayn can be interpreted as trading debt. In Islamic view, case of name change from debt become Islamic instrument without fundamental transformation still can not be allowed.
Modelling Analysis

System thinking or Kaffah approach can be conducted in many models. This research shows how System Dynamics method on Sinllammim method is derived by three aspects: source analogue with god as a macro economy, result analogue with human as a bond, and feedback analogue with pray as an opportunity. For this sukuk modeling, there are some assumptions to build analysis such as system boundaries in macro economy, endogenous factor for bonds and sukuk, and exogenous factor for opportunity. The main source of reference used in this study is statistical data, macro economics, monetary, and conventional capital market, as well as Islamic Capital Market in Indonesia and Malaysia during 2002-2006. Those data are read by System Dynamics methods (Non Linier System Thinking) the methodology of thinking approach in the system with comprehensive and dynamics paradigm through multi discipline studies. For computation, this study has taken many advantages from Stock Flow Diagram technique (the formulation modeling base on Powersim version 2005).

Mental Model

The first phase in System Thinking to use System Dynamics method is mental model. Modeler made simple correlation among variables to reflect the system, boundaries, and endogenous factor. In this research, mental model will reflect correlation between macro economy and marketable securities, and feedback between marketable securities and macro economy by opportunity. Growth of macro economy in both countries Indonesia and Malaysia will effect banking and finance market including financial instrument like bonds and sukuk. The increasing of sukuk trading will give more opportunity for market players. Then market players will earn more investments to boost macro economy as well. Then this loop will make circle to generate more and more better value, this call positive loop.

Diagram 1: Mental Model of Sukuk

![Diagram 1: Mental Model of Sukuk](image)

Source: Result Analysis, 2008.

Causal Loop Diagram

The second phase after mental model is Causal Loop Diagram (CLD). This CLD represents causal relationship between variables such as inflation, risk free rates, and index in macro economy loop. Correlations among variable was chosen to have the positive loop in CLD. A system dynamics model must represent the structure of the real system well enough that the model behaves the same way the real system would. Behavioral includes not only replicating historical experience but also responding to circumstances and policies that are entirely the figure.
Correlations among variables reflect the past behavior of a system. Correlations do not represent the structure of the system. If circumstances change; if previously feedback loops become dominant, if new policies are tried, previously reliable correlations among variables may break down.

**Diagram 2: Causal Loop Diagram Sukuk in Indonesia and Malaysia**

Source: Result Analysis 2008

**Stock Flow Diagram**

Third phase of System Dynamics is Stock Flow Diagram (SFD). Stocks are accumulation. They characterize the state of the system and generate the information upon which decisions and actions are based. Stocks give system inertia and provide them with memory. Stock Flow Diagram is prepared by assigning the types of variables as levels, rates, and auxiliaries. The drawing of the diagram goes loop by loop and starts with drawing the level boxes in the loop. Next the rates influencing the level are drawn. Then the fine policy structure to determine the rates is drawn, and finally all the individual flow diagrams are united.
Diagram 3: Sukuk In Indonesia and Malaysia

Source: Result Analysis 2008

System Dynamics Graph

Based on simulation result and indicator table for designer scenario, the graph shows scenario with tax incentive and SBSN issues give the best result to see sukuk value in the next 5-10 years. In the research of System Dynamics on Sukuk shows that:
1. The increasing of Sukuk value is effected by Sovereign Sukuk (SBSN) issues, as a high increasing in conventional bonds after Government Debt Securities (SUN) issues.

2. The Sukuk development until year 2015 will be effected by macro economic, so it need sensitivity scenario for interest rates (SBI) and market share to anticipate any changing.

**Graph 1: System Dynamics Modelling On Indonesia and Malaysia Sukuk**

Source: Result Analysis, 2008.

**Conclusions**

The value of Indonesia Sukuk in year 2015 was higher than the value of Malaysia Sukuk. Although during year 2002-2006 as the beginning of Sukuk development (BapepamLK Decree, Kep-386/BL/2007) the market capitalization is very low than Malaysia Sukuk (Securities Commissions, Quarterly Report, Kuala Lumpur, SC, 2007). Indonesia Sukuk policy analysis can be effected by sensitivity of Bank Indonesia Certificate (SBI) and their market share, also Indonesia Sukuk prospect will be reached by structural intervention through tax incentives and Government Sukuk Securities (SBSN) issues.

This research shows that:

1. The increasing of Indonesia Sukuk value is effected by SBSN issues, as a high increasing in conventional bonds after Government Debt Securities (SUN) issues.

2. Indonesia Sukuk index is higher than Malaysia Sukuk, this will attract more investments in Indonesia Sukuk.

3. The Indonesia Sukuk development until year 2015 will be effected by macro economy, so it need sensitivity scenario for SBI and market share to anticipate any changing. Indonesia Sukuk value will reach Rp 2.726.019 Billions in year 2015 above Malaysia Sukuk value Rp 1.944.952 Billions through tax and SBSN intervention policy.
References


-------, *"The Energy Transition and the Economy: A System Dynamics Approach"*. PhD Dissertation, MIT Sloan School of Management, Massachusetts, 1981


ALI AUDAH, CONCORDANCE QUR’AN, Pustaka Litera, Jakarta, 2003

AL-KHALÂ’INI, MUHAMMAD IBN ISMÂ’IL. *Subul al-Salâm*. Bandung: Dahlan, t.t.


Fatchur Rahman, Ikhtisar Mushthalahul Hadits, Alma-Arif, bandung, 1987


Hindle, Tim, Pocket MBA. *The Economist Book (Seri Intisari Manajemen).* Jakarta: Gramedia, 1996.

http://www.stiead.ac.id

Http://www.tokogunungagung.co.id

Http://www.tokogunungagung.co.id


Muhammad Sulaiman Abdullah Al-Asyqar, Al Qadhih fii Ushul Fiqh.


Muhammad Chirzin, Al-Quran Dan Ulumul Quran, Dana Bhakti, Jogjakarta, 1998

Muhammad Thahir ibn Abd al-Qadir al-Kuri al-Makki, Tarikh al-Khath al-Arabi wa Adabibi, Hijaz, 1982


Subhi As Shalih, Dar Al-Ilm Lil-Malayini, Beirut, 1977.


Zuardin Azzaino, Peperangan Ghaibiah Ilahiah (Manusia, Jin, dan Malaikat), Pustaka Al-
Hidayah, Jakarta, 1990


**Prospectus**


Badan Pengawas Pasar Modal Dan Lembaga Keuangan, Departemen Keuangan, Republik Indonesia, [http://www.bapepam.go.id](http://www.bapepam.go.id)

Badan Pusat Statistik Republik Indonesia, [http://www.bps.go.id](http://www.bps.go.id)


Bank Indonesia, [http://www.bi.go.id](http://www.bi.go.id)

Bank Negara Malaysia, [http://www.bnm.go.my](http://www.bnm.go.my)


Bursa Efek Indonesia, [http://www.bei.co.id](http://www.bei.co.id)

Bursa Efek Jakarta, [http://www.jsx.co.id](http://www.jsx.co.id)

Bursa Efek Surabaya, [http://www.bes.co.id](http://www.bes.co.id)

Bursa Malaysia, [http://www.bursamalaysia.com](http://www.bursamalaysia.com)

