

**2017 Workshop on  
National Spatial Planning  
- A Futurology Approach -**

**Lecture 2**

**An Application: Futures of Money,  
Technology and Society**

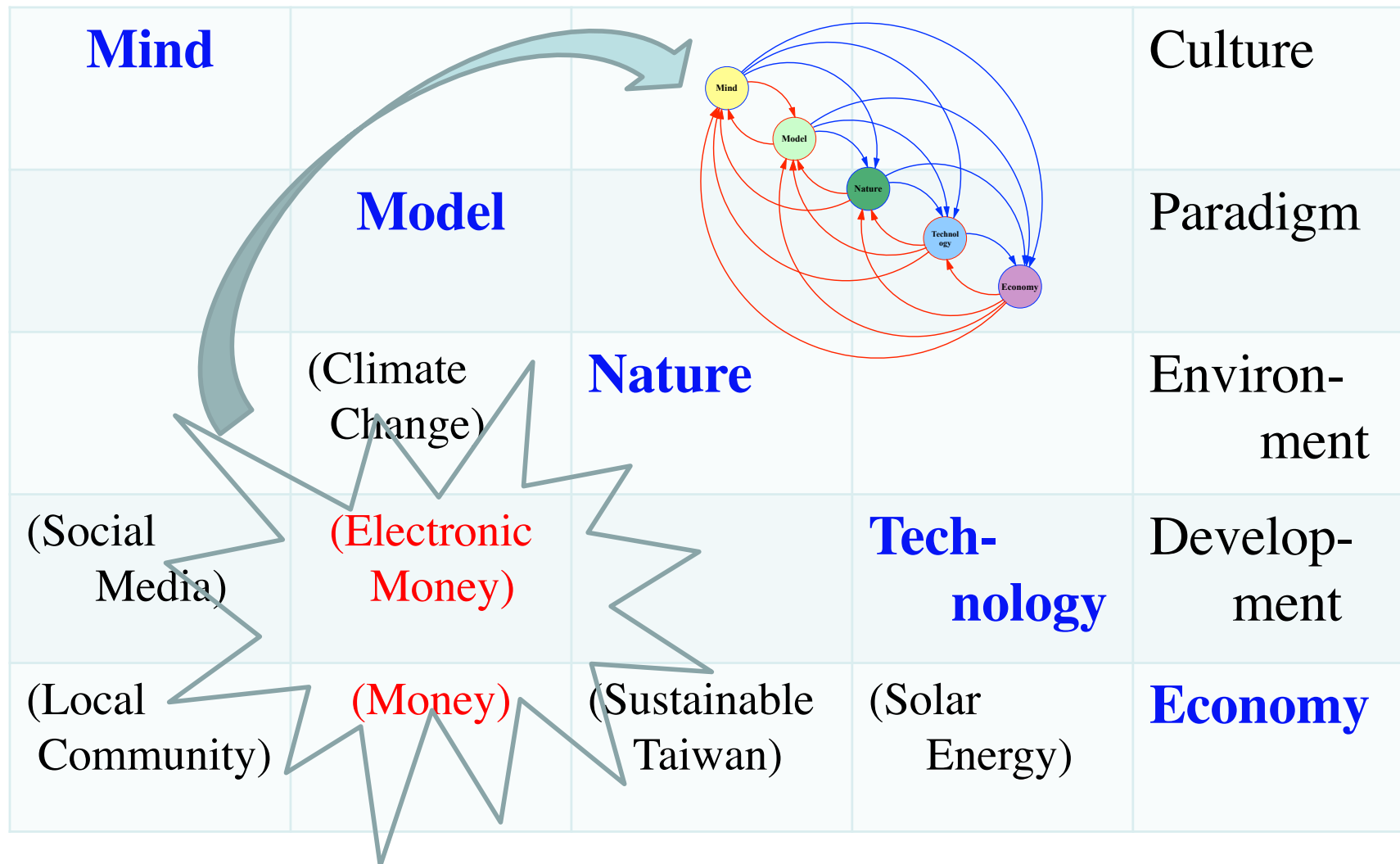
**National Development Council  
Conference Hall, Taipei, Taiwan  
16:00- 17:30, March 2, 2017**

**Kaoru Yamaguchi, Ph.D.  
Japan Futures Research Center, Japan  
E-mail: [director@muratopia.net](mailto:director@muratopia.net)**

# What are Futures Studies ?

FOCAS: Future-Oriented Complexity and Adaptive Studies

Missing Fields of Studies



# Money and Macroeconomic Modeling

## - Accounting System Dynamics Approach -

Title	
Overview	
Population Labor Force	Population Labor Force.f
Currency Circulation	Currency Circulation.f
GDP	GDP.f
Interest, Price & Wage	Interest, Price & Wage.f
Producer	Producer.f
Consumer	Consumer.f
Government	Government.f
Banks	Banks.f
Central Bank	Central Bank.f
Foreign Exchange Rate	Balance of Payments
GDP Simulation	GDP Simulation.f
Fiscal Policy	Fiscal Policy.f
Monetary Policy	Monetary Policy.f
Trade & Investment Abroad Simulation	
Economic Indicators	Economic Indicators.f
B/S Check	B/S C heck.f

(c) Prof. Kaoru Yamaguchi  
Doshisha Business School  
Japan

↑ Circulation

### Macroeconomic Dynamics Model

### < MacroDynamics 2.2 >

#### - Accounting System Dynamics Approach -

(c) All Rights Reserved, Sept. 2009

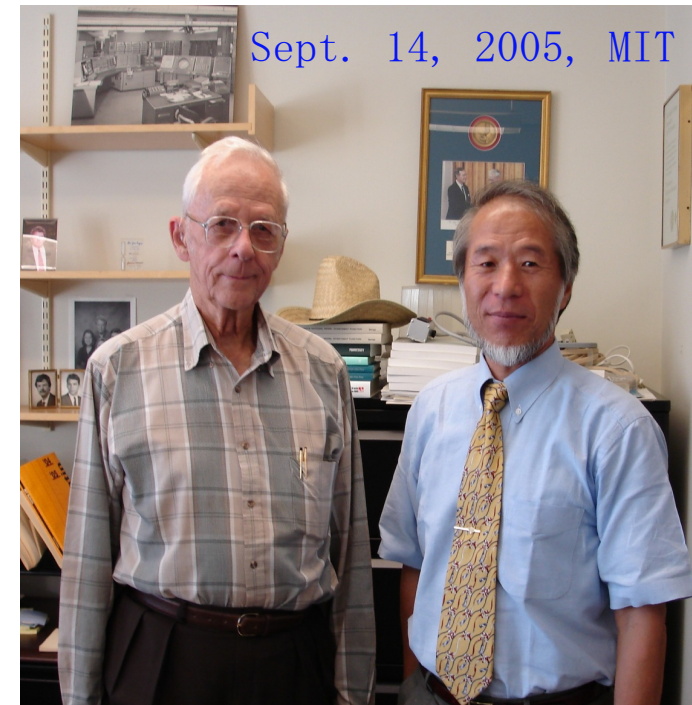
**Prof. Kaoru Yamaguchi, Ph.D.**

Doshisha Business School  
Doshisha University  
Kyoto, Japan

[kaoyamag@mail.doshisha.ac.jp](mailto:kaoyamag@mail.doshisha.ac.jp)

*This model provides a generic system on which various schools of economic thoughts can be built. Your comments and suggestions are most welcome.*

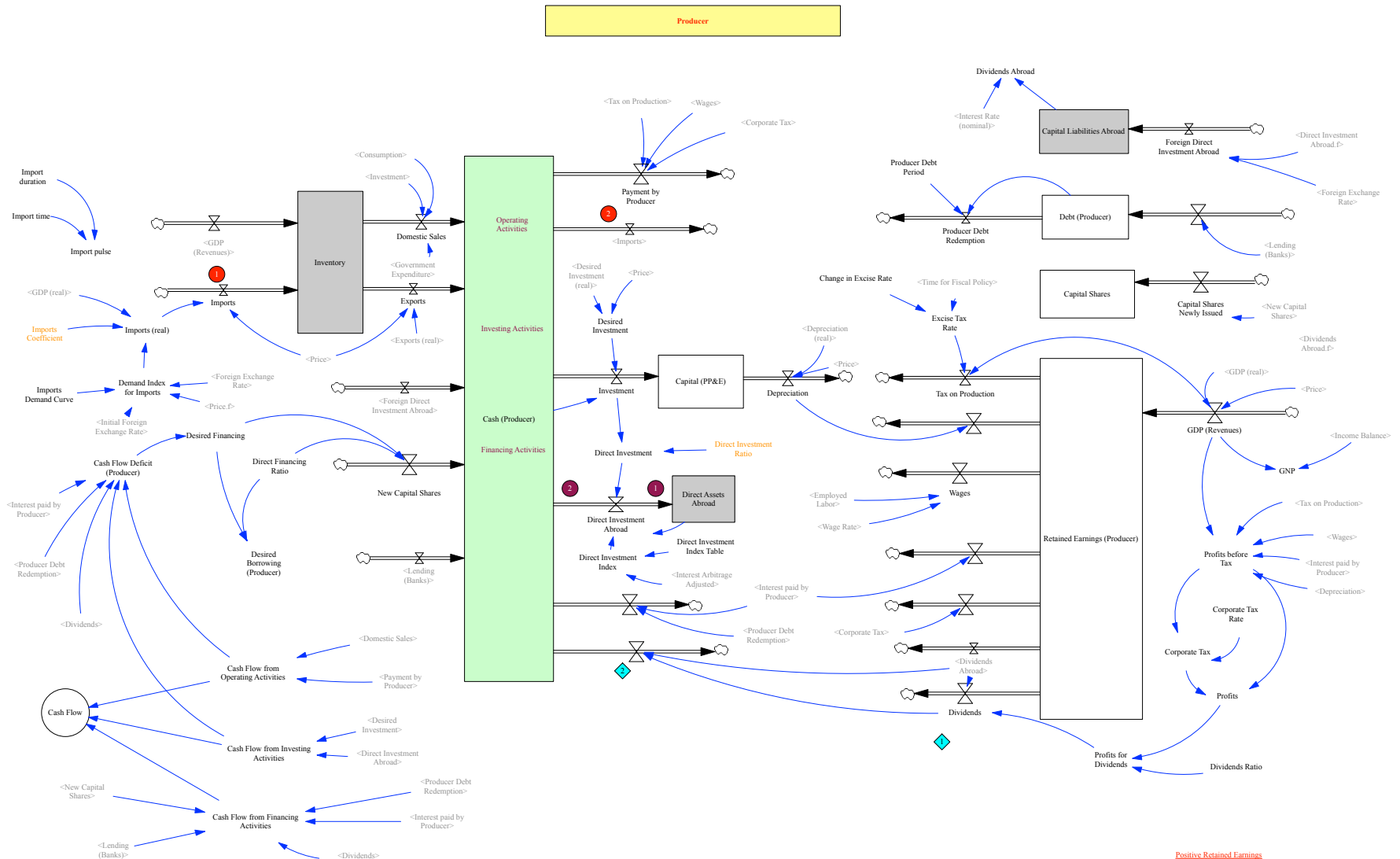
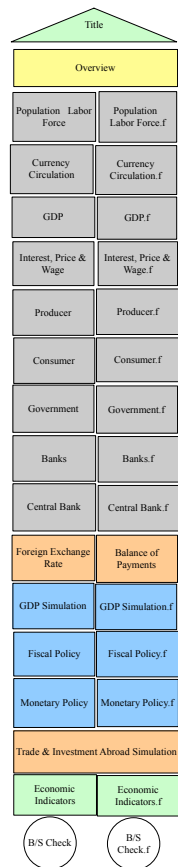
National Model  
by Jay Forrester  
1980s and 1999s



Sept. 14, 2005, MIT

Started in 2004 and Completed in 2008

## - Accounting System Dynamics Approach -





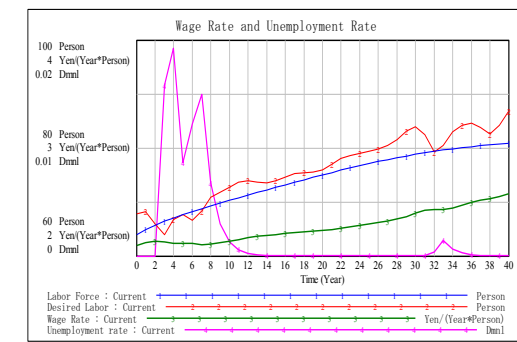
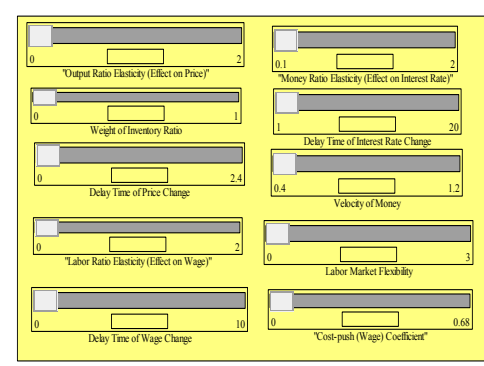
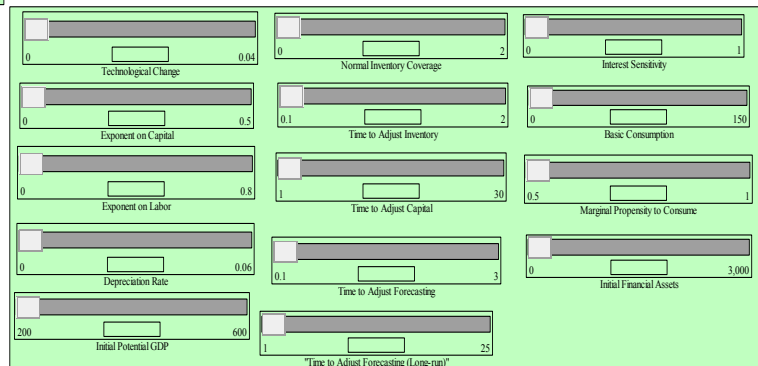
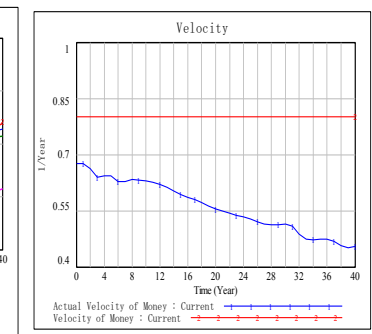
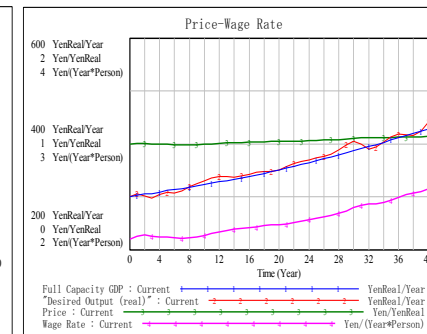
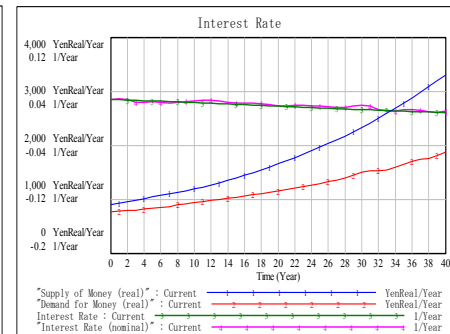
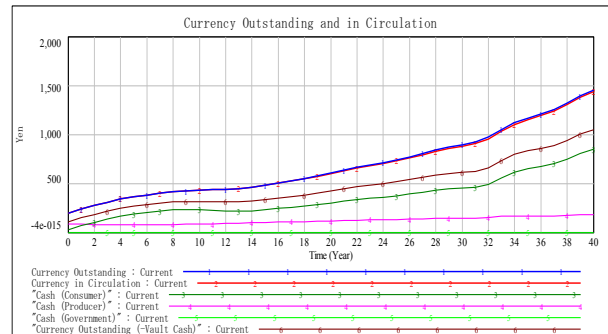
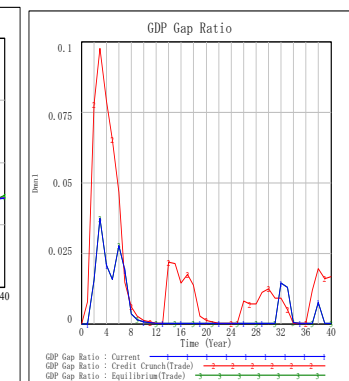
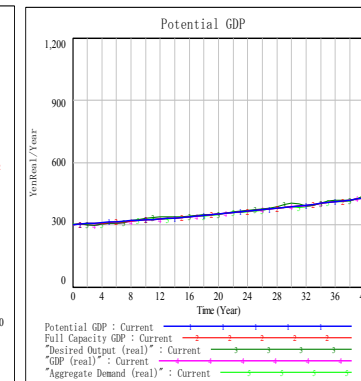
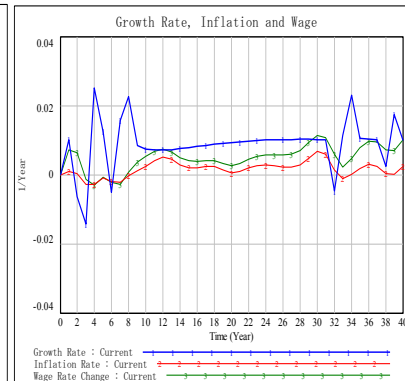
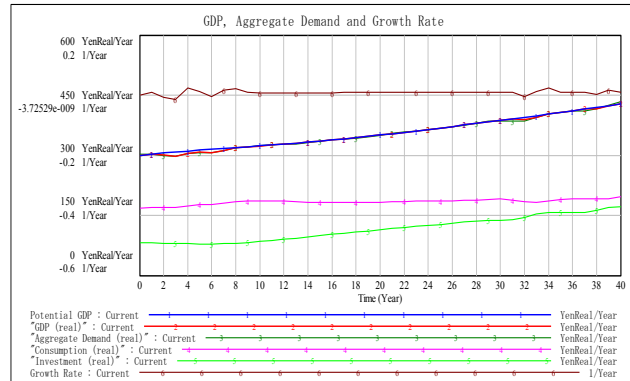
# Macroeconomic Modeling

## - Accounting System Dynamics Approach -

Title	
Overview	
Population Labor Force	Population Labor Force.f
Currency Circulation	Currency Circulation.f
GDP	GDP.f
Interest, Price & Wage	Interest, Price & Wage.f
Producer	Producer.f
Consumer	Consumer.f
Government	Government.f
Banks	Banks.f
Central Bank	Central Bank.f
Foreign Exchange Rate	Balance of Payments
GDP Simulation	GDP Simulation.f
Fiscal Policy	Fiscal Policy.f
Monetary Policy	Monetary Policy.f
Trade & Investment Abroad Simulation	
Economic Indicators	Economic Indicators.f

BS Check  
BS C heck.f  
(c) Prof. Konomi Kameguchi  
Doshisha Business School  
Japan

Creation



1776



Classical  
Theory

Neutral  
Money

Market  
Liberals

Great Depression, Oct.29, 1929 (Black Tuesday)

1929

Irving Fisher

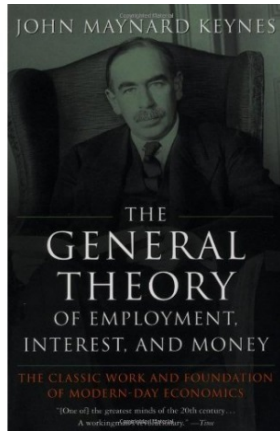


100% Money

Designed to keep checking banks 100% liquid; to prevent inflation and deflation; largely to cure or prevent depression; and to wipe out much of the National Debt.

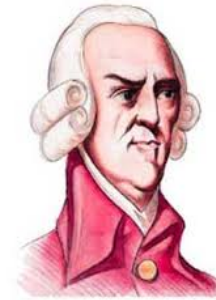
1935

Banking Act of 1933  
(Glass–Steagall Act)



1935

Taboo in  
Economics



Neoclassical  
Theory

Market &  
Financial  
Liberals

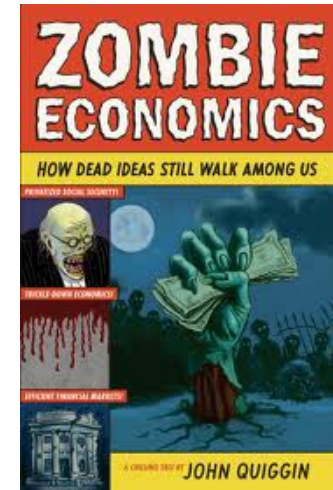
Globalization

1999

Stagflation  
1970s

2nd Great Depression, Sept. 15, 2008 (Lehman Shock)

2008



Debt  
Crisis

Debt

Money

System

Pilot's Failure ?



Debt Money System Works  
(Airplane is Fine! Train Pilots Better)



System Design  
Failure ?



Public Money System  
(Design Better Airplane!)



# Three System Design Failures of Debt Money (1)

## 1. Monetary and Financial Instability

Observed by Fisher (1935) after the Great Depression  
(Where does Money come from?)



BANK OF JAPAN



中華民國中央銀行



# What is Money ?

## Where does it come from?

$$M \times V = P \times T$$

M= Money Stock  
V= Velocity  
P= Price  
T= Transactions

Consumption  
Investment  
**Stocks & Bonds**

M = Coins + Bank Notes + **Deposits**

**Fake Economics :**  
**M is controlled by the Central Bank**

—Legal Tender—

Base Money M0 3 8 6 . 7 (trillion yen) (as of June 2016)		
Government Coins	4 . 7	1.2%
Bank of Japan Notes	9 5 . 2	24.6%
<b>Bank Reserves (at BoJ)</b>	2 8 6 . 8	74.2%

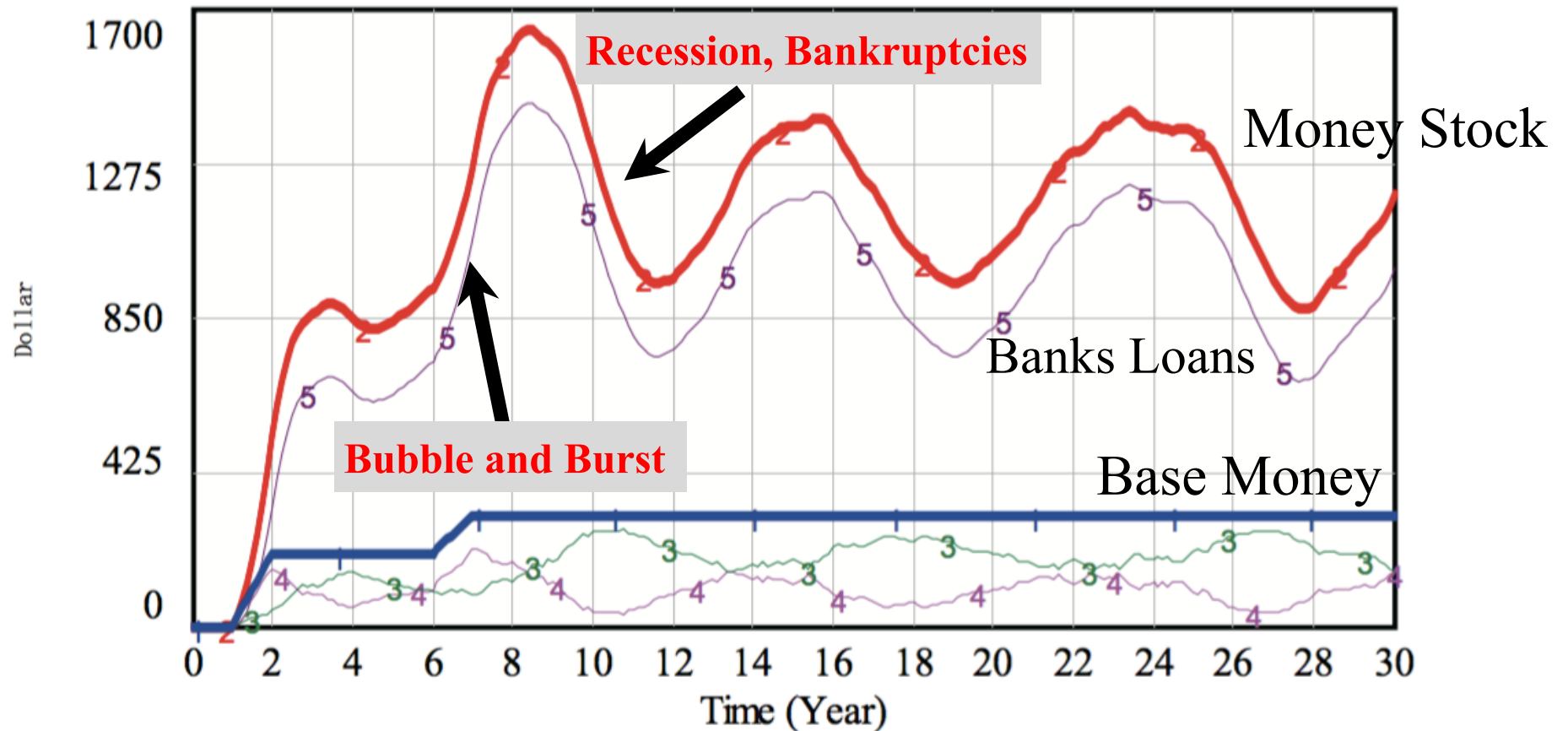
Money Stock M1 6 6 6 . 3 (trillion yen) (as of August 2016)		
Government Coins	4 . 7	0.7%
Bank of Japan Notes	9 5 . 2	14.3%
<b>Demand Deposits</b>	5 6 6 . 4	85%

Money Multiplier

**Deposits are  
created out  
of Nothing**

# Monetary Instability

Base Money, Currency in Circulation & Money Stock



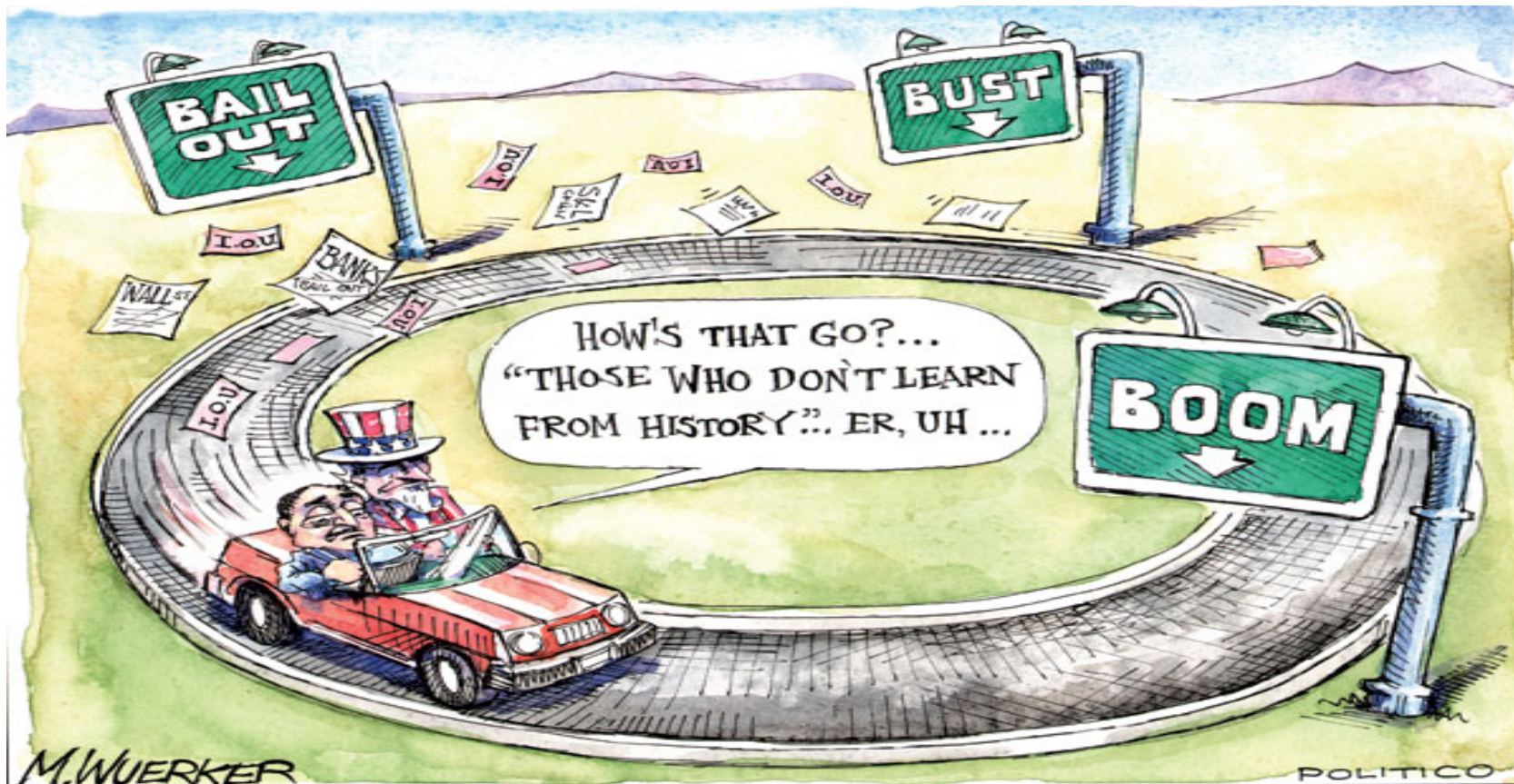
Base Money : Currency & Lending Ratios —————  
 "Money Stock (Data)" : Currency & Lending Ratios —————  
 Currency in Circulation : Currency & Lending Ratios —————  
 "Reserves (Central Bank)" : Currency & Lending Ratios —————  
 "Loan (Banks)" : Currency & Lending Ratios —————

Money Stock is **Endogenously** Created & Destroyed !

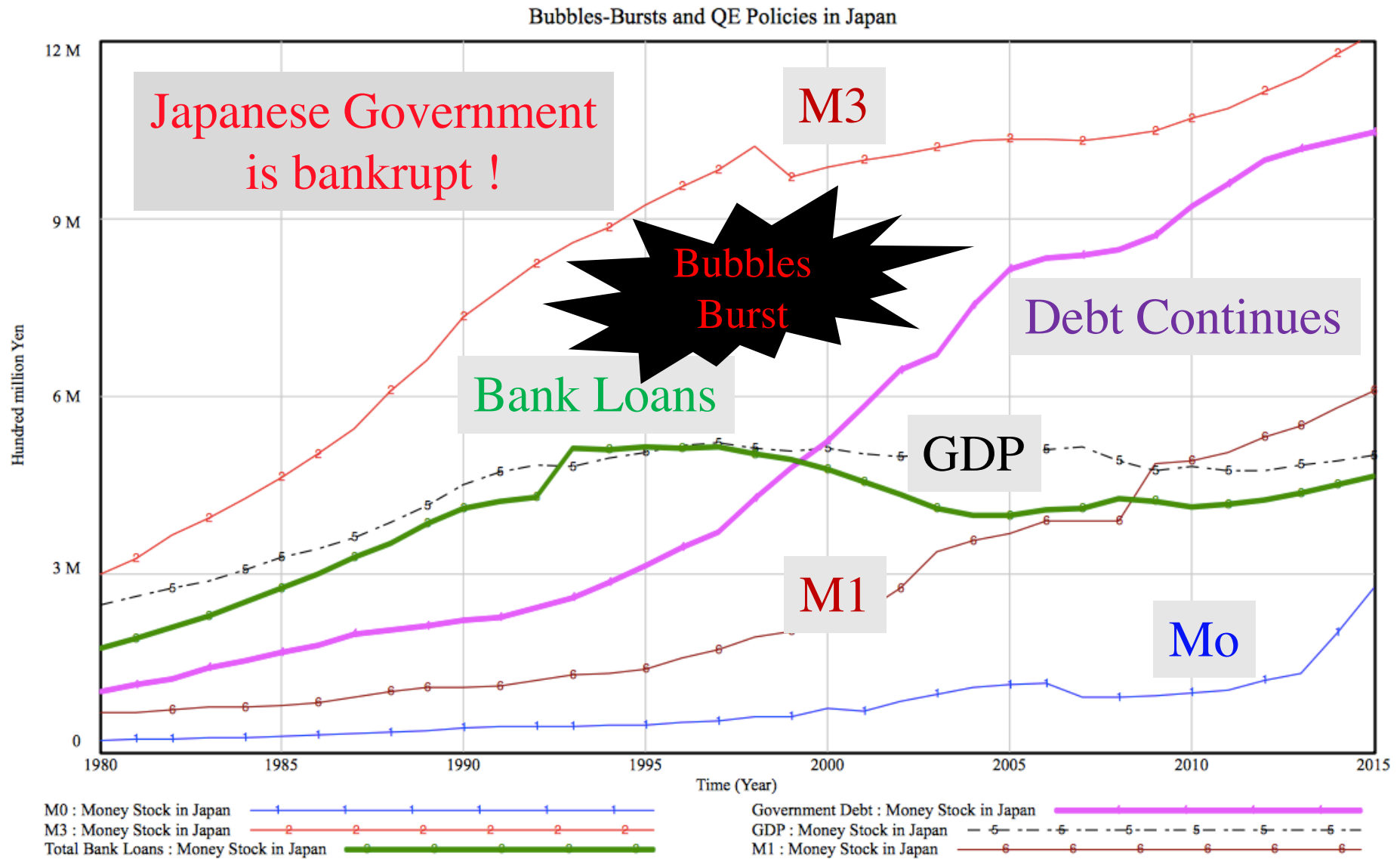


## 2. Government Debt Accumulation

(Recessions => Keynesian Fiscal Policies)



# Debt Accumulation in Japan: 1980 - 2015



Japanese Economy is Debt-end !



# US Economy may also be Debt-end !

Use your Brain !

**“You never have to default because you [can] print the money.”**



Still Report #875 - Donald Trump - Why Borrow When We Can Print? Economic Deficient Solution

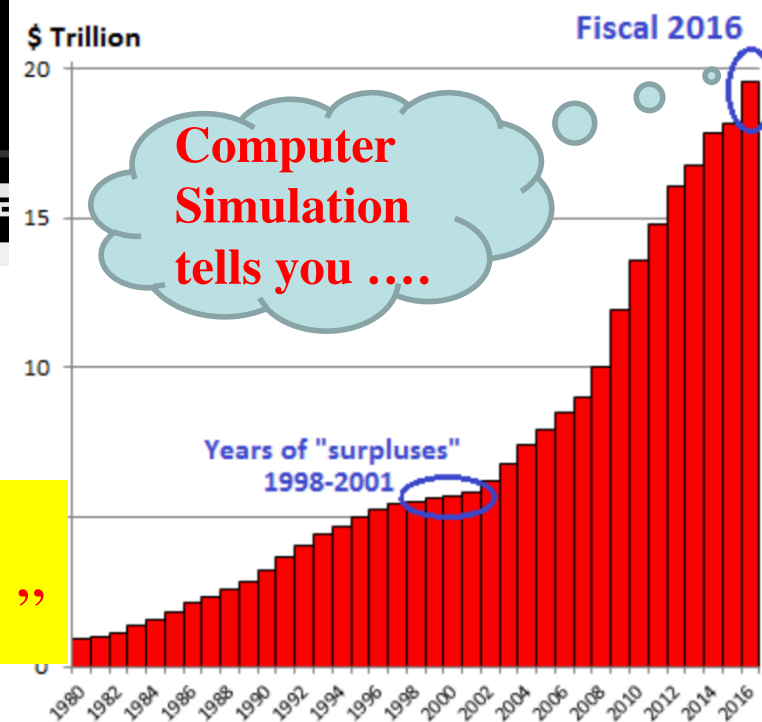


Bill Still

**“Within 3 years of your office US government must repay 54% ! ”**

2016/05/16

**US Gross National Debt  
Fiscal 1972 - 2016**



Source: US Treasury Department, Federal Reserve

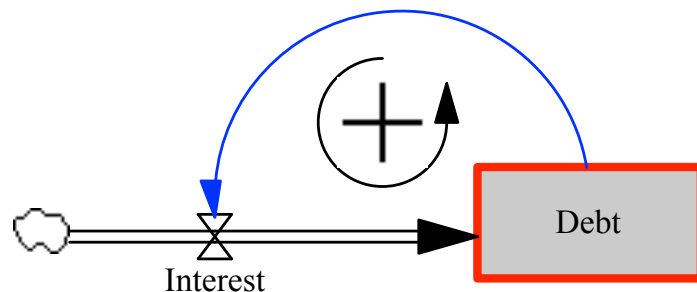
WOLFSTREET.com

# Three System Design Failures of Debt Money (3)

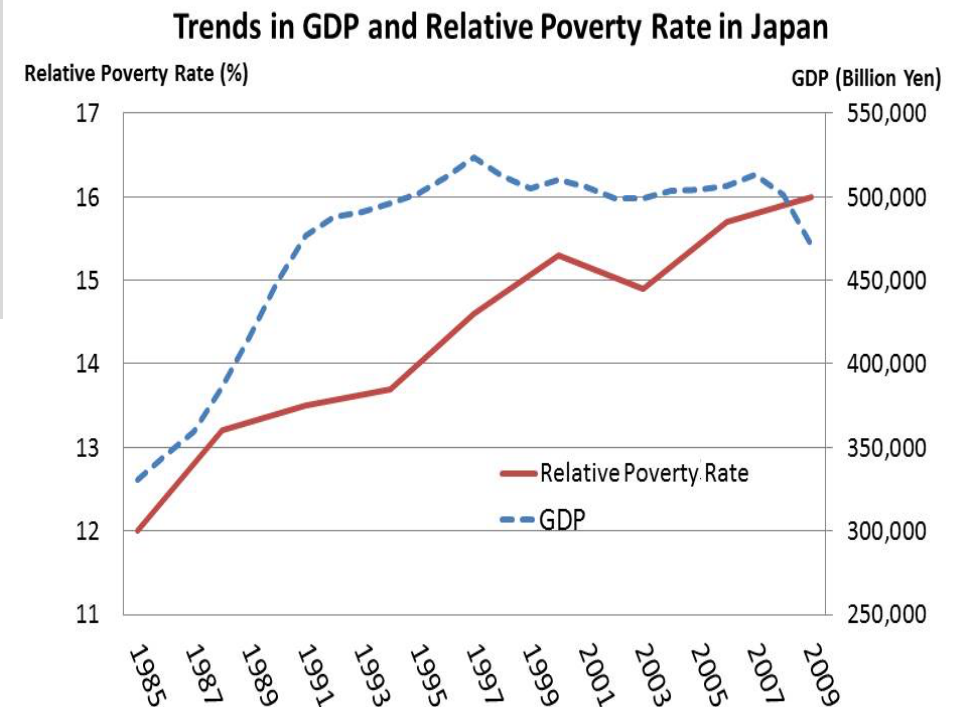
## 3. Income Inequality: Financiers and Non-financiers (Financial System of Compound Interest)

Just **8 men** own the same wealth as  
the **3.6 billion people** who make up  
the poorest half of humanity.

- Oxfam(NGO) reports, Jan. 17, 2017 -



The rich becomes richer, ...



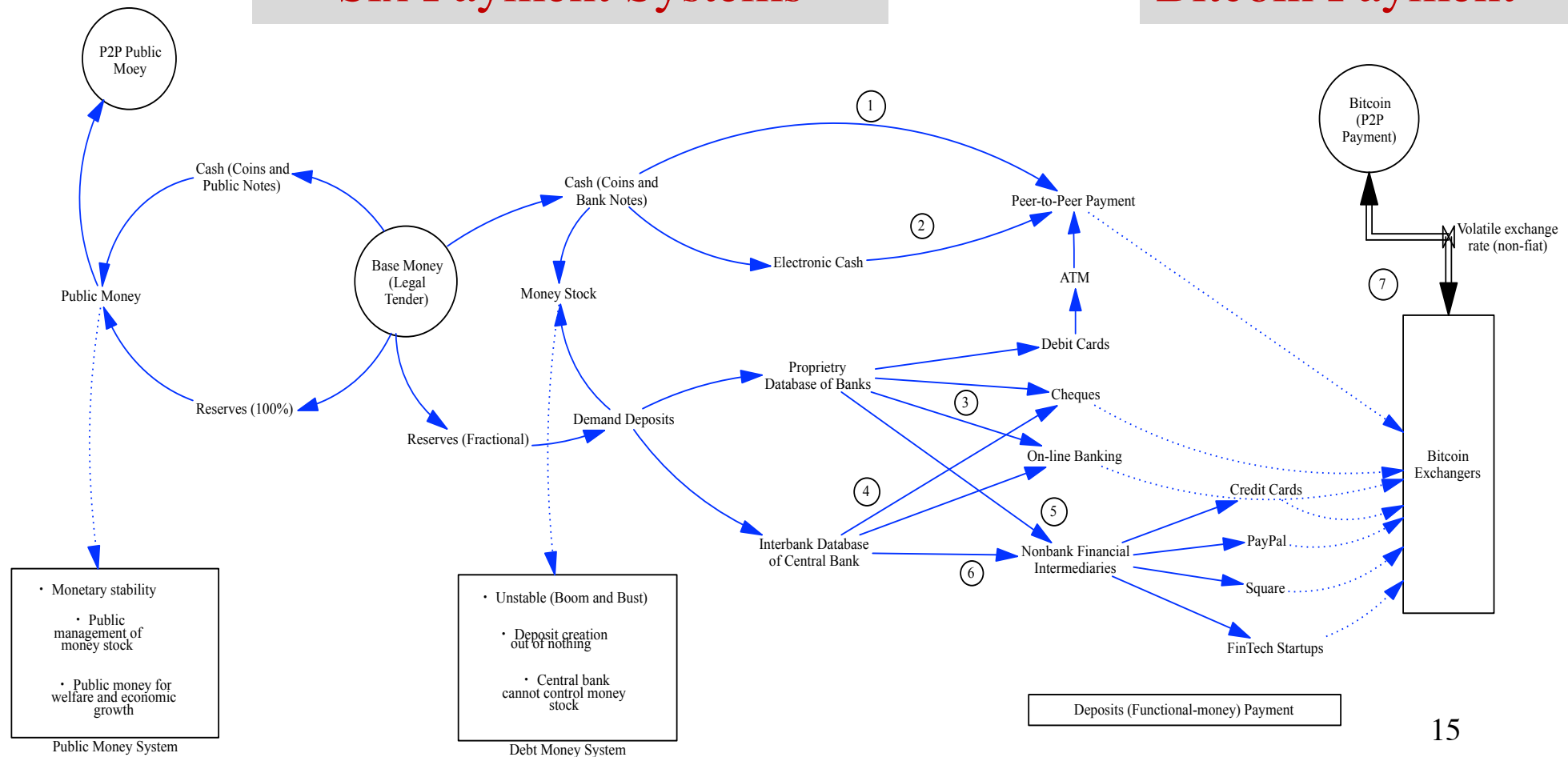
Source: Prepared by e's Inc. (Japan) based on data from multiple years of the "Comprehensive Survey of Living Conditions" by Japan's Ministry of Health, Labour and Welfare, and data from the United Nations Statistics Division (<http://unstats.un.org/unsd/snaama/dnList.asp>)

# Peer-to-Peer Public Money System

The 2nd Asia-Pacific Region System Dynamics Conference  
at National University of Singapore, Feb. 20, 2017

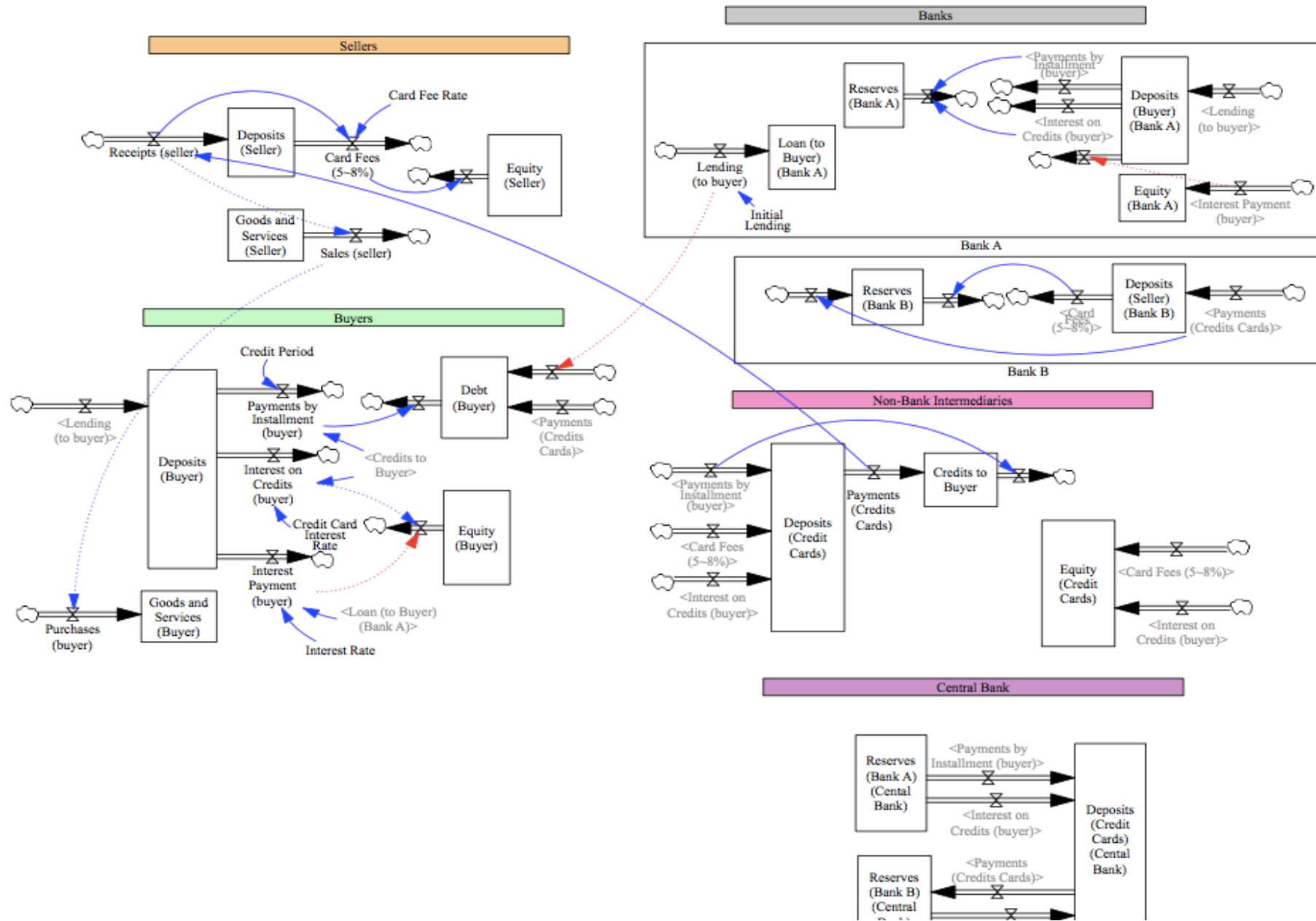
## Six Payment Systems

## Bitcoin Payment



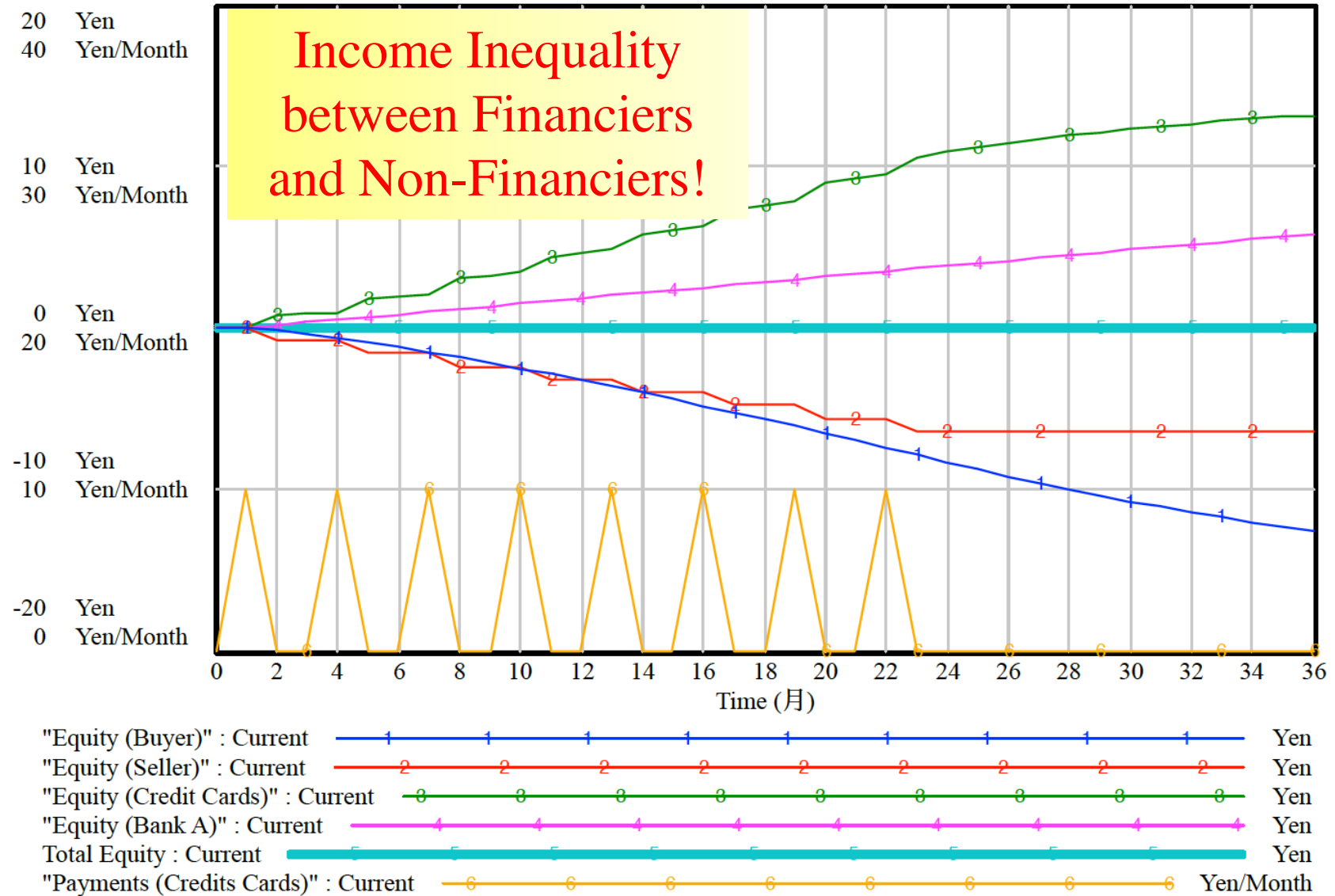
# Peer-to-Peer Public Money System

## ⑥ Deposits Transfer through Non-banks between different bank



# Peer-to-Peer Public Money System

Equity Distribution





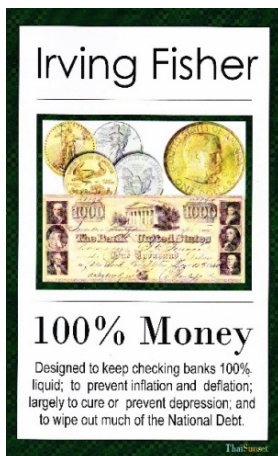
Classical  
Theory

Neutral  
Money

Market  
Liberals

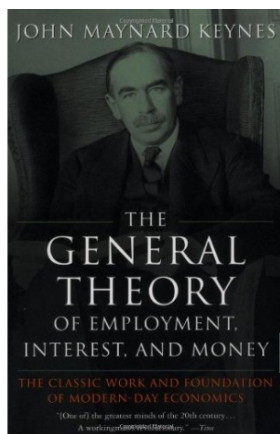
Great Depression, Oct.29, 1929 (Black Tuesday)

1929



1935

Banking Act of 1933  
(Glass–Steagall Act)



1935

American Monetary Act

Economics

System  
Design  
Failure

1999

Neoclassical  
Theory

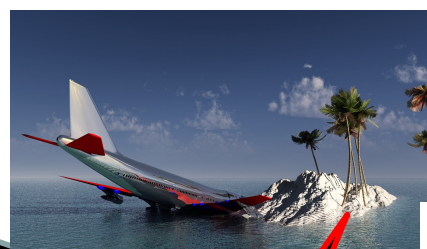
Market &  
Financial  
Liberals

Globalization

1. Instability
2. Debt
3. Inequality

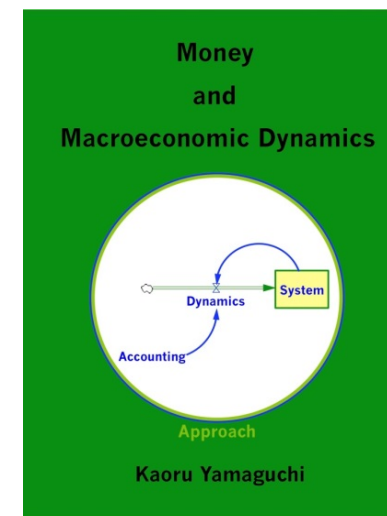
Stagflation  
1970s

Disequilibrium Analysis



Public Money System

It is necessary to  
provide an alternative  
to the zombie  
economics of  
market liberalism  
(2008, p. 240)



2013

2008

2nd Great Depression, Sept. 15, 2008 (Lehman Shock)



Debt

Money

System



(available: [www.muratopia.org](http://www.muratopia.org))



520 pages  
2016

## Contents

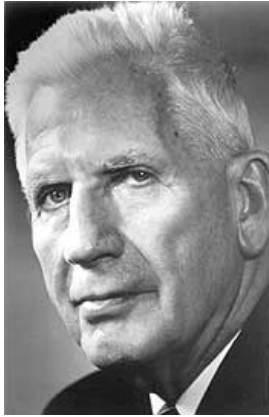
- I. Accounting System Dynamics
- II. Macroeconomic Systems of **Debt Money**
- III. Open Macroeconomic Systems of **Debt Money**
- IV. Macroeconomic Systems of **Public Money**



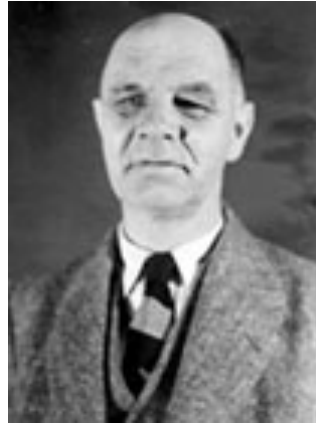
Tokyo, 2015  
352 pages

# The Origin of **Chicago Plan**: 1933 -> 1936->1939

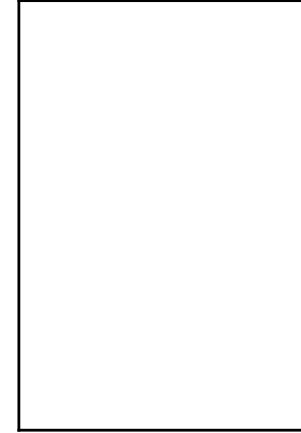
## “A PROGRAM FOR MONETARY REFORM”



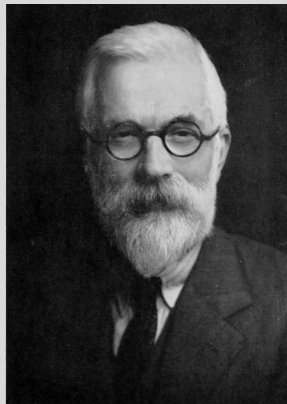
Paul H. Douglas  
(1892-1976)



Frank D. Graham  
(1875-1965)



Willford I. King  
(1880-1962)



Irving Fisher  
(1867-1947)



Earl J. Hamilton  
(1899-1989)



Charles R. Whittlesey  
(1900-????)



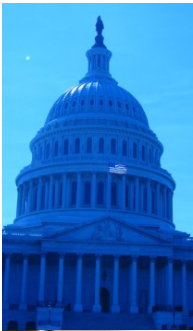
# **A Monetary Reform: Chicago Plan → American Monetary (NEED) Act**

**A Debt Money System  
- Money out of Nothing -**

- 1. Privately-Owned Central Bank issues Money (Notes)**
- 2. Credit Creation by Commercial Banks  
(A Fractional Reserve Banking System)**
- 3. Monetary Control by International Bankers**

**A Public Money System  
- American Monetary (NEED) Act -**

- 1. Congress Issues Money  
(Nationalization of the Central Bank)**
- 2. 100% Reserves  
(Abolishment of the Credit Creation)**
- 3. Money as Public Utility  
for the Economic Growth and Public Welfare**



**We can liquidate Debt  
without triggering  
Recession, Unemployment  
& Inflation Contagiously!**

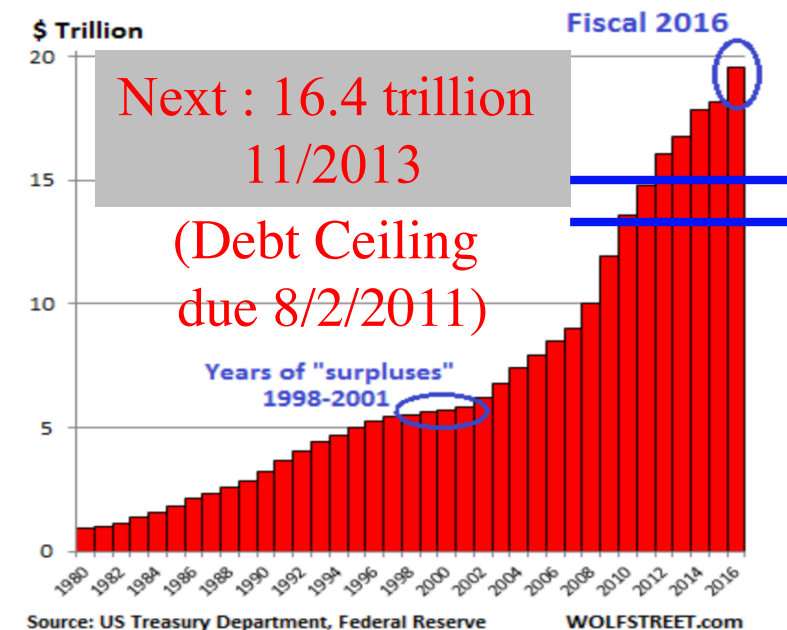
**US Congressional Briefing  
July 26, 2011  
At Capitol Hill, Washington DC**

**A Monetary Reform:  
Chicago Plan → American Monetary Act**

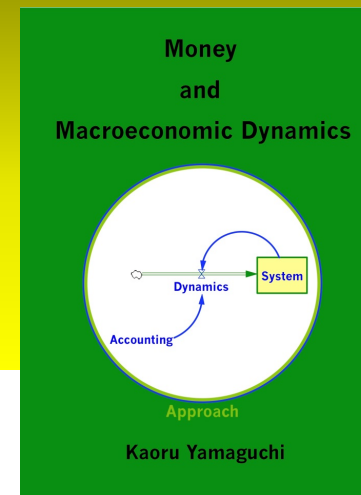


**H.R. 6550 (Dec. 17, 2010)  
H.R. 2990 (Sept. 21, 2011)  
“National Emergency Employment  
Defense Act (NEED)”  
A Bill to the US House Committee on  
Financial Services  
by US Congressman Dennis Kucinich,**

**US Gross National Debt  
Fiscal 1972 - 2016**

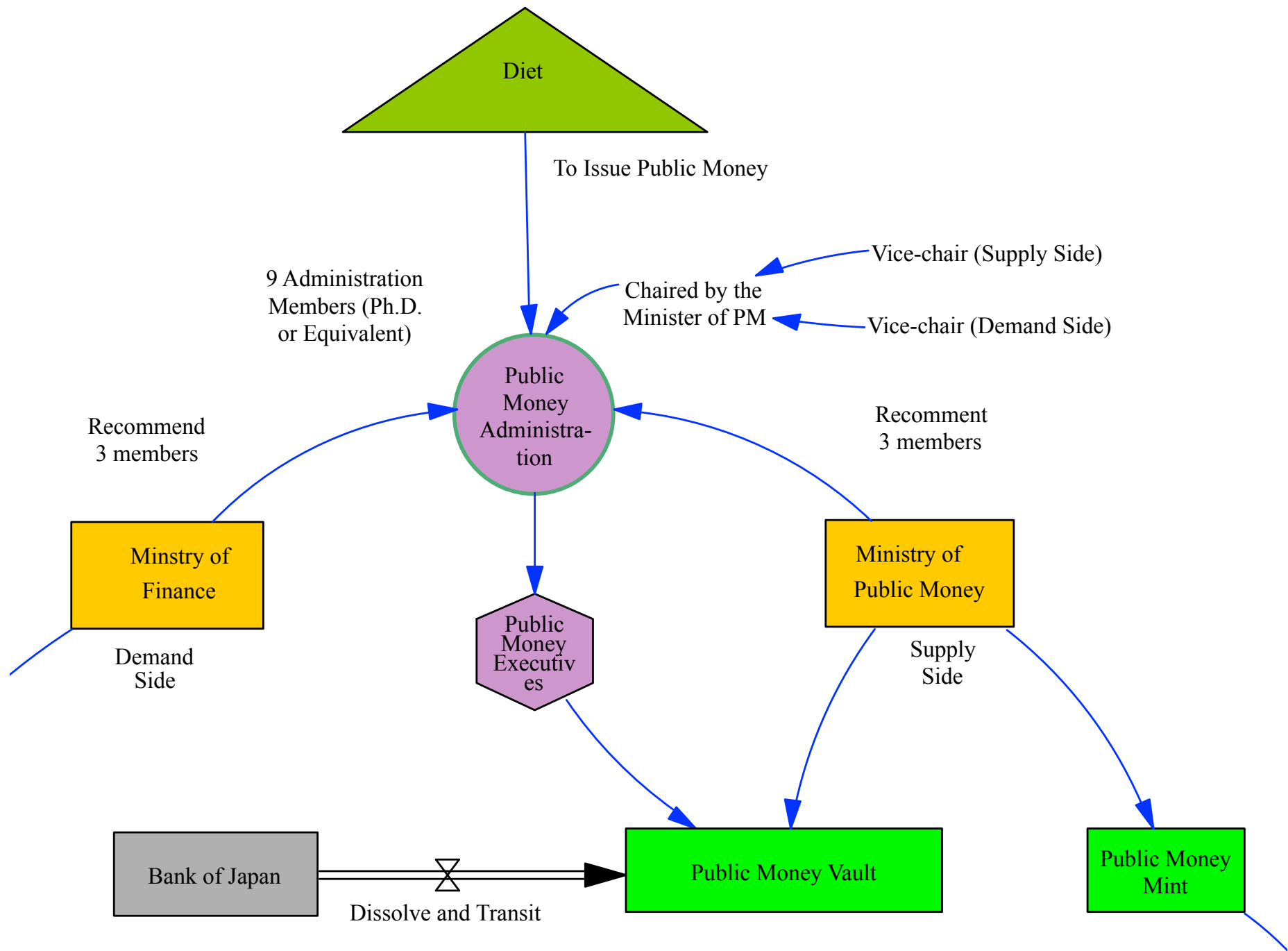


# Public Money System Fixes Three System Design Failures of Debt Money



	Public Money System (proposed)	Debt Money System (current)
Monetary Stability	Stable Money Supply Stable Price Level	Bubbles and Credit Crunches Inflation & Deflation
Financial Stability	No Bank-runs	Business Cycles (Booms and Depressions)
Employment	Full Employment	Involuntary Unemployment
Government Debt	No Government Debt	Built-in Debt Accumulation → Recession & Unemployment
Inequality	Income Inequality between Workers and Capitalists	Income Inequality between Financiers and Non-financiers
Sustainability	Sustainability is Possible	Accumulated Debt (Private and Public) → Forced Growth → Environmental Destruction

# Public Money Act of Japan (Getting Incorporated)



Great Depression, Oct.29, 1929 (Black Tuesday)

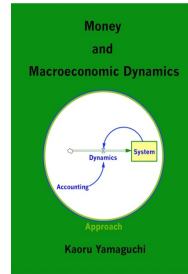
1929

2nd Great Depression, Sept. 15, 2008 (Lehman Shock)

2008

## Chicago Plan: Monetary Reform

Accounting  
System Dynamics  
Macroeconomic Model  
(August, 2008)



2013



2015  
(Public Money)

## Public Money System



## Blockchain Revolution

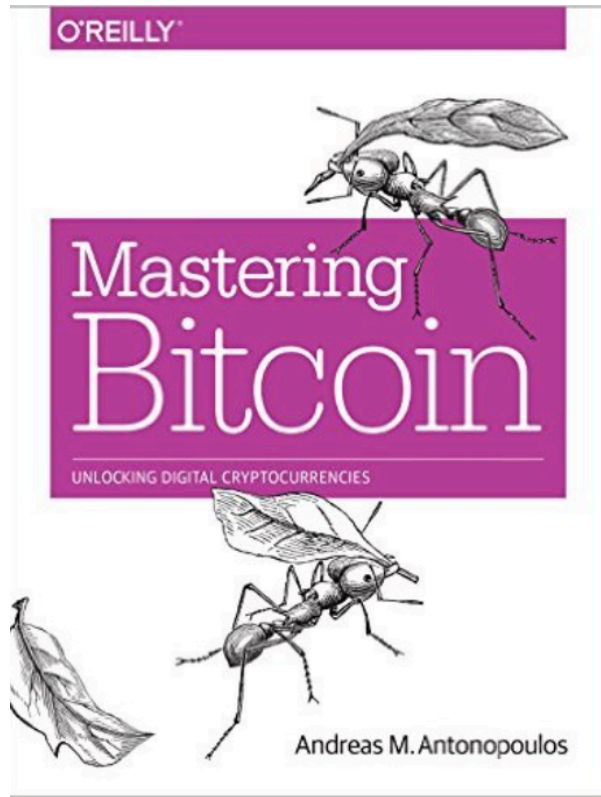
Bitcoin: A Peer-to-Peer Electronic Cash System  
by Satoshi Nakamoto, 2008;  
(started on 2009-01-03 18:15:05)

Bank  
Patchworks

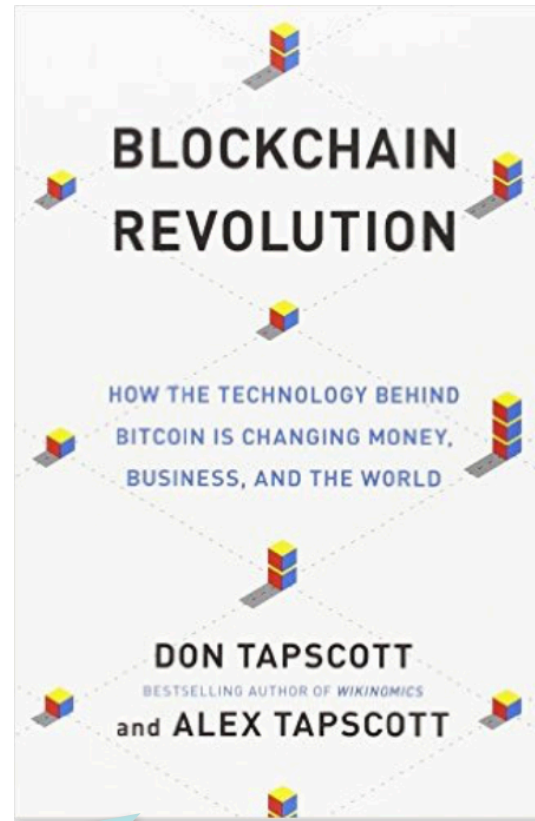
Debt Money System

- Peer-to-Peer Network
- Public Transaction Ledger
- Decentralized Verification (Blockchains)
- Highly Stable and Secure

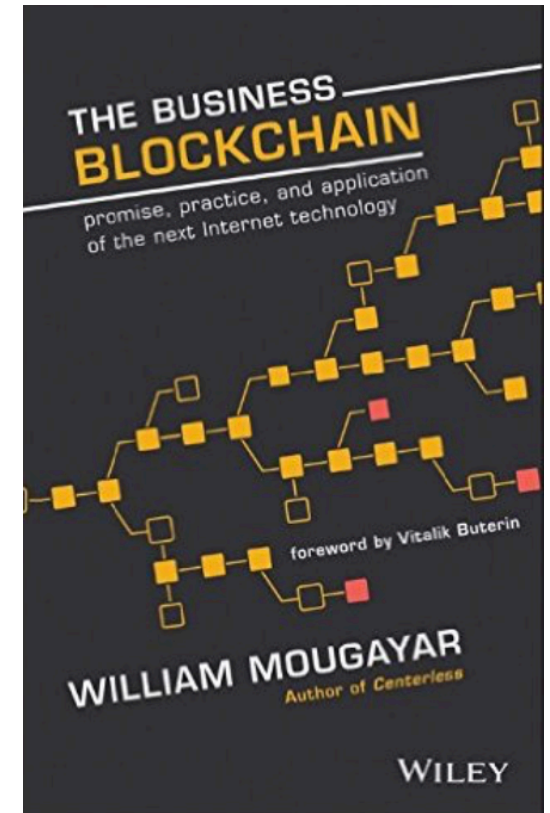




2 0 1 4



2 0 1 6



2 0 1 6

Some scholars have argued that the invention of double-entry bookkeeping enabled the rise of capitalism and the nation-state. This new digital ledger of economic transactions can be programmed to record virtually everything of value and importance to humankind: birth and death certificates, marriage licenses, deeds and titles of ownership, educational degrees, financial accounts, medical procedures, insurance claims, votes, provenance of food, and anything else that can be expressed in code (p.7).



## 2nd International Workshop P2P Financial Systems 2016

Opportunities · Risks · Market Dynamics · Regulation

[SPEAKERS](#)

[FULL PROGRAMME](#)

[PRACTICAL INFORMATION](#)

[CONFERENCE MATERIAL](#)

[CONTACT](#)



BANK OF ENGLAND



BANK OF CANADA  
BANQUE DU CANADA



DEUTSCHE  
BUNDESBANK  
EUROSYSTEM



FEDERAL RESERVE BANK of ST. LOUIS  
CENTRAL TO AMERICA'S ECONOMY®



UCL RESEARCH CENTRE  
FOR BLOCKCHAIN TECHNOLOGIES

## 8-9 September 2016, London, United Kingdom

ECONOTIMES

## Digital Currency Revolution



BoE explores implications of  
blockchain and central bank-issued  
digital currency



Friday, September 9, 2016 4:15 AM UTC

0 comment

# Blockchain as Bank Patchwork

## - Blockchain Revolution-



### Report on Practical Experiment of Blockchain Technology in Japanese Domestic Interbank Payment Operation

---

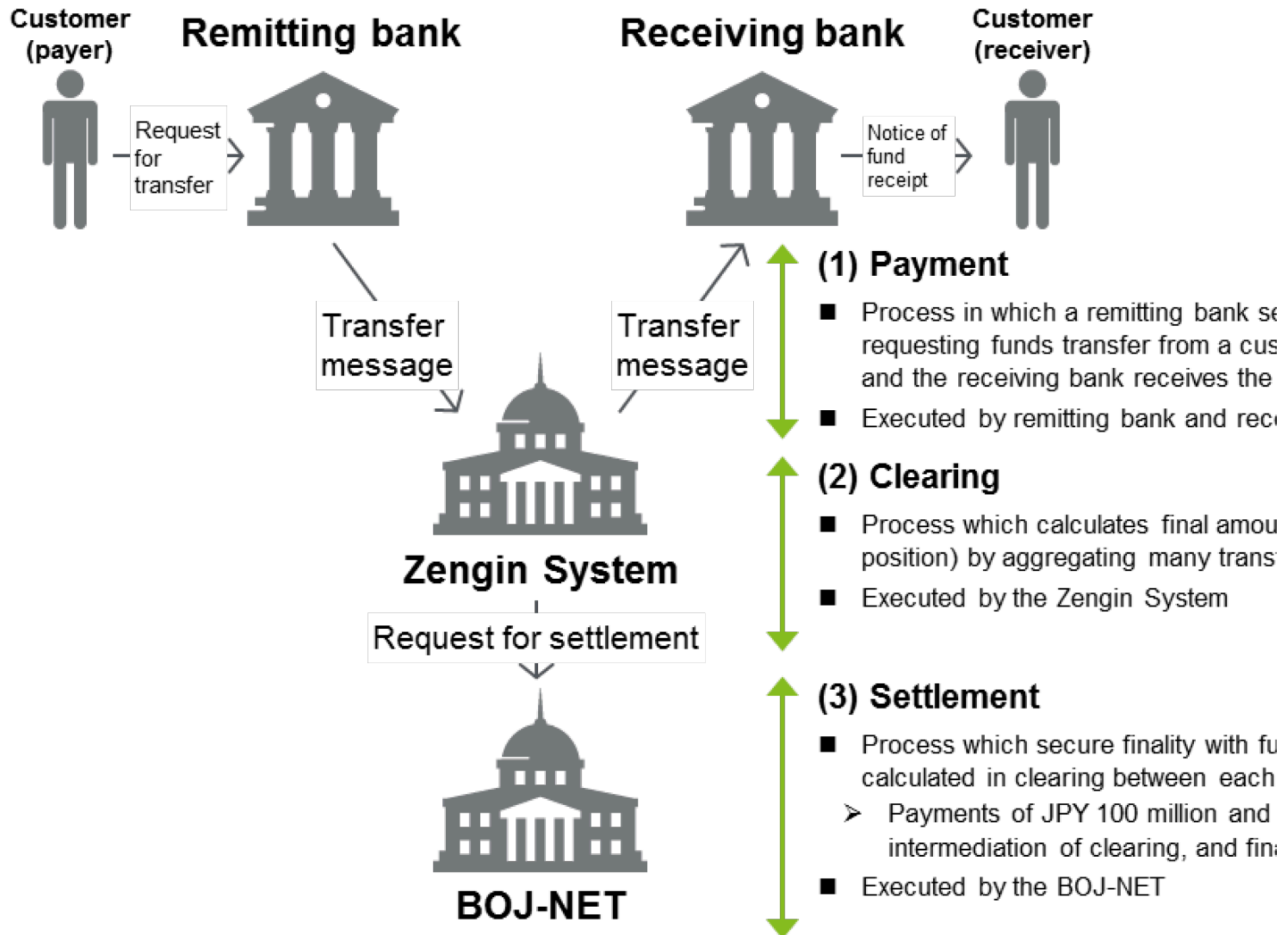
#### Blockchain Study Group

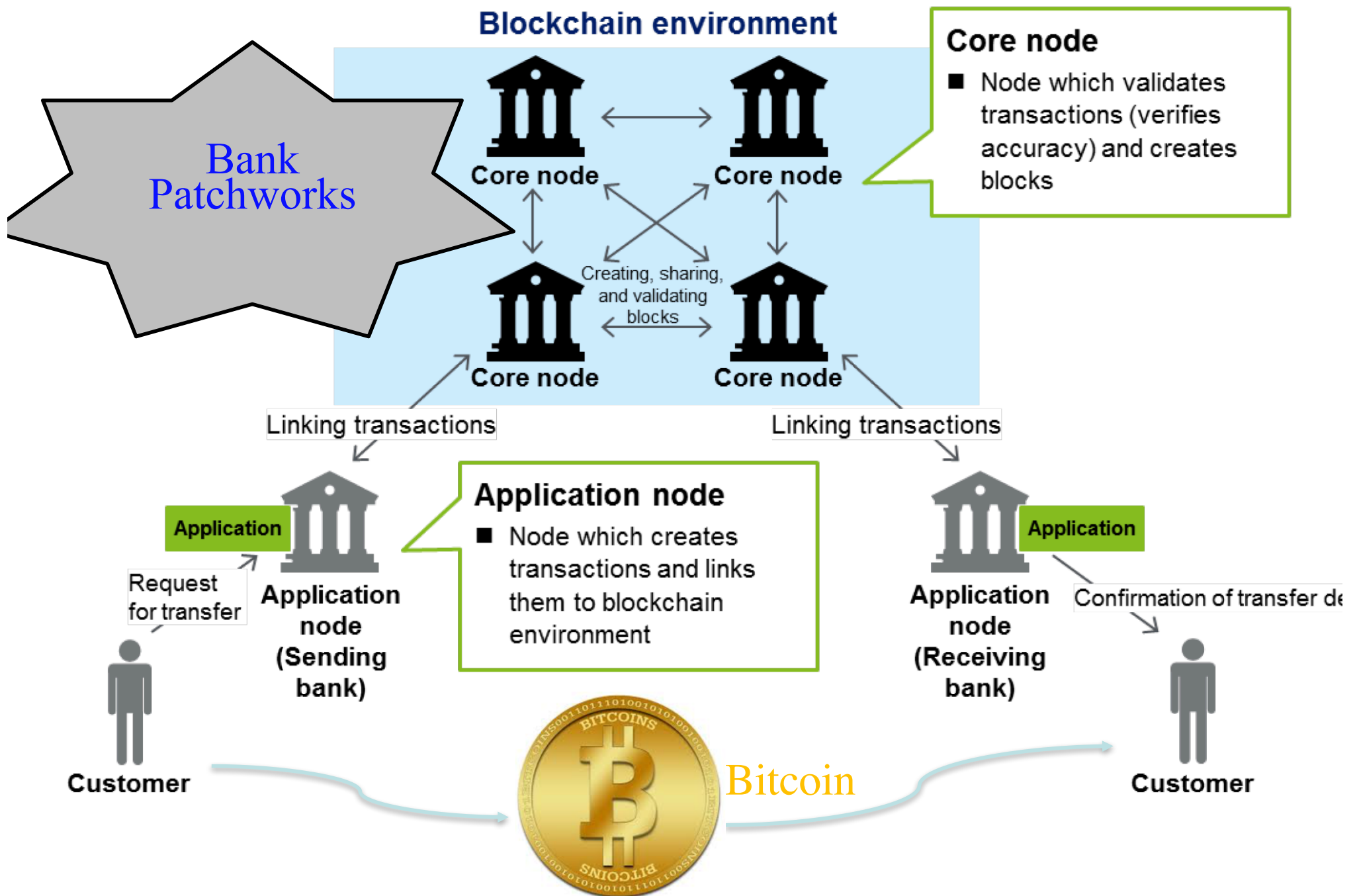
Mizuho Financial Group, Inc.  
Sumitomo Mitsui Banking Corporation  
Mitsubishi UFJ Financial Group, Inc.  
Deloitte Tohmatsu Group

2016/11/30









Great Depression, Oct.29, 1929 (Black Tuesday)

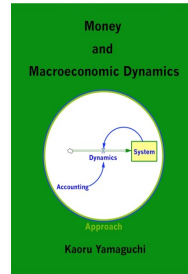
1929

2nd Great Depression, Sept. 15, 2008 (Lehman Shock)

2008

## Chicago Plan: Monetary Reform

Accounting  
System Dynamics  
Macroeconomic Model  
(August, 2008)



2013



2015  
(Public Money)

## Public Money System

The Ultimate Design of  
Monetary Reform

Asia-Pacific SD Conf. Singapore, 2/20/2017

## P2P Public Money System (Electronic PM)



2020

Blockchain Revolution

(The End of Bank  
Intermediaries)

Bitcoin: A Peer-to-Peer Electronic Cash System  
by Satoshi Nakamoto, 2008;  
(started on 2009-01-03 18:15:05)

Bank  
Patchworks

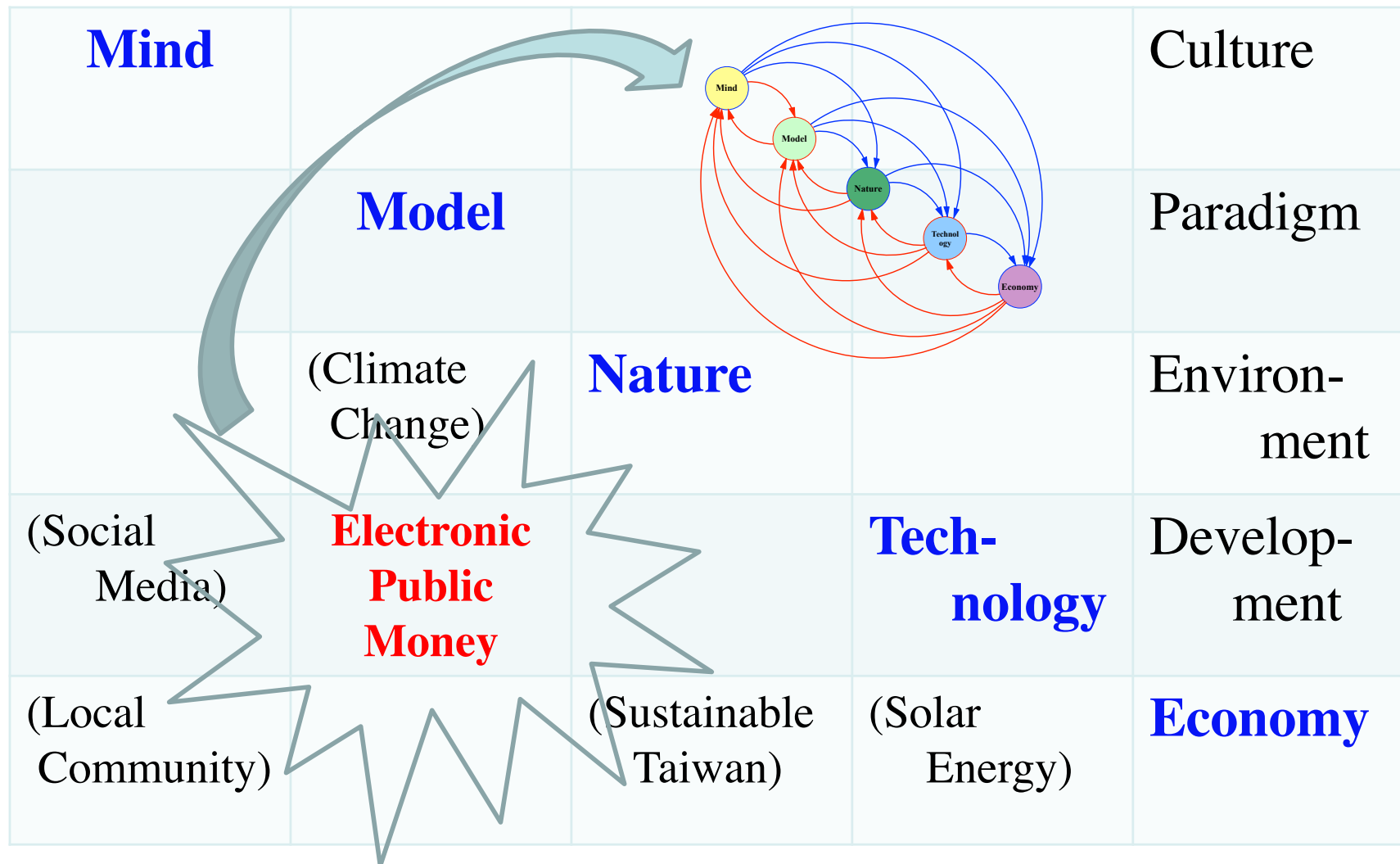
Debt Money System

- Peer-to-Peer Network
- Public Transaction Ledger
- Decentralized Verification (Blockchains)
- Highly Stable and Secure

# Futures of Electronic Public Money EPM

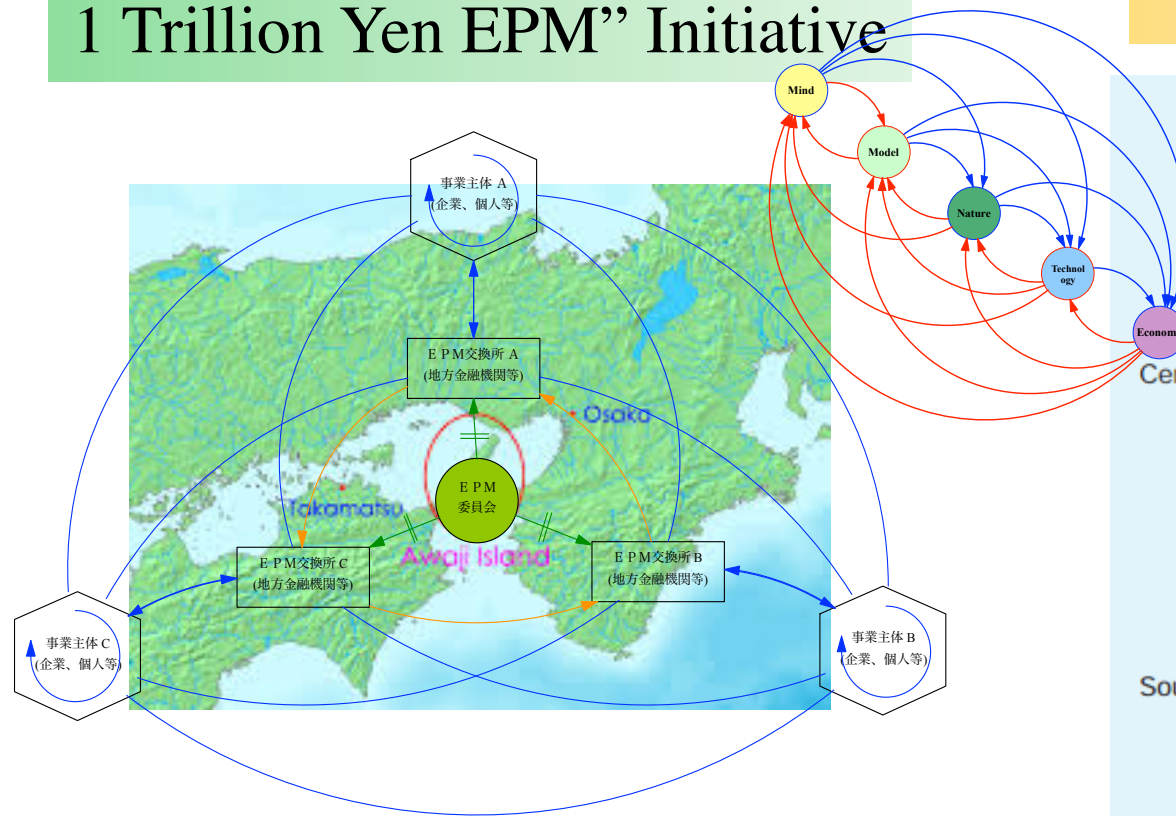
FOCAS: Future-Oriented Complexity and Adaptive Studies

Missing Fields of Studies

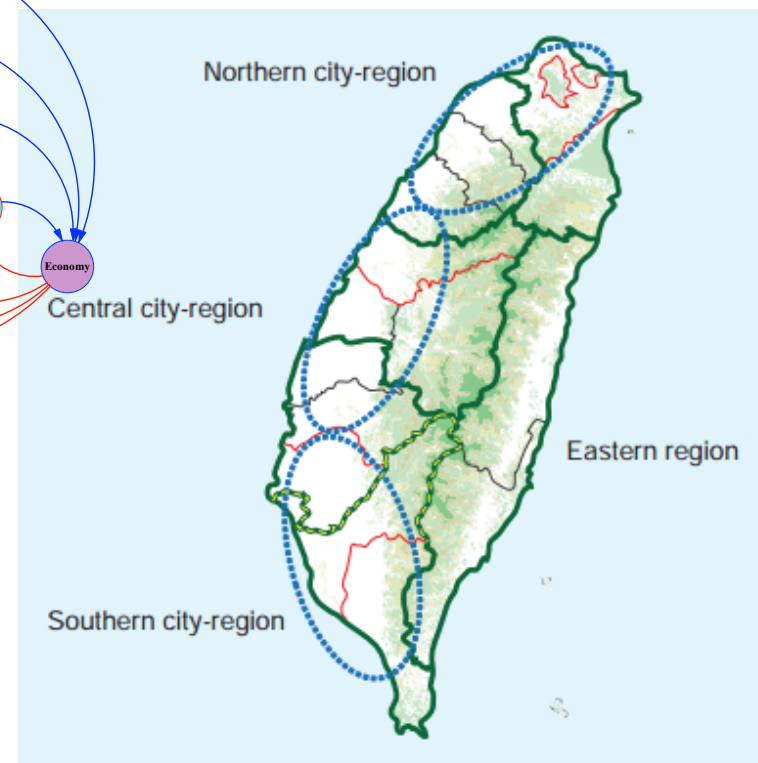


# Futures of Electronic Public Money EPM in Japan and Taiwan

## “Experimental Zone of 1 Trillion Yen EPM” Initiative



## Electronic Public Money in Taiwan (suggested)



Japan and Taiwan are more independent than EU countries  
because we have Power to Print Money!