



CHULALONGKORN
BUSINESS SCHOOL

FLAGSHIP FOR LIFE

Money, Contract, and Stablecoin

Kanis Saengchote

Department of Banking and Finance

Chulalongkorn Business School

www.dr-kanis.com



เงิน

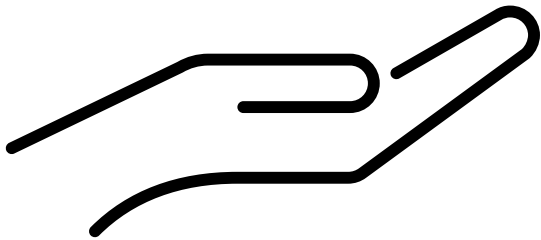




Token Money versus Account-Based Money

Brunnermeier, James and Landau (2019). Token money is bearer instrument, while account-based money is tied to a specific identity.

Token



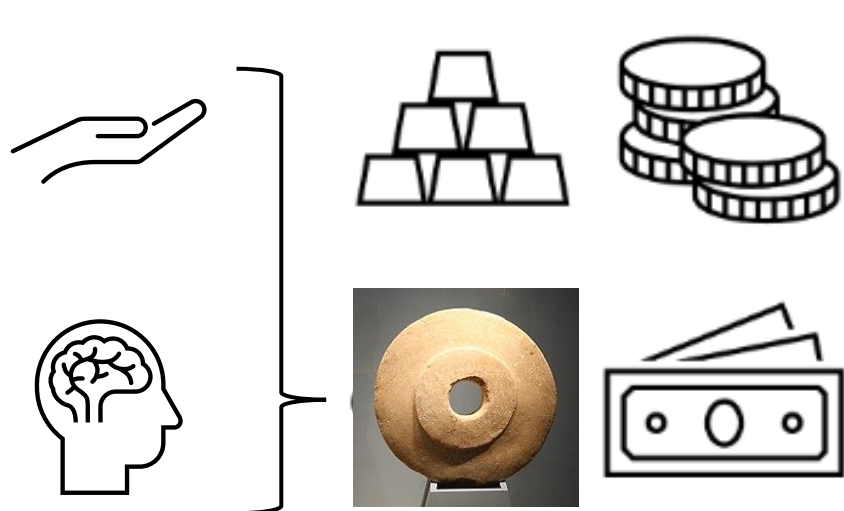
Account-Based





Outside Money versus Inside Money

Gurley and Shaw (1960). Inside money is an economic obligation that is widely accepted and freely exchanged. Outside money just exists.



Outside Money

Naturally-occurring stuff
and their derivatives

Social contract



Inside Money

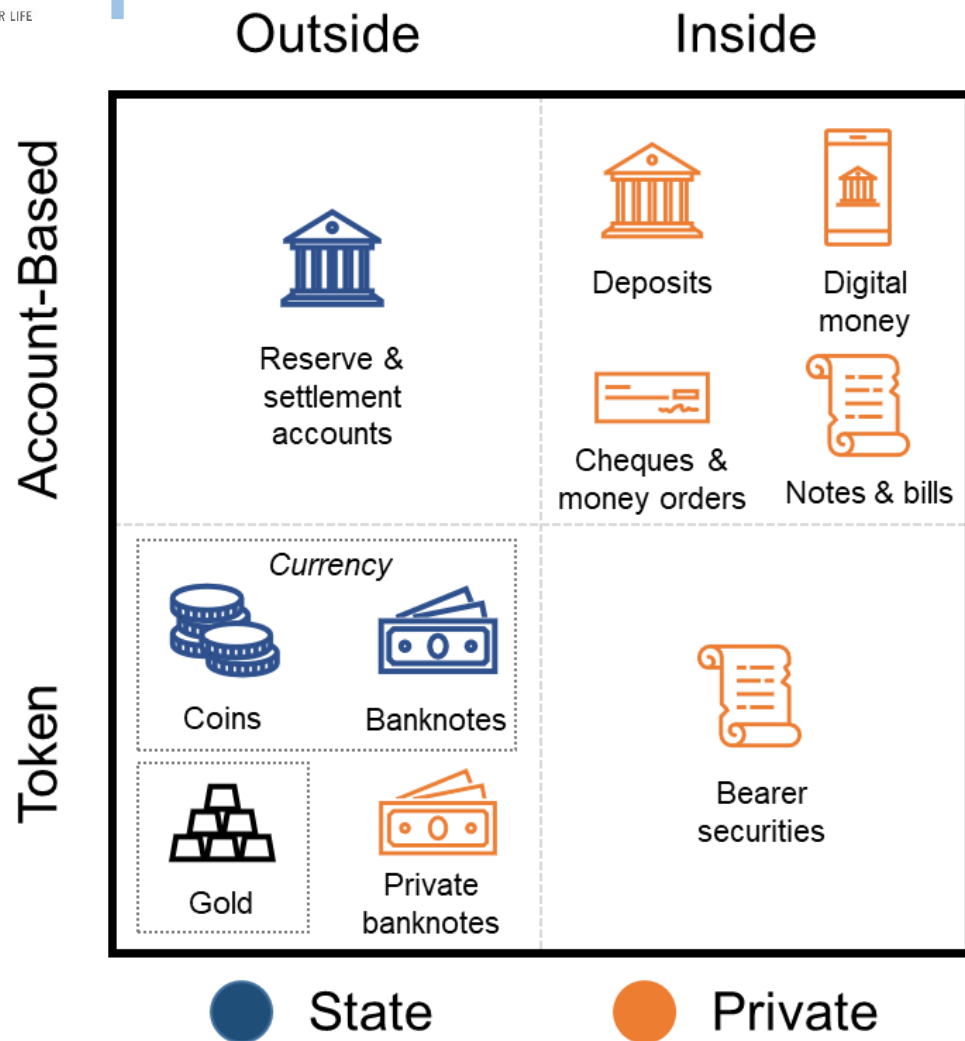
Asset = liability

Economic contract

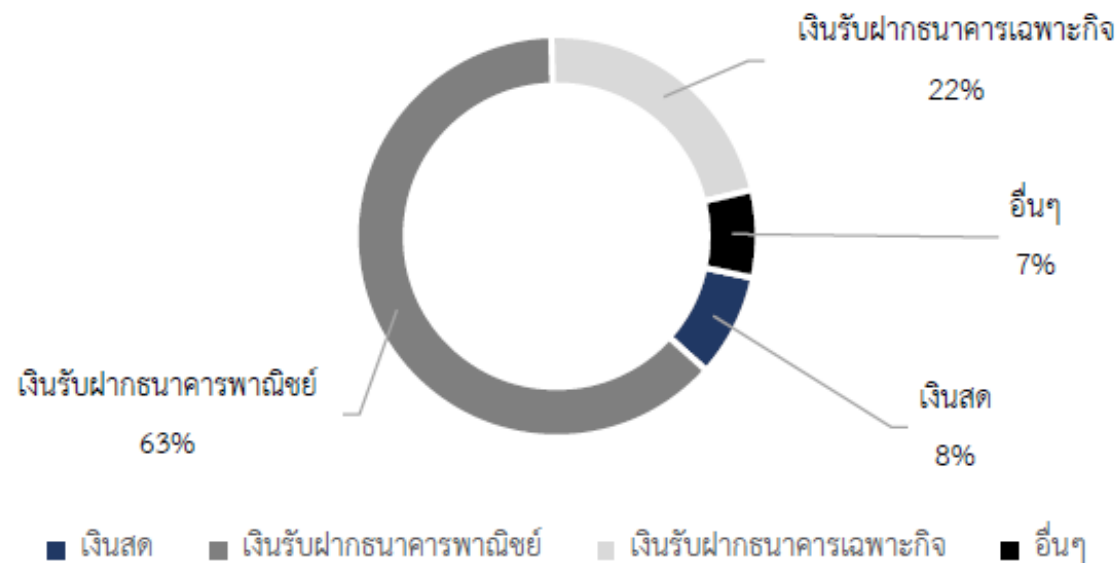


The Money Box and Modern Money

85% of “money” in Thailand is bank deposits, and cash only accounts for 8%.



ภาพที่ 1 ปริมาณและองค์ประกอบของเงิน ณ กรกฎาคม พ.ศ. 2565



ที่มา: ธนาคารแห่งประเทศไทย (ตาราง EC_MB_004_S2 ปริมาณเงินและองค์ประกอบ)



“Digital” “cash” is very difficult to create!

Modern money is information, so shouldn't it be easy to have digital cash?

Money \neq Cash!

- Cash is (physical) token.
 - Cash is private.
 - Cash is permissionless.
- Digital money is (often) account-based.
 - Digital information has full data trail.
 - Digital database users have different rights.



Overcoming the physical-digital dichotomy

Permissionless blockchain = public database with an incentive mechanism that allows users to remain anonymous but can trust recorded information as "truth".

- Private key:** random number generator
- Public key:** corresponds to generated private key
- Public address:** generated from public key as hash

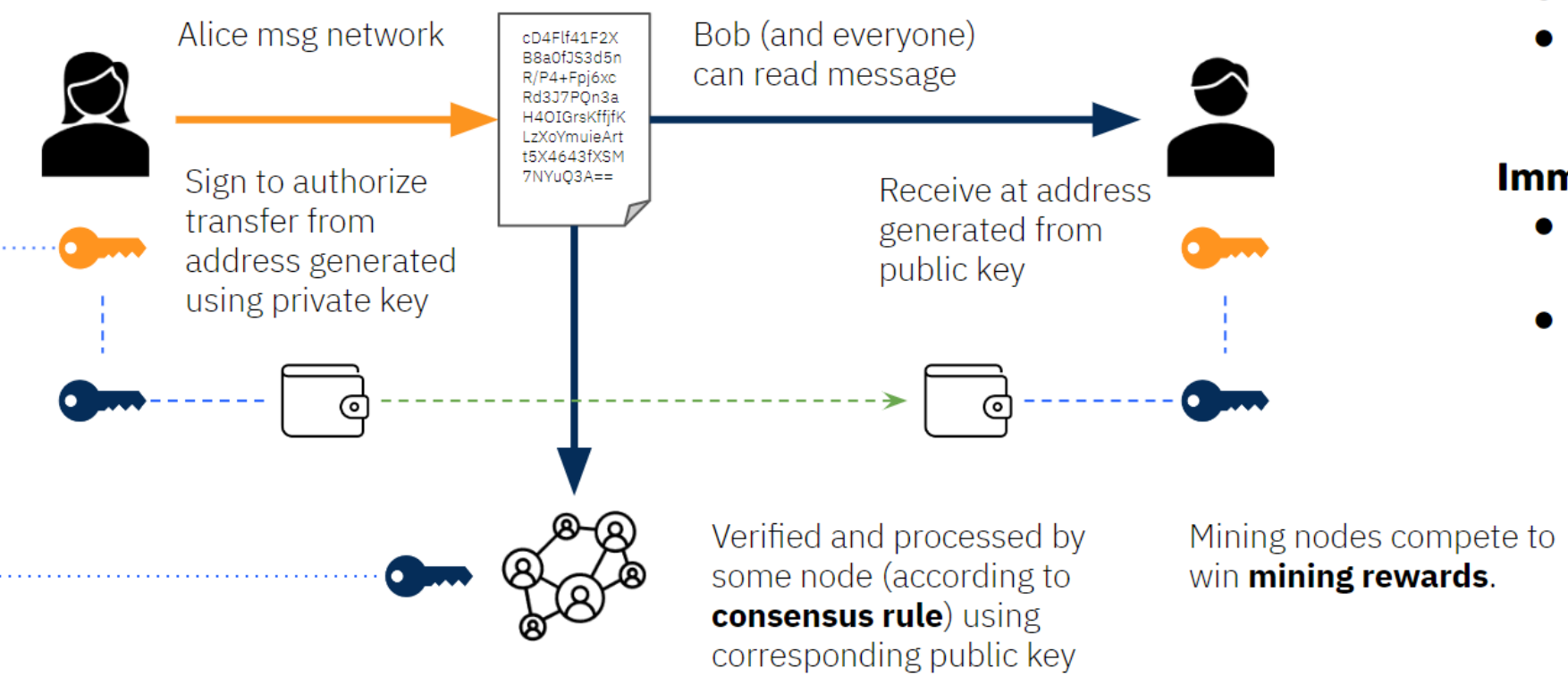
Seed phrase: helps track private keys

Permissionless (self-custodial keys)

- Private key to generate address and digitally sign transactions
- Public key for public verification
- Verified and processed by random nodes according to rules if valid

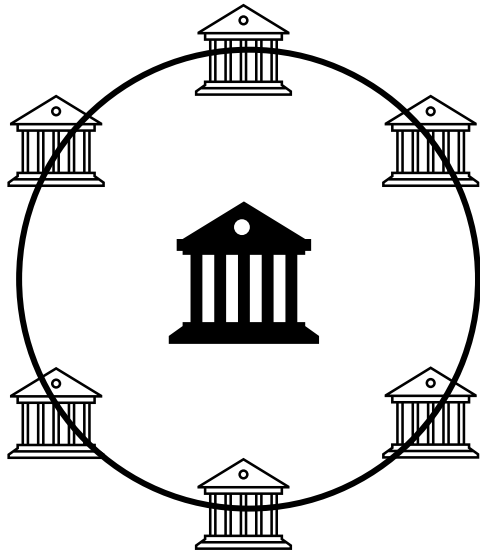
Immutable (once recorded)

- Append-only data in blocks linked together
- Sequential hash to verify linkages and transactions in blocks



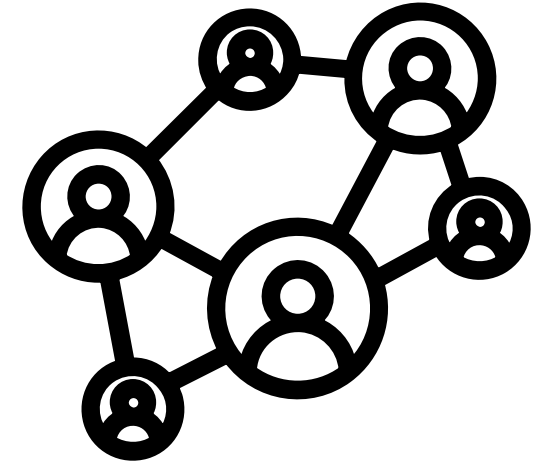


Settlement “finality” has a very different meaning for blockchain information system.



Multiple, centralized databases
+ personally identifiable accounts

→ requires clearing & settlement



Single, distributed database
+ “tokenized” data

→ no clearing required



Cryptocurrency as digital cash?

- Token Address is owned by holder of private key.
- Private Txns are transparent, but addresses are anonymous.
- Permissionless Instr. sent by private key and mined by random node.

Very close to cash despite being digital in nature!

→ Digital outside money

But what is the exchange rate of a cryptocurrency to other currencies?



Currency, money, and stablecoin



FROM:
Money *is*
currency



TO:
Money *based*
on currency



Outside money

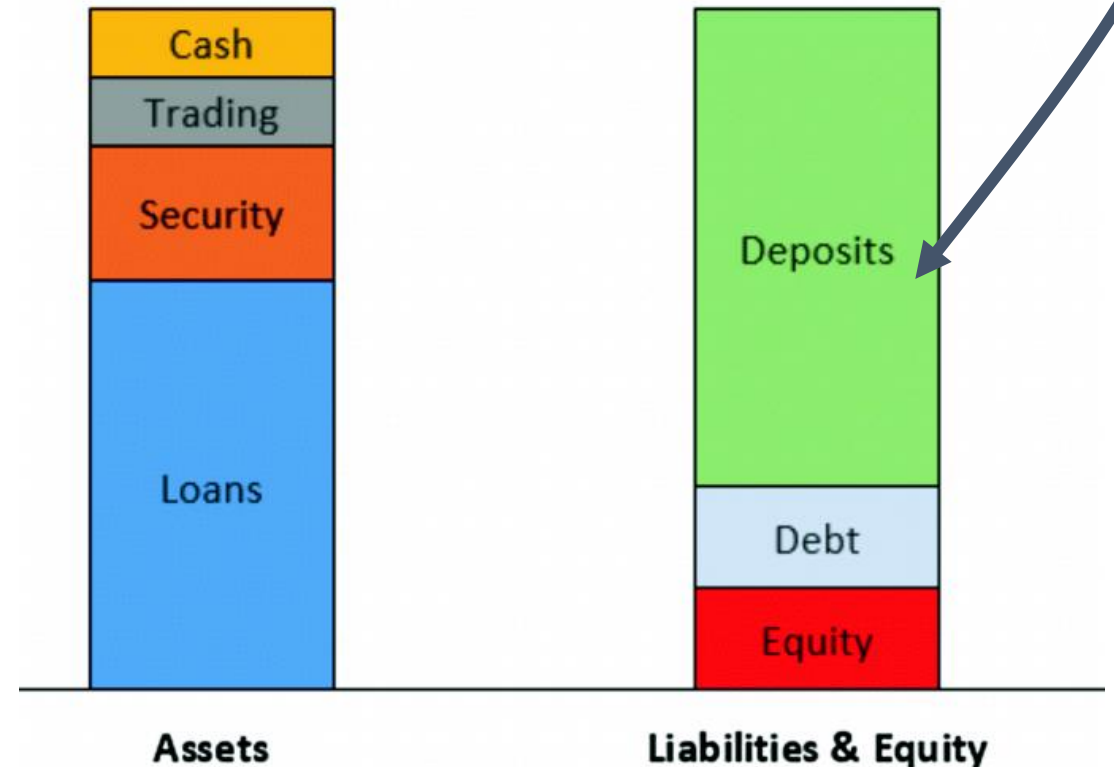
บัญชีกองทุนสำรองเงินตรา



Source: BOT Magazine, Issue 2, 2019

Inside money

Stylized Bank Balance Sheet



Source: Lessambo, F.I. (2020).
Commercial Banks' Financial Statements.





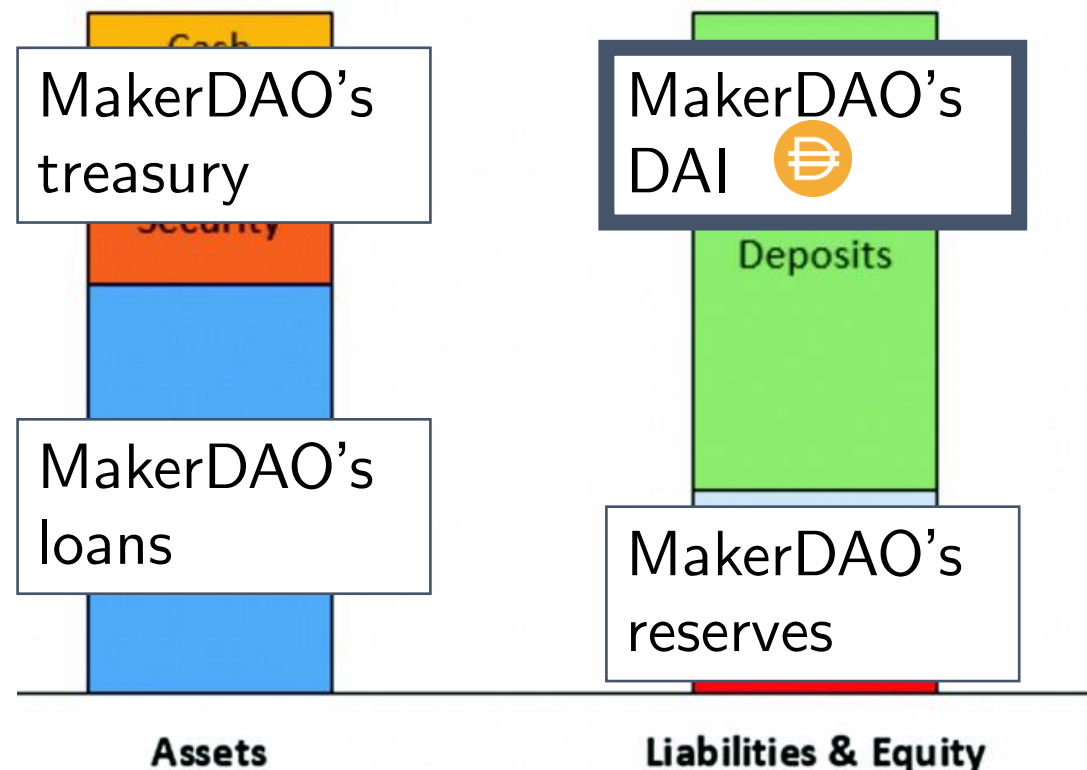
Money based on currency: Stablecoins (linked to currency) on blockchain

บัญชีของทุนสำรองเงินตรา



Algorithmic
(banknote printing)

Stylized Bank Balance Sheet



Collateralized debt position
(bank deposit creation)



Selected protocol failures and crises in DeFi

June 2021: Iron Finance (TITAN-IRON)
algorithmic stablecoin run.

Saengchote (2021),

Saengchote and Samphantharak (2022)

Jan 2022: Abracadabra (MIM)

CDP stablecoin [bank] run.

Saengchote, Putninš and

Samphantharak (2022)

May 2022: Terra (LUNA-UST)

algorithmic stablecoin run.

Saengchote and Samphantharak (2022)

In Token Crash Postmortem, Iron Finance Says It Suffered Crypto's 'First Large-Scale Bank Run' CoinDesk

In the wake of the crash, billionaire Mark Cuban is now calling for regulation of stablecoins.

By Kevin Reynolds ⌚ Jun 18, 2021 at 12:09 a.m. Updated Sep 14, 2021 at 8:13 p.m.

Daniele Sestagalli Projects Tank Amid Wonderland Drama



by Chris Williams

Jan. 28, 2022

Wonderland's treasury manager 0xSifu was outed as a criminal who co-founded the illegitimate QuadrigaCX exchange yesterday. In the fallout, Wonderland and other projects linked to Daniele Sestagalli are plummeting.

How Terra's UST and LUNA Imploded



Even as the entire crypto market tanked, the biggest story was the dual implosion of Terra's UST and LUNA. Here's what happened.

By  Liam J. Kelly ☆

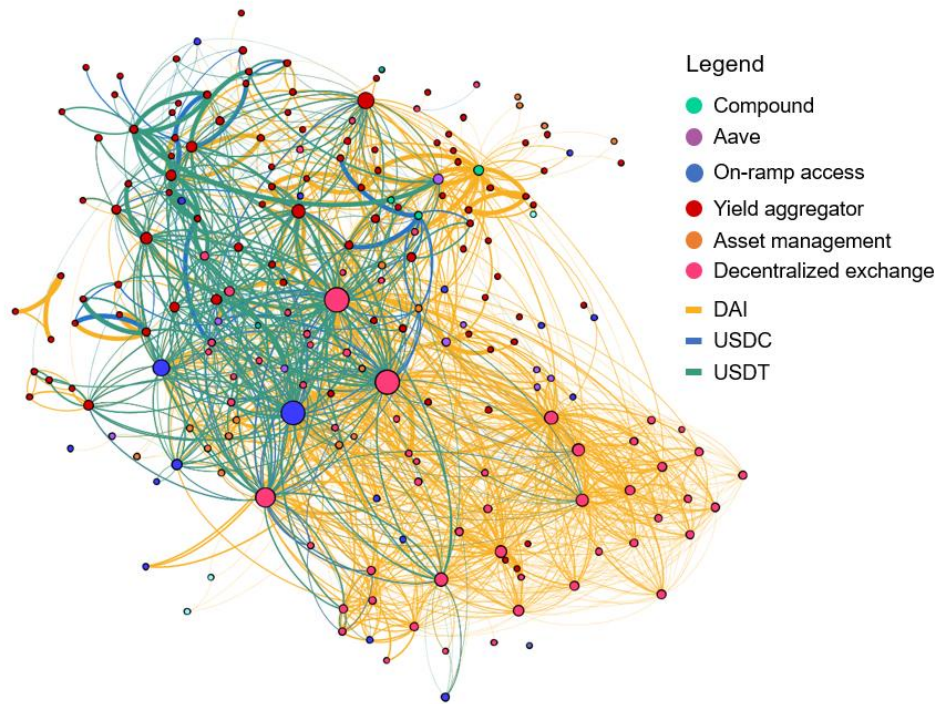
📅 May 14, 2022

🕒 8 min read



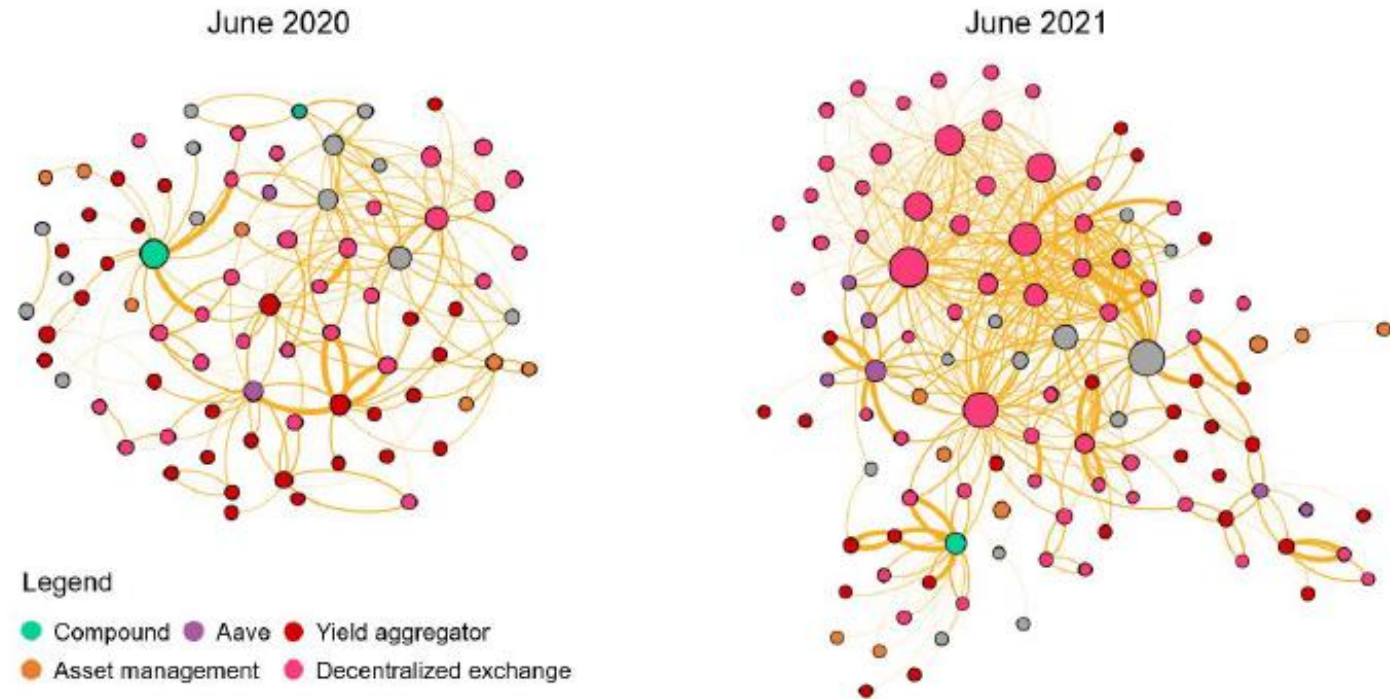
Just like its predecessors, DeFi is also a debt-on-debt network of inside money, but currently without clear rules and regulations (pseudonymous and permissionless) and is growing in complexity.

Debt-on-debt network via stablecoins



Source: Saengchote (2022a)

Permissionless blockchain → rapid proliferation



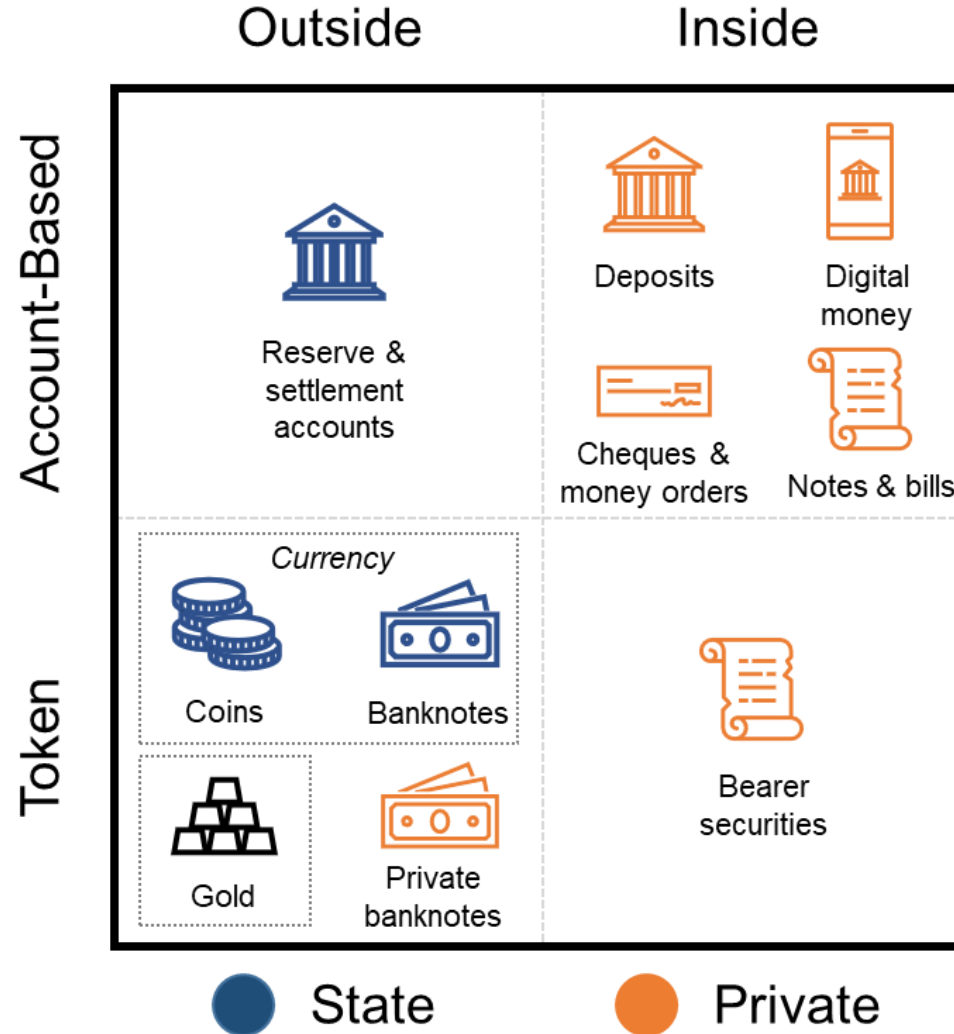
Source: Saengchote (2021)



The Money Box, revisited

Public sector's role is in maintaining outside money, used to establish unit of account, facilitate payment system, and other public goals.

Today, private sector no longer issues outside money.



Private sector's role is in allocating inside money, which is the bloodline of the modern economy, and the privilege to issue money and credit is governed by **regulation**.



CHULALONGKORN
BUSINESS SCHOOL

FLAGSHIP FOR LIFE

Code is law.

Permissionless, decentralized, pseudonymous blockchains allow new possibilities but have their tradeoffs.



เงิน