

Anatomy of a Run: The Terra Luna Crash

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The Terra-Luna design

(Loosely) adapted from d'Avernas-Morin-Vandeweyer (2023)

Future platform revenue (block rewards, fees, convenience)	Equity Tokens (Luna)
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Start from a token-backed platform business:

- ▶ Offers platform for smart contracts e.g., loans, automated exchanges
 - ▶ Operating smart contracts and blockchain validation generates revenues ultimately captured by token holders
- + tokens are required to use platform services (convenience yield).
(no bubble)

The Terra-Luna design

Future platform revenue	Equity Tokens (Luna)
Stablecoin yield (option)	

- ▶ Assume some investors derive extra value from holding/using a stable instrument (Gorton et al., 2023) ~ “convenience yield”
 - ▶ Make the equity token convertible into a stablecoin (+ stabilization mechanism)
- ⇒ Create **additional value**.
- + Stablecoin investors need to buy equity token to access the stablecoin

The Terra-Luna design

Future platform revenue	Stablecoins (UST)
	Equity Tokens (Luna)

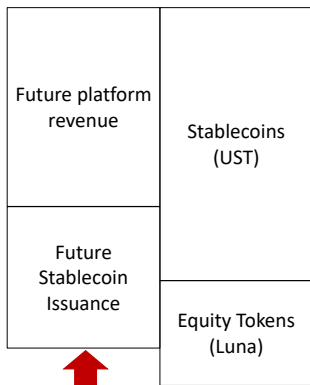
- ▶ Stablecoin investors buy equity tokens to exert the conversion option and capture the convenience yield.
- ⇒ monetize convenience yield for equity token holders (additional revenue).
- ▶ Remark: in the UST case convenience yield augmented by extra subsidy by TFL through Anchor deposit rate.

The Terra-Luna design

Future platform revenue	Stablecoins (UST)
Future Stablecoin Issuance	Equity Tokens (Luna)

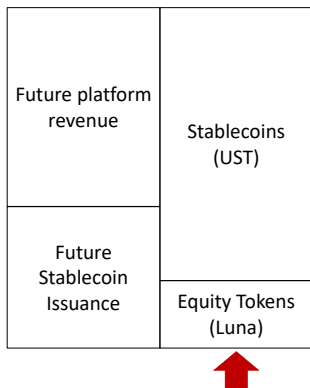
- ▶ Suppose demand for stablecoin is expected to grow
- ⇒ Key insight in d'Avernas et al (2023), stablecoin and equity token value backed (in part) by proceeds from **future** issuance.
- ▶ Rationalize the subsidy from Luna holders (TFL) to UST holders (through Anchor)?

Fragility



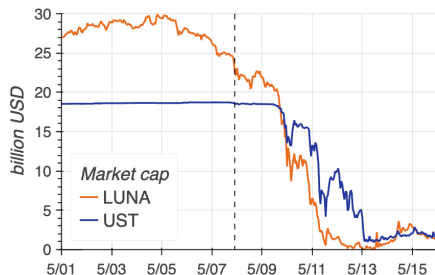
- ▶ Assets are risky:
 - ▶ Fundamental risk: e.g., technical failure, demand shock
 - ▶ Coordination problems (platform)
- + Asset values are highly correlated

Fragility



- ▶ Assets are risky:
 - ▶ Fundamental risk: e.g., technical failure, demand shock
 - ▶ Coordination problems
- + Asset values are highly correlated
- ⇒ Conversion option (of UST into Luna)
 - ▶ short-term mechanism to keep the price stable around \$1 through arbitrage in normal times
 - ▶ but does not provide long-term **safety** in crises.

So is this a run?



Different from a *bank run* (à la Diamond-Dybvig):

- ▶ No convertibility into a safe asset or even an asset with independent value
- ▶ Most of the exit happens through direct sale of UST
- ▶ Investors convert into Luna (Alameda Research) to sell.

~ Investors losing faith in the business (the value of the assets)?

So is this a run?

Peg creates a pecuniary externality \Rightarrow strategic complementarities:

- ▶ Sale of UST puts pressure on the peg
- ▶ **Loss of peg destroys value** (stablecoin no longer stable)
- ▶ justifies sale (self-fulfilling)

~ Currency attack (Morris-Shin 1998), amplification of fundamental shocks

Remark: unlike a Central Bank, shareholder (TFL) does not have (or has little) currency reserves to defend the peg.

Transparency vs Complexity

Collateral-backed stablecoins (Tether):

- + Simple(r) design
- Opacity of collateral holdings
- ▶ Fixable through regulation? (~ banking)

Algorithmic stablecoins (UST):

- ▶ More transparent
- ▶ (Incredibly) complex
 - ▶ hard to understand for (retail) investors
 - ▶ amplifies risk (Caballero and Simsek 2013)
 - ▶ creates **asymmetries** between sophisticated and unsophisticated investors \Rightarrow may harm wider adoption in the long run (Dang et al., 2014).
- ▶ Hard to regulate (except bans)

Conclusion

- ▶ Amazing data collection and analysis effort.
- ▶ Implications for stability/viability of DeFi and retail investors protection.
- ▶ Small request: more information on governance (holdings of Luna tokens, of Anchor's governance tokens).
- ▶ Wild extrapolation: a case for blockchain-based programmable CBDC?