Tutorial 4: Terra/Luna Collapse

Anatomy of a Death Spiral

ECOM215: Blockchain Economics and Digital Assets

Week 5 | Decentralised Finance (DeFi)

Semester B, 2025/2026

CASE BRIEF FOR STUDENTS

Please read before the tutorial. Estimated reading time: 15 minutes.

Background

In early May 2022, the Terra blockchain was one of the most celebrated projects in cryptocurrency. Its native stablecoin, UST (TerraUSD), had grown to become the third-largest stablecoin with a market capitalisation of approximately $18 billion. The associated token, LUNA, had a market cap of around $40 billion, making it a top-10 cryptocurrency.

One week later, both were worthless. Approximately $60 billion in value was destroyed in what became the largest collapse in cryptocurrency history.

This case examines what Terra was, how it worked, why it failed, and what lessons it offers for understanding DeFi risks.

How Terra Worked

Unlike fiat-backed stablecoins (USDC, USDT) that hold dollar reserves, UST was an **algorithmic stablecoin**. It maintained its $1 peg through a mechanism linking it to LUNA:

The Core Mechanism:

- To **mint** 1 UST: Burn $1 worth of LUNA
- To **redeem** 1 UST: Burn the UST, receive $1 worth of LUNA

How the peg was supposed to work:

- If UST trades above $1: Arbitrageurs mint new UST (by burning LUNA), sell UST on the market, pocket the difference. This increases UST supply, pushing price back to $1.
- If UST trades below $1: Arbitrageurs buy cheap UST on the market, redeem for $1 worth of LUNA, sell the LUNA. This decreases UST supply, pushing price back to $1.

The system had no external collateral. UST's value depended entirely on the ability to redeem it for LUNA—and LUNA's value depended largely on demand for UST.

The Anchor Protocol: 20% Yields

A critical part of Terra's ecosystem was **Anchor Protocol**, a lending platform that offered approximately **20% APY** on UST deposits.

Why this mattered:

- 20% yield on a "stablecoin" was extraordinarily attractive
- At its peak, over 70% of all UST was deposited in Anchor
- This created massive demand for UST, supporting LUNA's price

Where did the yield come from?

- Borrowers paid interest (but borrowing demand was insufficient)
- Staking rewards from collateral
- **Subsidies from Terra's reserves**—the yield was not sustainable

The 20% rate was essentially a customer acquisition cost, paid from a "yield reserve" that was being depleted. By early 2022, the reserve was shrinking and Anchor announced plans to move to a variable rate.

The Collapse: May 7–13, 2022

Saturday, May 7:

- Large withdrawals from Anchor (approximately $2 billion over the weekend)
- UST begins trading slightly below $1 (around $0.98)
- Unclear whether this was an intentional attack or organic selling

Sunday–Monday, May 8–9:

- UST drops to $0.90, triggering panic
- Holders rush to redeem UST for LUNA
- Each redemption mints new LUNA, increasing LUNA supply
- LUNA price falls from $80 to $60

Tuesday–Wednesday, May 10–11:

- Death spiral accelerates

- UST drops to $0.30
- LUNA supply explodes: from 350 million to over 6 *trillion* tokens
- LUNA price collapses: $60 → $1 → $0.01 → $0.0001

Friday, May 13:

- Terra blockchain halted twice
- UST trading at $0.10–$0.15
- LUNA effectively worthless
- Combined losses: approximately $60 billion

The Death Spiral Mechanism

The collapse illustrated a **reflexive death spiral**:

1. UST loses peg slightly
2. Holders redeem UST for LUNA (minting new LUNA)
3. Increased LUNA supply pushes LUNA price down
4. Now $1 of LUNA is worth less, so more LUNA must be minted per UST redeemed
5. LUNA price falls further
6. Confidence in UST collapses (if LUNA is worthless, UST redemptions are worthless)
7. Everyone tries to exit simultaneously
8. System cannot absorb the selling pressure

The fundamental problem: **circular backing**. UST was backed by LUNA, but LUNA's value depended on UST demand. When confidence broke, both collapsed together.

Warning Signs That Were Ignored

- **Unsustainable yields**: 20% APY with no clear source of returns
- **Concentration risk**: 70%+ of UST in a single protocol (Anchor)
- **No external collateral**: Nothing outside the system to absorb shocks
- **Previous stress**: UST had briefly lost its peg in May 2021
- **Academic warnings**: Researchers had identified the death spiral risk
- **Size mismatch**: UST market cap ($18B) approaching LUNA market cap ($40B)—less "buffer"

The Aftermath

Immediate consequences:

- Tens of thousands of investors lost substantial savings
- Some retail investors had put life savings into Anchor for the 20% yield
- Contagion spread: Crypto hedge funds (Three Arrows Capital) and lenders (Celsius, Voyager) collapsed in subsequent weeks

Legal and regulatory:

- Do Kwon (Terra founder) charged with fraud by US SEC and South Korean authorities
- Arrested in Montenegro (March 2023) while travelling on false documents
- Extradition proceedings ongoing
- Accelerated regulatory focus on stablecoins globally

Industry response:

- Algorithmic stablecoins largely discredited
- Greater scrutiny of yield sources ("Where does the yield come from?")
- MiCA regulation (EU) explicitly addresses algorithmic stablecoin risks

Key Facts Summary

Item	Detail
Date of collapse	May 7–13, 2022
UST market cap (peak)	∼$18 billion
LUNA market cap (peak)	∼$40 billion
Total value destroyed	∼$60 billion
LUNA supply change	350 million → 6+ trillion
LUNA price change	$80 → $0.0001
Anchor yield	∼20% APY

Questions to Consider

1. Why did so many people invest in a system with such obvious risks? What role did the 20% yield play?
2. Could the collapse have been prevented once it started? What interventions might have worked?
3. How is Terra/Luna different from a traditional bank run? How is it similar?
4. Should algorithmic stablecoins be banned, regulated, or allowed to fail?
5. What due diligence should investors perform before depositing funds in DeFi protocols?

Further Reading (Optional)

- "The Fall of Terra: A Timeline" — The Block Research
- Nansen research report on Terra wallet flows
- SEC complaint against Terraform Labs (February 2023)

Session Timeline

Time	Activity
0:00–0:08	Context setting: summarise the mechanism and collapse
0:08–0:20	Discussion Question 1: Why did people invest?
0:20–0:32	Discussion Question 2: Could it have been stopped?
0:32–0:44	Discussion Question 3: Bank run parallels
0:44–0:52	Discussion Question 4: Regulatory response
0:52–1:00	Synthesis and key takeaways

Discussion Questions with Guidance

Question 1: Why did people invest despite the risks?

"The circular backing and unsustainable yields were visible to anyone who looked. Why did so many people—including sophisticated investors—put money into Terra?"

Points that may emerge:

- **Yield hunger**: In a low-interest-rate environment, 20% on a "stablecoin" was irresistible
- **Social proof**: Major VCs (Jump, Three Arrows) invested; "smart money" validated it
- **Complexity as camouflage**: The mechanism was complicated enough that many didn't understand the risks
- **Short-term thinking**: Many knew it was risky but thought they could exit before collapse
- **Normalisation**: UST had existed for years and survived a prior stress test (May 2021)
- **Motivated reasoning**: People wanted to believe; confirmation bias filtered out warnings

Key insight: High yields without clear sources should always trigger scepticism. "Where does the yield come from?" is the fundamental due diligence question in DeFi.

Question 2: Could the collapse have been stopped?

"Once UST started losing its peg on May 7, was the collapse inevitable? What interventions might have worked?"

Potential interventions:

- **Bitcoin reserves**: Luna Foundation Guard had ∼$3B in BTC reserves; they deployed them but it was insufficient
- **Circuit breakers**: Pause redemptions temporarily to prevent panic spiral
- **External bailout**: A large institution could have provided liquidity (none did)
- **Mint caps**: Limit how much LUNA could be minted per day (but this breaks the peg mechanism)

Why interventions failed or wouldn't work:

- $3B reserves vs $18B UST market cap—insufficient buffer
- Pausing redemptions destroys confidence in the peg entirely
- No "lender of last resort" in DeFi (unlike central banks for traditional banks)
- The mechanism itself was the problem—any fix undermines the core design

Key insight: Once a death spiral starts in a system with circular backing, it may be impossible to stop. The design was fundamentally fragile, not just poorly managed.

Question 3: How is this like (and unlike) a bank run?

"Traditional banks can also experience runs. How is Terra/Luna similar to a bank run? How is it different?"

Similarities:

- Confidence-driven: Both collapse when depositors lose faith
- Self-fulfilling: The act of withdrawing causes further losses
- Speed matters: Slow withdrawals are manageable; panic is not
- Contagion: Both can spread to connected institutions

Differences:

- **No deposit insurance**: Banks have FDIC/government backstop; DeFi does not
- **No lender of last resort**: Central banks provide emergency liquidity; no equivalent in DeFi
- **24/7 markets**: Bank runs historically took days; Terra collapsed in hours
- **Transparency**: Everyone could watch reserves drain in real-time (accelerated panic)
- **Circular backing**: Banks hold external assets (loans, bonds); Terra's backing was internal

Key insight: DeFi has recreated traditional financial risks (runs, leverage, contagion) without the safety infrastructure (insurance, central banks, regulation) that evolved over centuries to manage them.

Question 4: What should regulators do about algorithmic stablecoins?

"After Terra, regulators worldwide have proposed rules for stablecoins. Should algorithmic stablecoins be banned? Regulated? Left alone to fail?"

Arguments for banning:

- Retail investors cannot assess the risks

- No algorithmic stablecoin has achieved long-term stability at scale
- Systemic risk if they grow large enough
- Consumer protection mandate

Arguments for regulation (not banning):

- Innovation shouldn't be prohibited, just controlled
- Require clear disclosures, risk warnings, investor caps
- Reserve requirements or capital buffers
- Let sophisticated investors participate with informed consent

Arguments for allowing failure:

- Caveat emptor—investors should do due diligence
- Market discipline: Failures teach lessons
- Regulation may not prevent fraud and gives false sense of security
- DeFi is global; national bans just push activity elsewhere

Key insight: MiCA (EU) essentially requires stablecoins to have reserves, which effectively prohibits pure algorithmic models. The US approach remains unclear. There's genuine tension between innovation and protection.

Extension Question (if time permits)

"Do Kwon is facing fraud charges. But the mechanism was public—anyone could read the smart contracts. Is it fraud if everything was transparent?"

This raises interesting questions about disclosure vs. fraud. The SEC alleges misrepresentation about the stability mechanism and sustainability of yields, not just that the system failed.

End of Tutorial 4 Materials