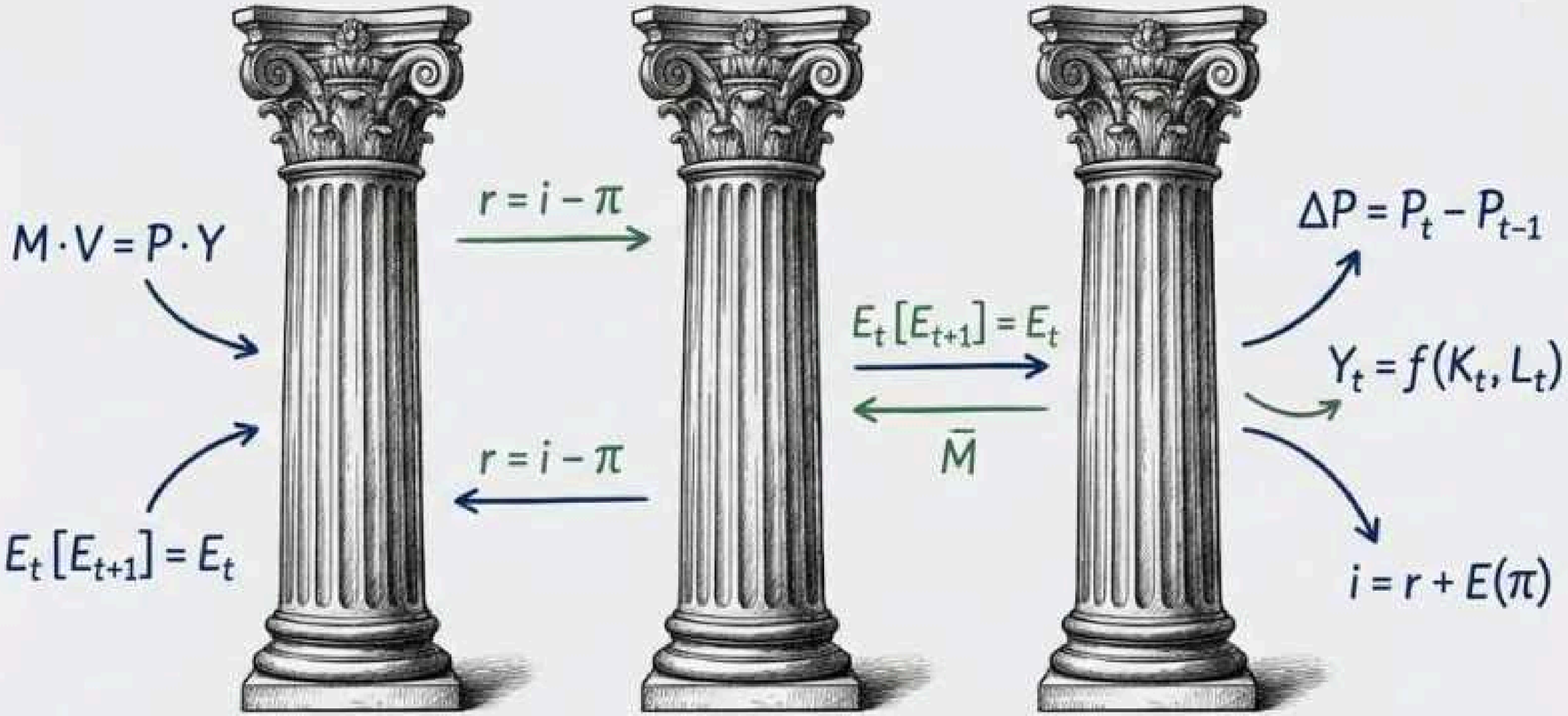
[¶ 3.1]

The Three Pillars of Monetary History



The Promise

Origins of the Gold Standard.

What was it, and why did the world adopt it?

The Performance

Benefits vs. Costs.

What did it do well, and where did it fail?

The Pivot

The transition to managed paper money (1700s–1971).

How did we reach today's fiat system?

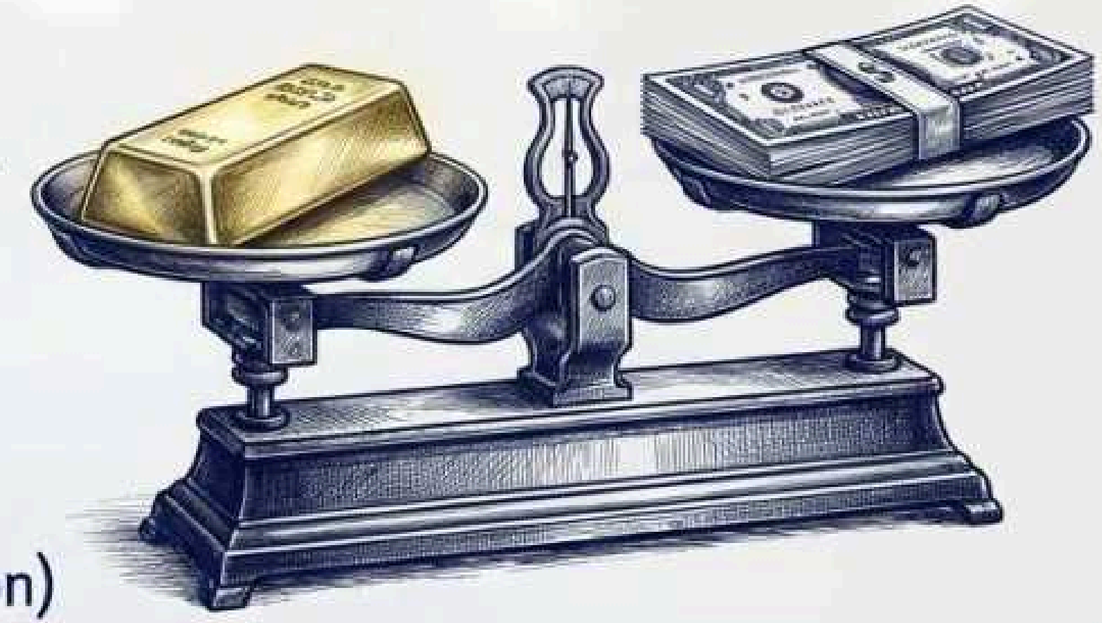
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The Anatomy of a Promise

[¶ 3.2]

1 Unit of Currency = X grams of Au

The Core Mechanism:
Convertibility on demand.



Why Gold?
Scarce, enduring, universally accepted.

$$\frac{\Delta M}{\Delta T} > 0 \Rightarrow \pi\uparrow \text{ (Inflation)}$$

$$\lim_{n\to\infty} P(t) \to \infty \text{ as } M(t) \to \infty$$

$$\lim_{M(t)\to\infty} P(t) \to \infty \text{ as}$$

The Constraint: $\text{Max } P_{aper} = f(\text{Gold Reserves})$

A physical limit on government money printing.

$$R = k \cdot G$$

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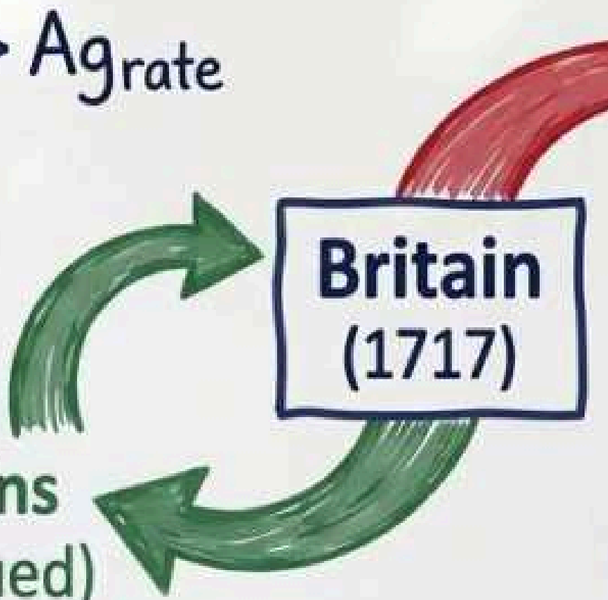
An Accidental Standard (1717)

[¶ 3.3]



$G:S > 15:1$

$Au_{rate} > Ag_{rate}$



Silver Coins
(Undervalued)
flow out to
foreign markets.

Gold Coins
(Overvalued)
stay in circulation.

$f(Au, Ag) \neq C$

$\int(\text{outflow}) > \int(\text{inflow})$

Newton's Miscalculation:
Gold priced too high
relative to silver.

Result: A working gold standard born by accident, not design.

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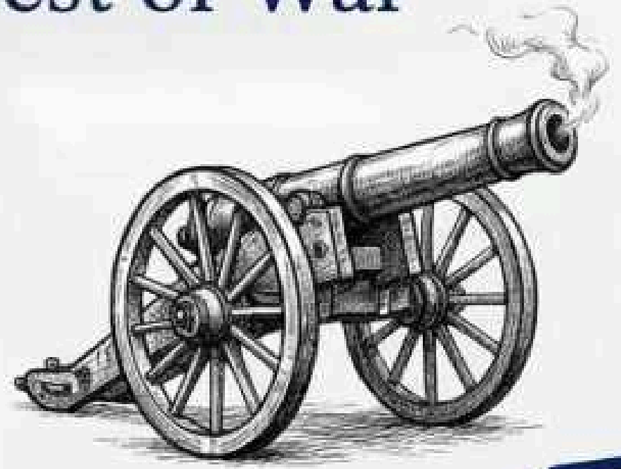
The Stress Test of War

[¶ 3.4]

$$P = \frac{M \cdot V}{T}$$

$$\frac{\Delta P}{\Delta t} > 0$$

$$P = \frac{M \cdot V}{T}$$



1797: Bank of England suspends convertibility due to invasion fears. Paper money circulates, triggering massive inflation.

1821: Return to gold at the pre-war price.

The Human Cost:
Forced price deflation required to return to pre-war parity caused immense economic suffering.

The Classical Era (1870s – 1914)

[¶ 3.5]

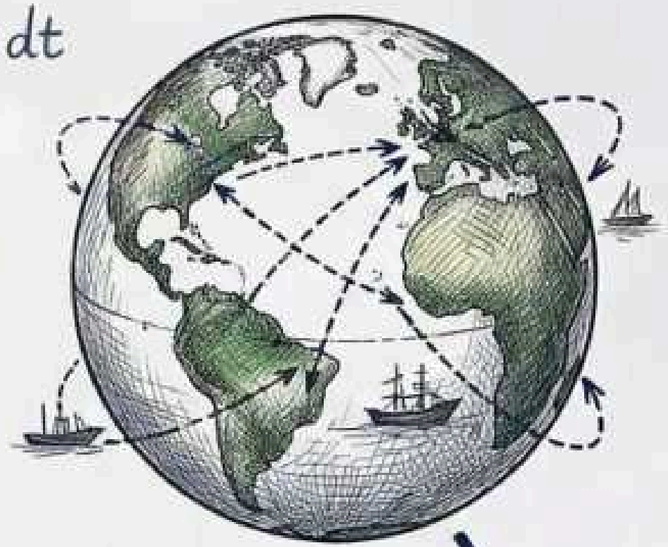


$$\int_0 f(x)\,dt$$

$$P = \frac{\Delta P}{\Delta t} > 0$$



$$\int_{1-:0}^{\infty} f(x) \cdot dt$$



$$T_m = -rf \cdot h^{k}$$

$$\int^{\infty} f(x) \cdot dt$$

1871 — 1873 — 1900 — 1914

German Empire adopts gold (funded by French war reparations).

US **halts silver coinage** (1873), formally adopts gold (1900).

The Classical Gold Standard: Most major economies securely linked by a single metal.

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Hume's Price-Specie Flow Mechanism

[¶ 3.6]

$\frac{dQ}{dP} < 0$

Trade Deficit
(Buy > Sell)

Gold flows out
$-\Delta Au$

$\frac{dM}{dt}$

$\frac{\Delta P}{\Delta t} > 0$

Exports rise,
deficit shrinks.
Gold flows back in.
$+\Delta Au$

Money supply shrinks,
Prices fall.
Goods become cheaper.
$M\downarrow \quad P\downarrow$

$P = \frac{M \cdot V}{T}$

$P = \frac{M \cdot V}{T}$

Exports rise,
deficit shrinks.
Gold flows back in.
$+\Delta Au$

$\Delta X = f(P, E)$

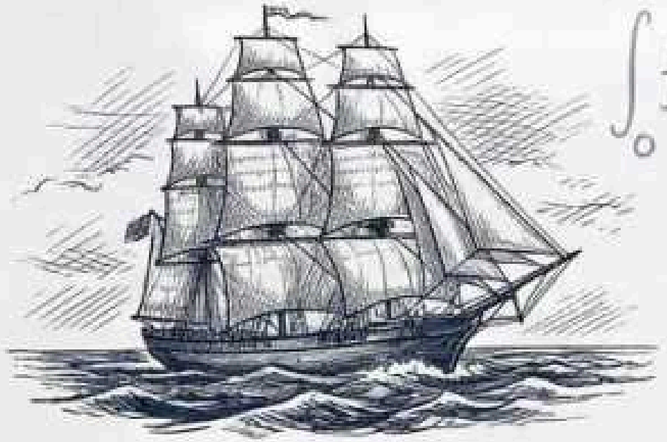
Insight: *The global trade system was theoretically self-correcting* (David Hume, 1752).

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The Case For Gold (Benefits)

[¶ 3.7]

$$\int_0 f(x)\,dt \qquad \int_{1-:0}^{\infty} f(x)\cdot dt$$



Stable Exchange Rates:
Simplified global trade and lending.

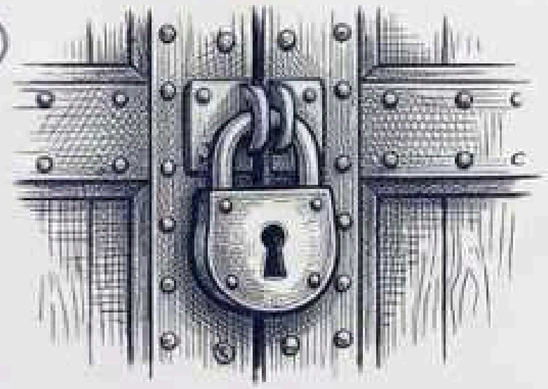
$$\frac{\Delta P}{\Delta t} => 0$$



Long-Term Price Stability:
A pound in 1900 bought what it did in 1800.

$$M \cdot V = P \cdot T$$

$$\frac{\Delta P}{\Delta t} > 0$$



Fiscal Discipline:
Governments physically restrained from printing their way out of debt.

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The Case Against Gold (Costs)

[¶ 3.8]



$$\text{Real Debt} = \frac{\text{Nominal Debt}}{\text{Price Level}}$$

$$\frac{dP}{dt} < 0$$

Deflationary Swings:

Falling prices (1870s–1890s) increased the real burden of debt.

$$M \neq f(\text{Demand})$$



Arbitrary Money Supply:

Tied to random mining discoveries, not economic need.

$$\Delta M \sim \text{Random Mining}$$



Political Backlash:

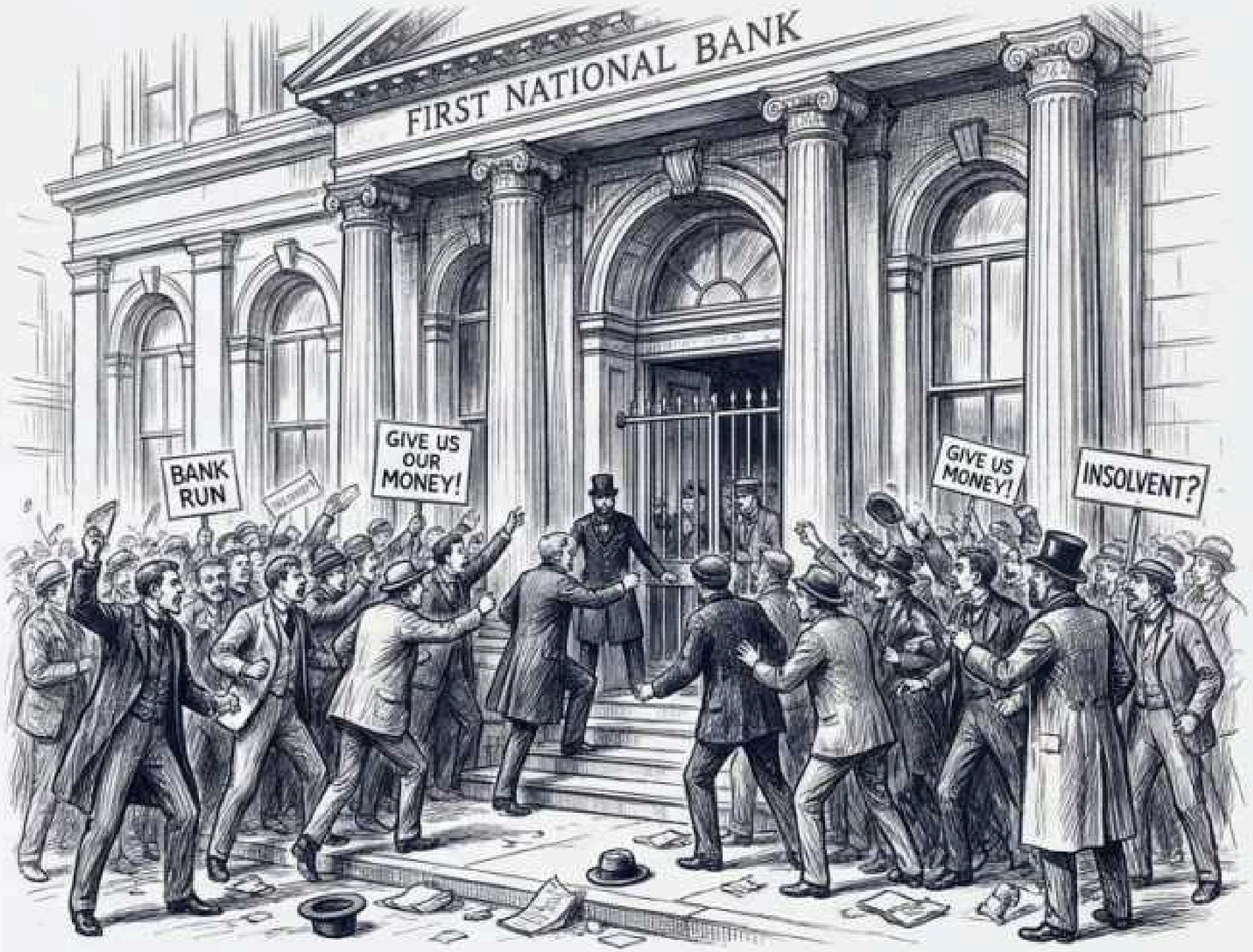
The 1896 'Cross of Gold' convention channeled public anger.

$$\text{Economic Instability} \approx f(\Delta M_{\text{random}})$$

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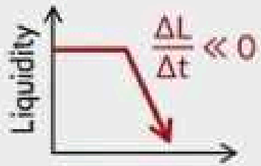
The Persistence of Panic

[¶ 3.9]



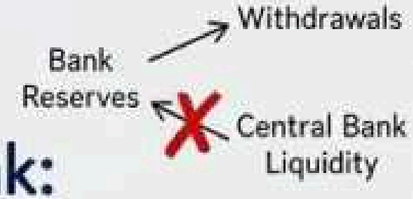
The Crises:

Banking panics hit the US in 1873, 1893, and 1907.



The Vulnerability:

Fearing insolvency, depositors rushed to withdraw physical cash en masse.



The Missing Link:

No central bank existed with the power to supply emergency liquidity to failing institutions.

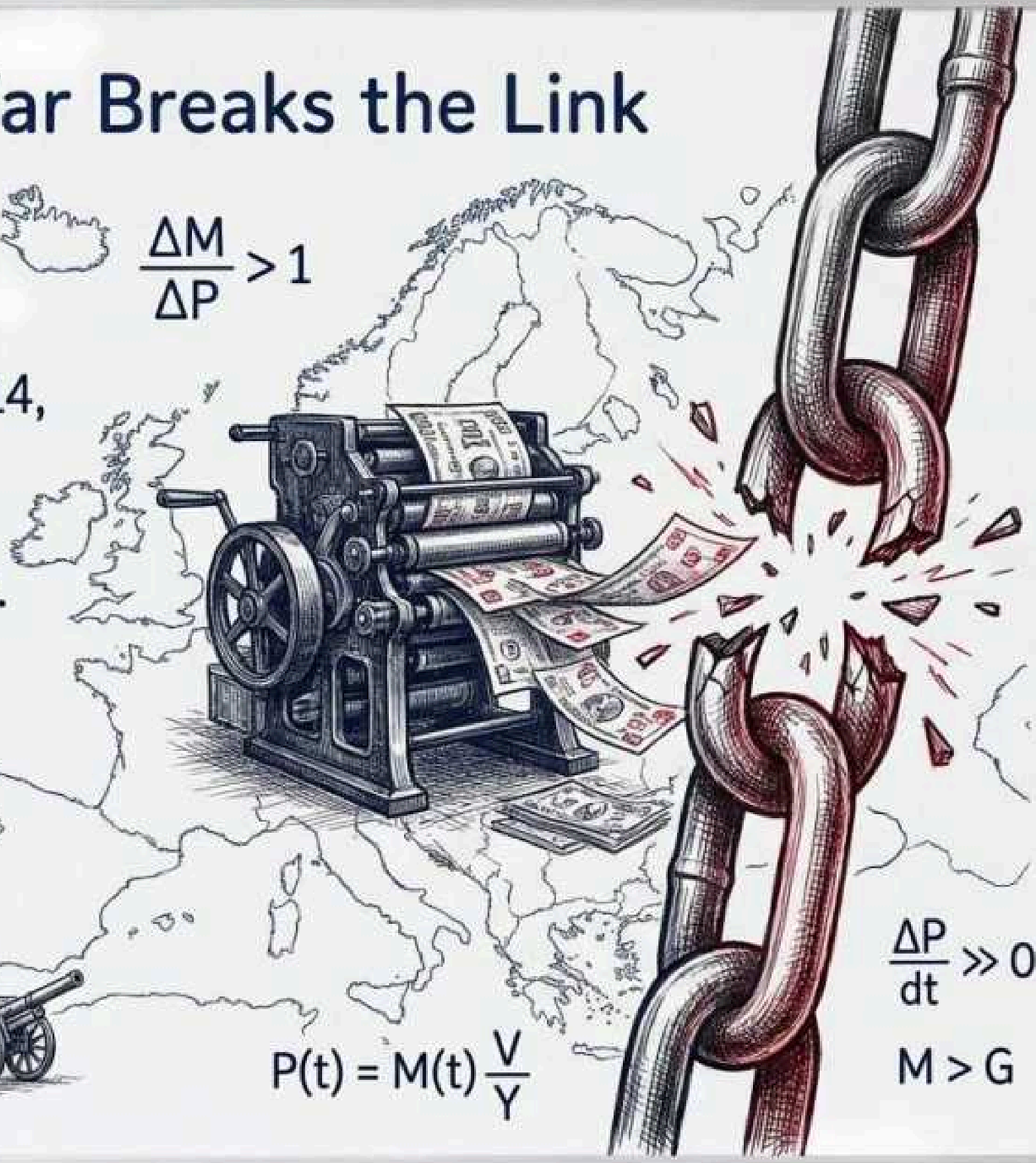
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The Great War Breaks the Link

[¶ 3.10]

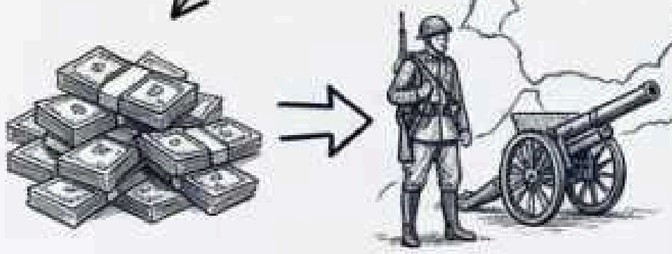
The Motivation:
Nations suspend convertibility in 1914, needing to print limitless paper to fund the war effort.

$$\frac{\Delta M}{\Delta P} > 1$$



The Result:
Massive inflation sweeps across Europe. The classical gold standard is permanently shattered.

$$P(t) = M(t)\frac{V}{Y}$$



$$P(t) = M(t)\frac{V}{Y}$$

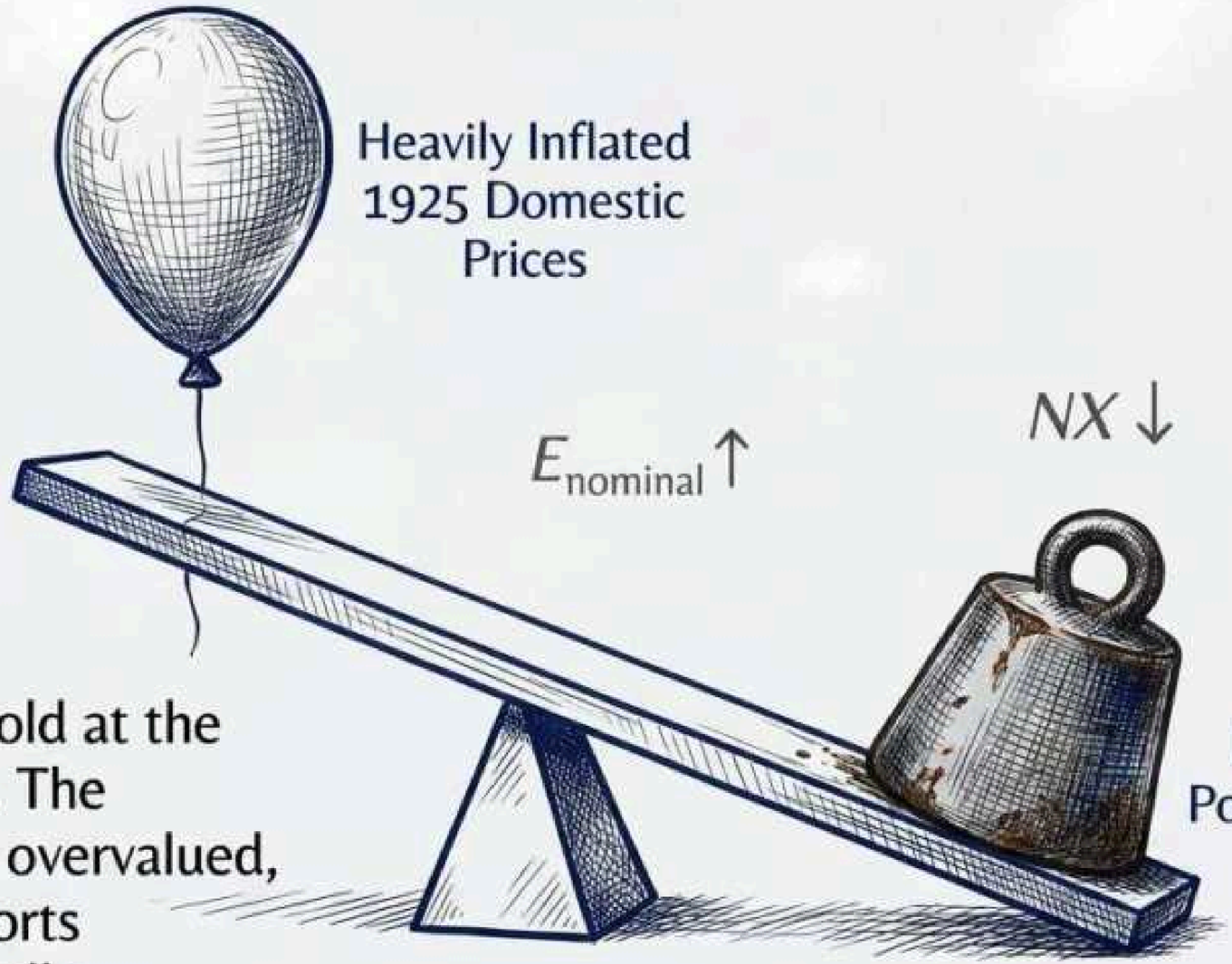
$$\frac{\Delta P}{dt} \gg 0$$

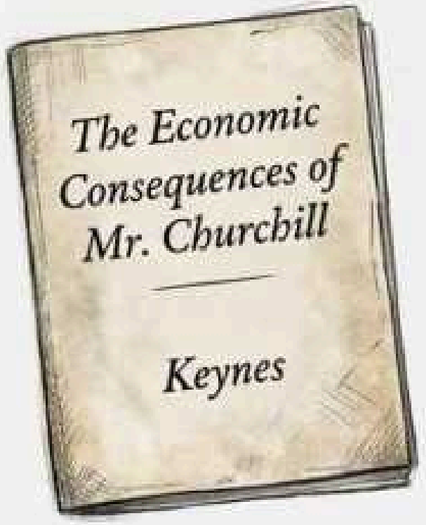
$$M > G$$



Britain's 1925 Misstep

[¶ 3.11]





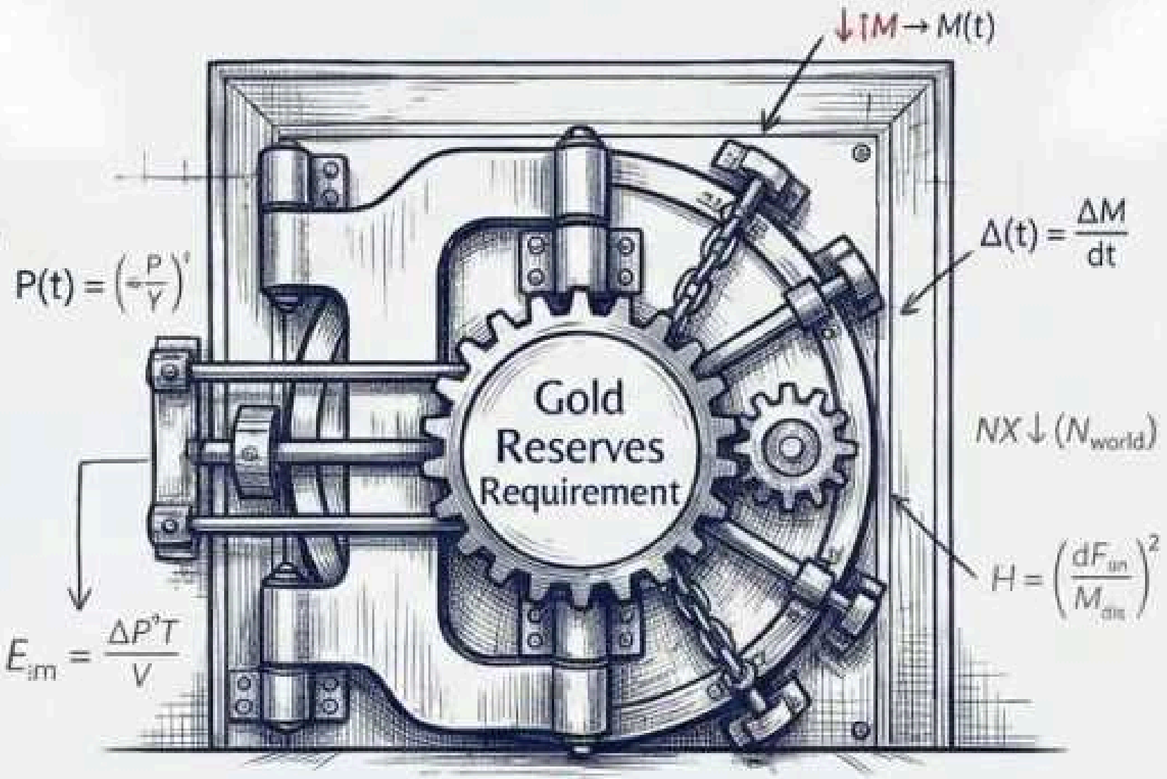
1931: Britain abandons gold again.

The Consequence:
Britain returns to gold at the pre-war parity rate. The pound is artificially overvalued, making British exports uncompetitive globally.

The Deflationary Trap of the Depression

[¶ 3.12]

1930–1933: US banks fail en masse, money supply contracts, and prices crash by a devastating 25%.



The Trap:

Governments couldn't ease credit or cut interest rates without triggering a catastrophic run on their remaining gold reserves.

↓M → ↓P (-25%)

The Escape:

Early abandoners (like Britain) recovered much faster than nations that stayed tied to gold.

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FDR Resets the Board

[¶ 3.13]



$$G(t) = C(t) + I(t) + G(t) \qquad \frac{\Delta M}{\Delta P}$$

1 oz Au = $35.00

- 1934: Official price arbitrarily raised to $35/ounce.

$$\frac{\Delta M}{\Delta P} \qquad G(t) = C(t) + I(t) + G(t) \qquad r\dot{\psi}, r) = \text{gold}\left(\frac{2\Lambda P_{dt} - \Sigma P_{dt}}{2000}\right)^2$$

- 1933: Bank holiday. Citizens required to surrender gold. Domestic convertibility ends.

$$t = \frac{\Delta M}{\Delta P}$$

The New Paradigm:

The US dollar is tied to gold exclusively for transactions with foreign governments.

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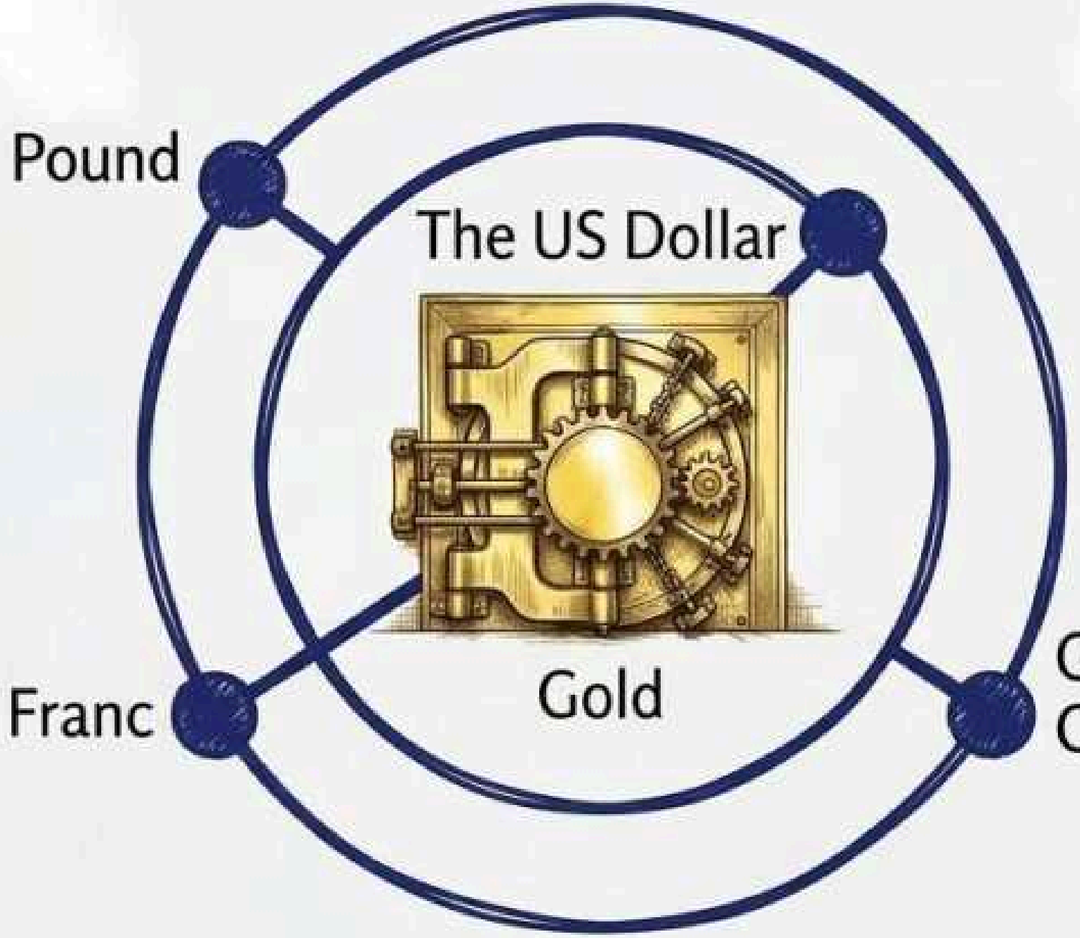
The Blueprint of Bretton Woods (1944)

[¶ 3.14]

$$\sum_i (E_i) = \text{Gold}$$

$$P_{USD} = f(Au)$$

$$P_i = k_i \cdot P_{USD}$$



44 allied nations meet in New Hampshire, led by Keynes and Harry Dexter White. Creation of the IMF and World Bank.

$$P_i = k_i \cdot P_{USD}$$

The Architecture: Global currencies tethered to the USD; the USD tethered to Gold.

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The Golden Quarter-Century

[¶3.15]

$$G(t) = C(t) + I(t) + G(t)$$

$$\frac{\Delta Y}{\Delta K} = r$$

“The dollar as good as gold.”

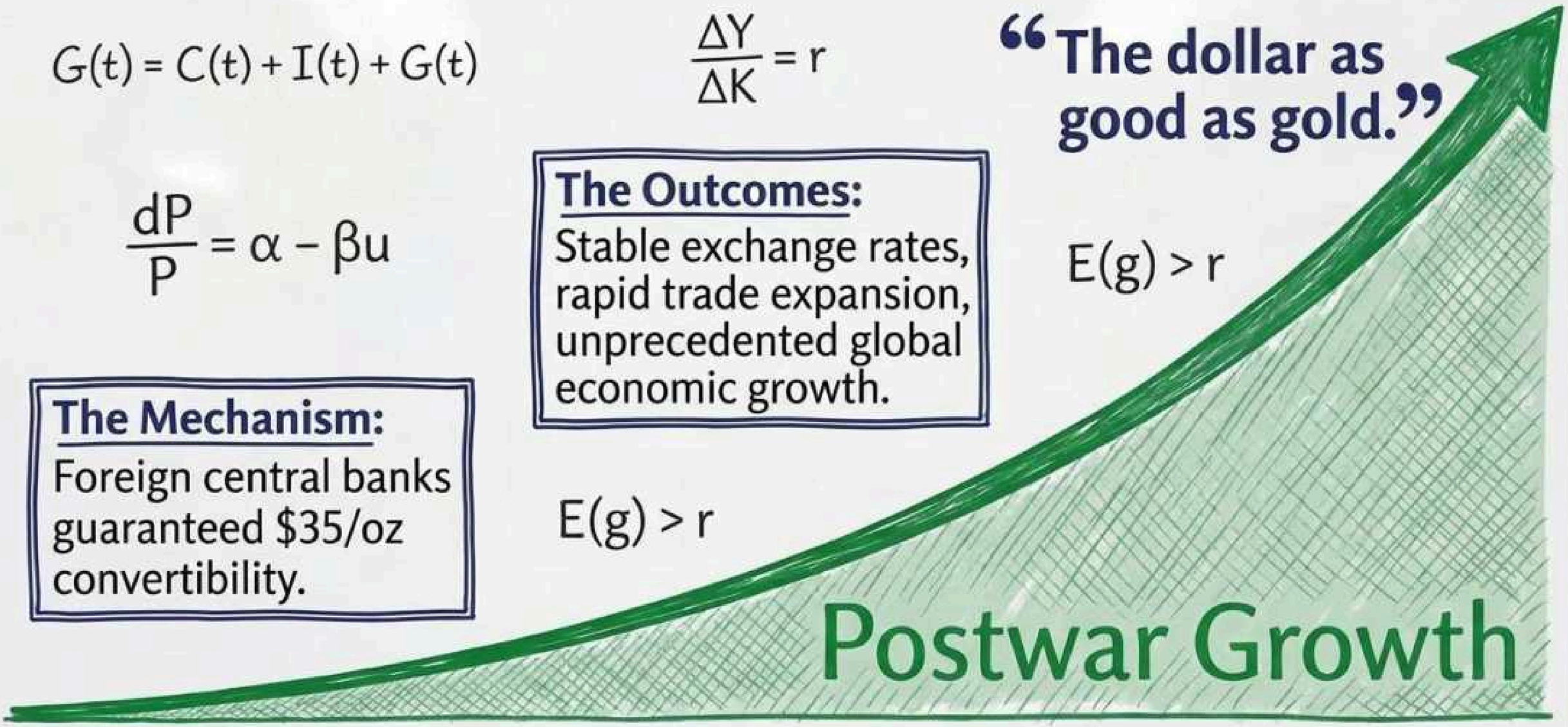
$$\frac{dP}{P} = \alpha - \beta u$$

The Outcomes:
Stable exchange rates, rapid trade expansion, unprecedented global economic growth.

$E(g) > r$

The Mechanism:
Foreign central banks guaranteed $35/oz convertibility.

$E(g) > r$



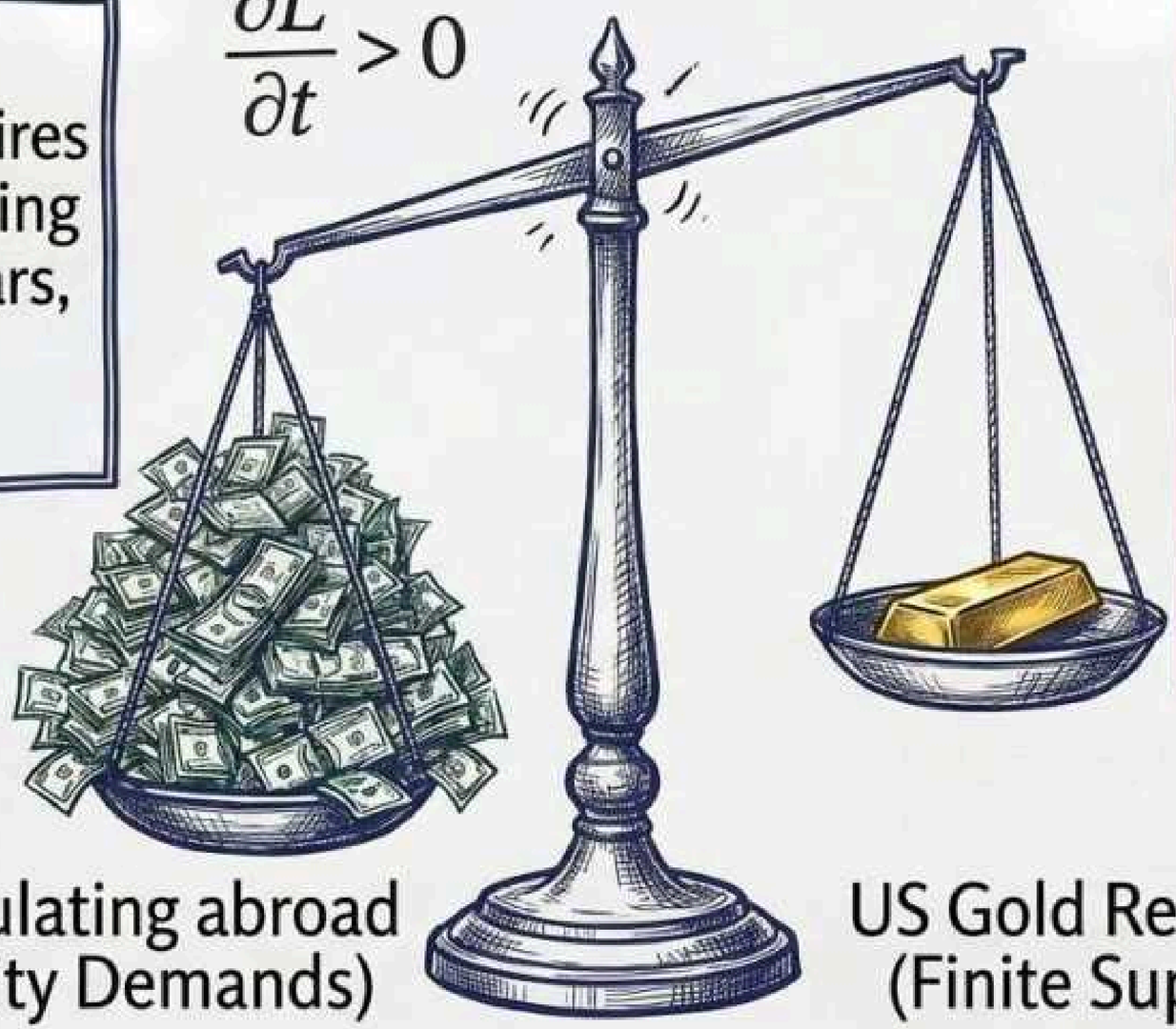
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The Triffin Dilemma (1960)

[¶3.16]

The Need:
Global trade requires a constantly growing supply of US dollars, sourced only via US deficits.

$$\frac{\partial L}{\partial t} > 0$$



The Paradox:
The more dollars printed to satisfy the world, the less credible the guarantee to exchange them for a finite supply of gold.

$$\frac{\partial G}{\partial t} = 0$$

$$L \gg G$$

Dollars circulating abroad
(Global Liquidity Demands)

US Gold Reserves
(Finite Supply)

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The Strain Shows

[¶3.17]

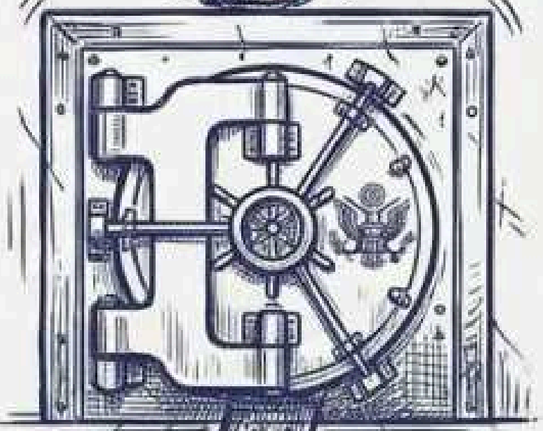


$\Delta Gold < 0$

$\int \frac{dG}{dt}\, dt \to 0$

$\Delta Gold < 0$

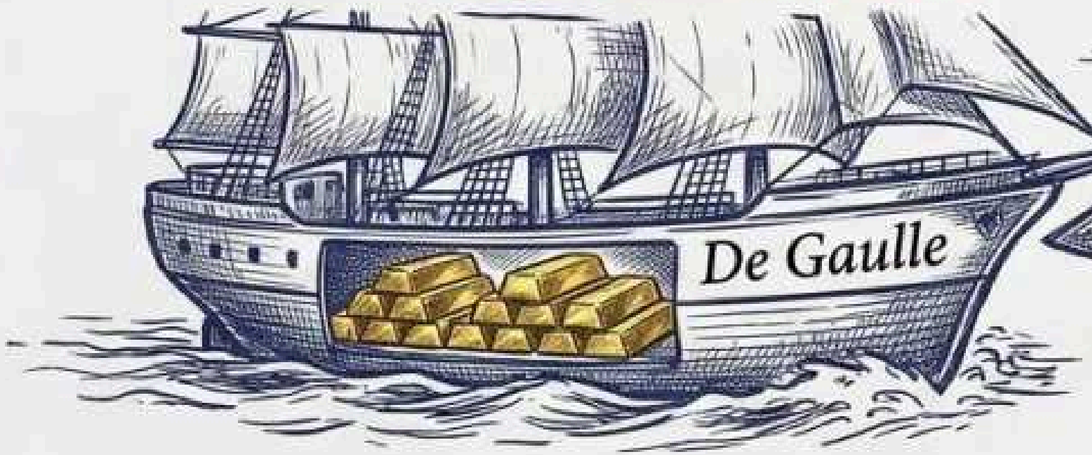
Late 1960s: Vietnam War & Domestic Programs push prices up. Foreign governments amass huge dollar reserves.



$L > G$

The US Gold Vault drains at an alarming rate.

$\frac{\partial G}{\partial t} \ll 0$

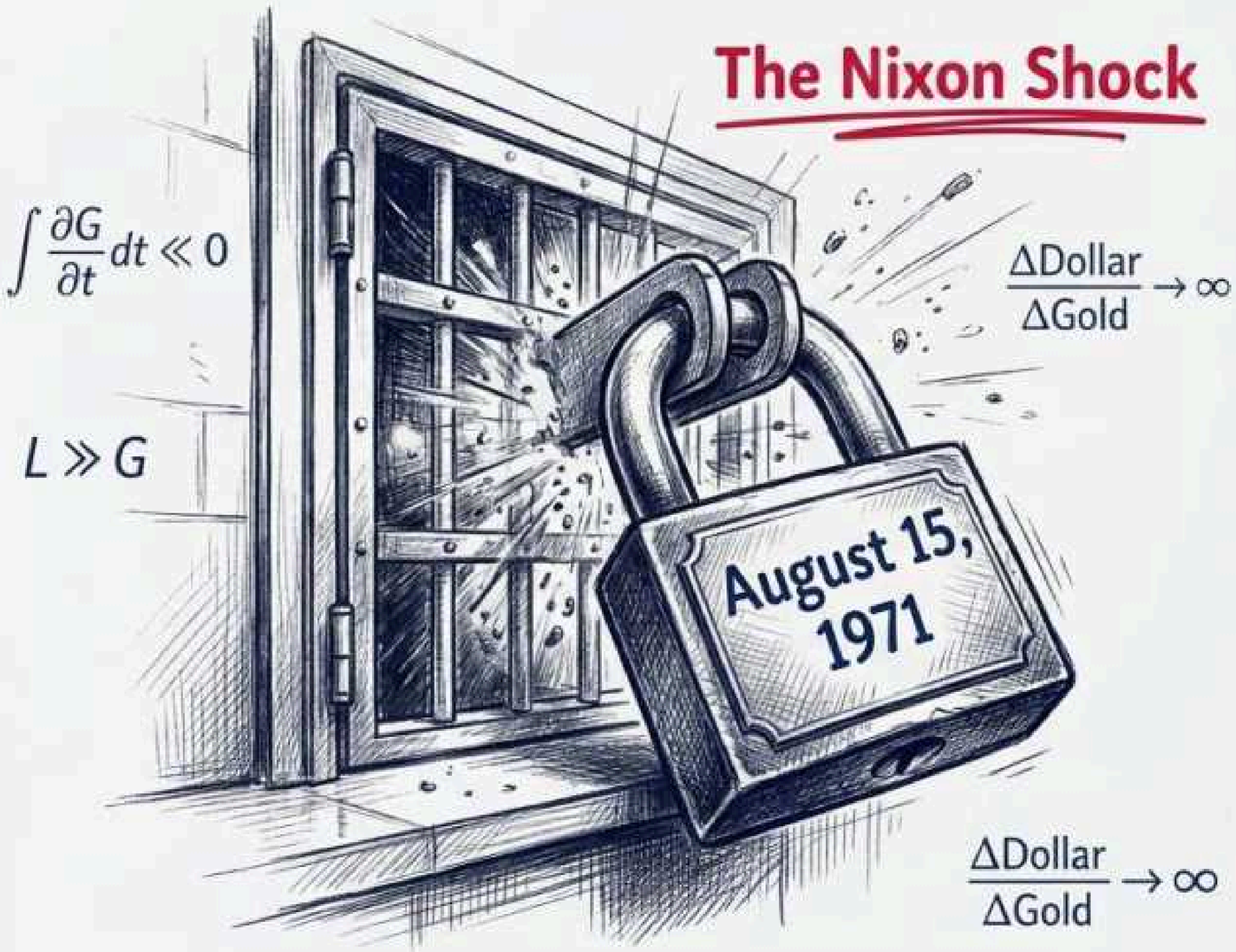


France demands physical gold for its dollars, rapidly draining the US gold stock.

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Closing the Gold Window

[¶ 3.18]



- **The Event:** President Nixon abruptly halts exchanging dollars for gold.
- **The Aftermath:** By 1973, attempts to repair fixed rates fail. Major currencies begin floating.
- **The End of an Era:** No major currency has been backed by gold since.

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Synthesis of an Era

$$\frac{dP}{dt} = k(Y - Y_f)$$

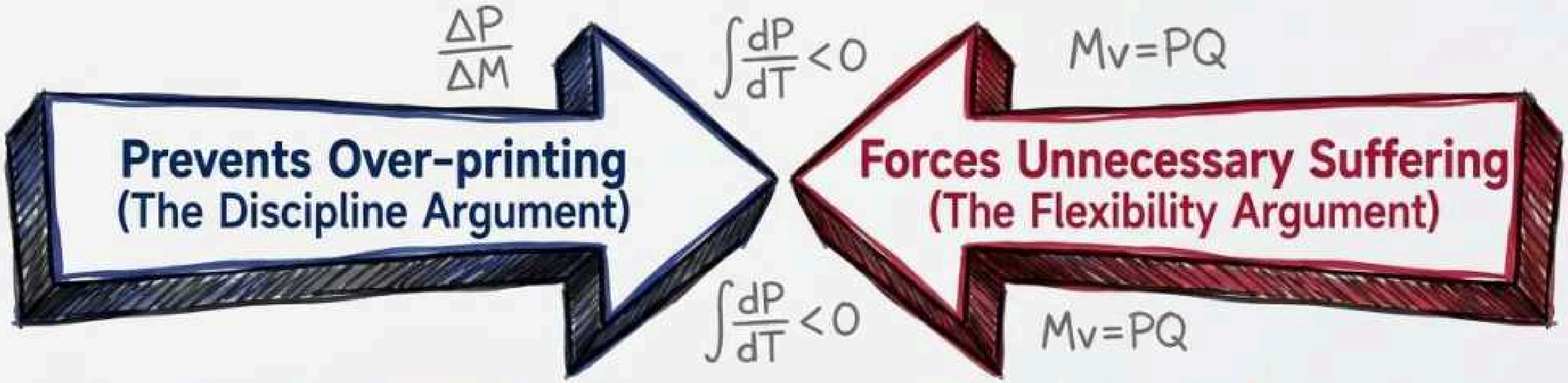
[¶ 3.19]

The Mechanism	The Fatal Flaw	The Demise
Currency pegged to physical weight.	Bound dynamic economies to a economies to a finite, arbitrarily mined metal.	Bretton Woods collapsed under the tension between expanding global liquidity needs and finite national limits.
$\int \frac{\partial S}{\partial t} dt \approx 0$ $\frac{\Delta L}{\Delta G} \to \infty$		
Result: Imposed discipline & stabilized long-term exchange rates. $\sum_{i}^{n} \varepsilon_i = 0$	*Result: Exacerbated the devastation of the Great Depression.* $\frac{dP}{dt} = k(Y - Y_f)$	*Result: Left the world with managed paper money.* $M \cdot V = P \cdot Q$

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The Final Debate

[¶ 3.20]



Discussion Question: Which argument proves stronger to you?

Application: What specific historical evidence from today's lecture defends your view? (e.g., 1870s deflation, 1914 inflation, 1930s depression, 1970s Vietnam inflation).

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