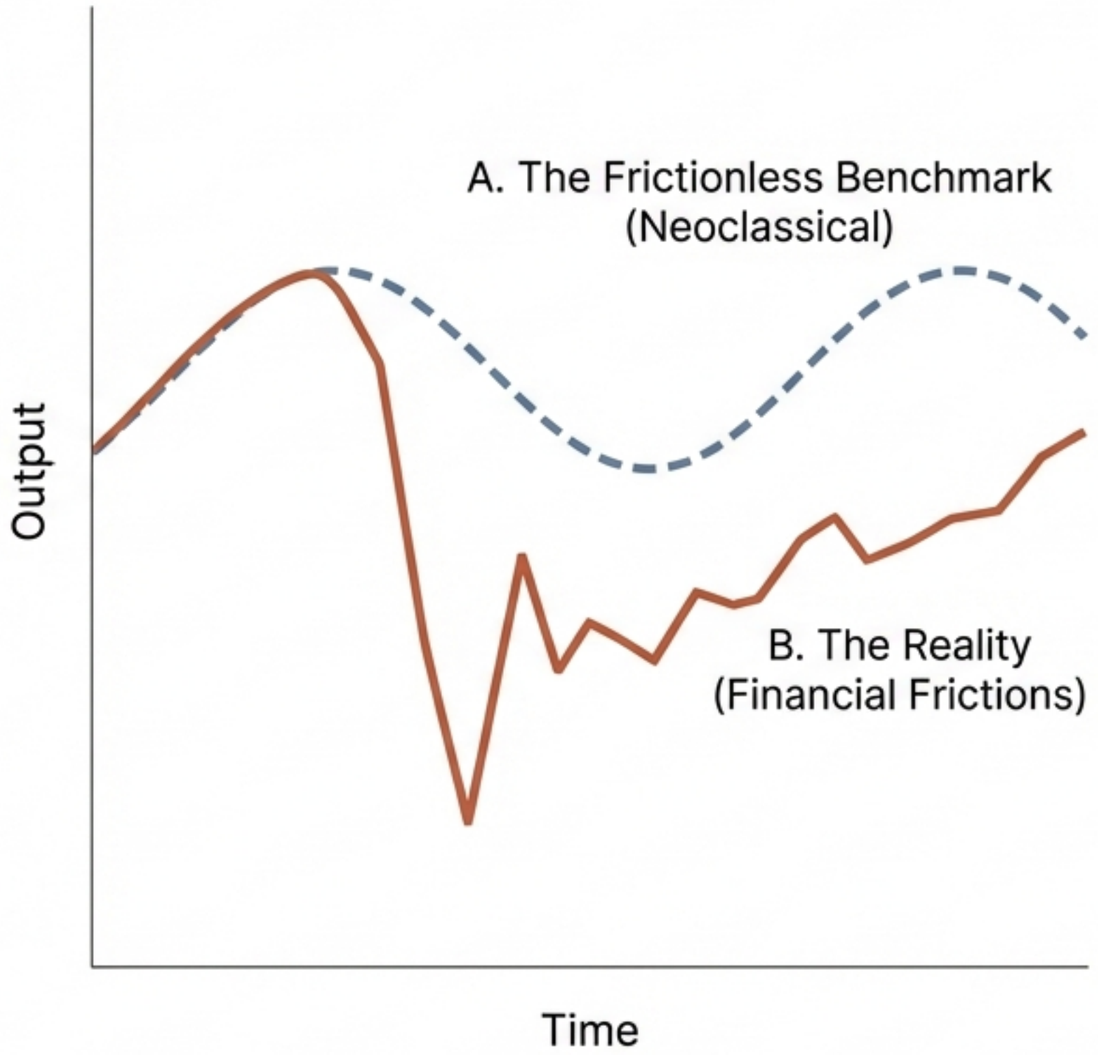
Credit Market Frictions in Macroeconomics

Moving Beyond the Frictionless Benchmark

Mainstream macroeconomics long abstracted from financial frictions, assuming the ‘real’ economy drove financial flows. The Great Recession proved that financial disruptions are not merely symptoms—they are drivers of economic depth and persistence.

Based on Chapter 19 by Vincenzo Quadrini



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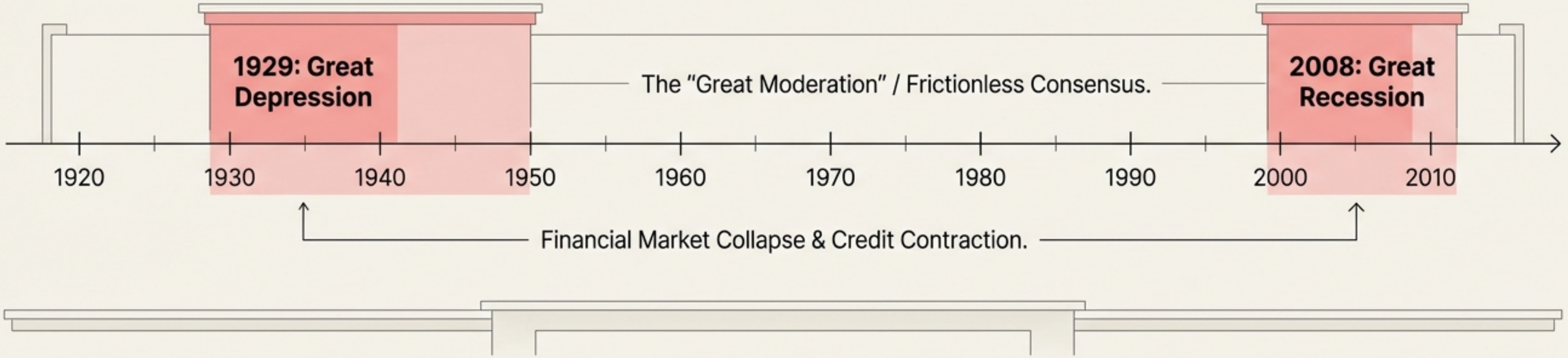
The Great Recession Exposed the "Complete Markets" Fallacy



The Pre-2008 Consensus

Models relied on "Complete Markets." Financial sectors were viewed as passive bystanders (veils) that did not alter real productivity trajectories.

The Historical Contradiction

Major downturns are defined by severe credit disruptions. Bank failures and credit collapses are central features, not side effects.

The Missing Link

Standard models with sticky prices or labor frictions failed to explain the depth and persistence of these crashes.

Models constructed on the assumption of frictionless financial markets were missing important elements for understanding the dynamics of the economy.

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Empirical Reality: The Real and Financial Sectors Co-Move

Figure 1: Pro-cyclical Credit Flows

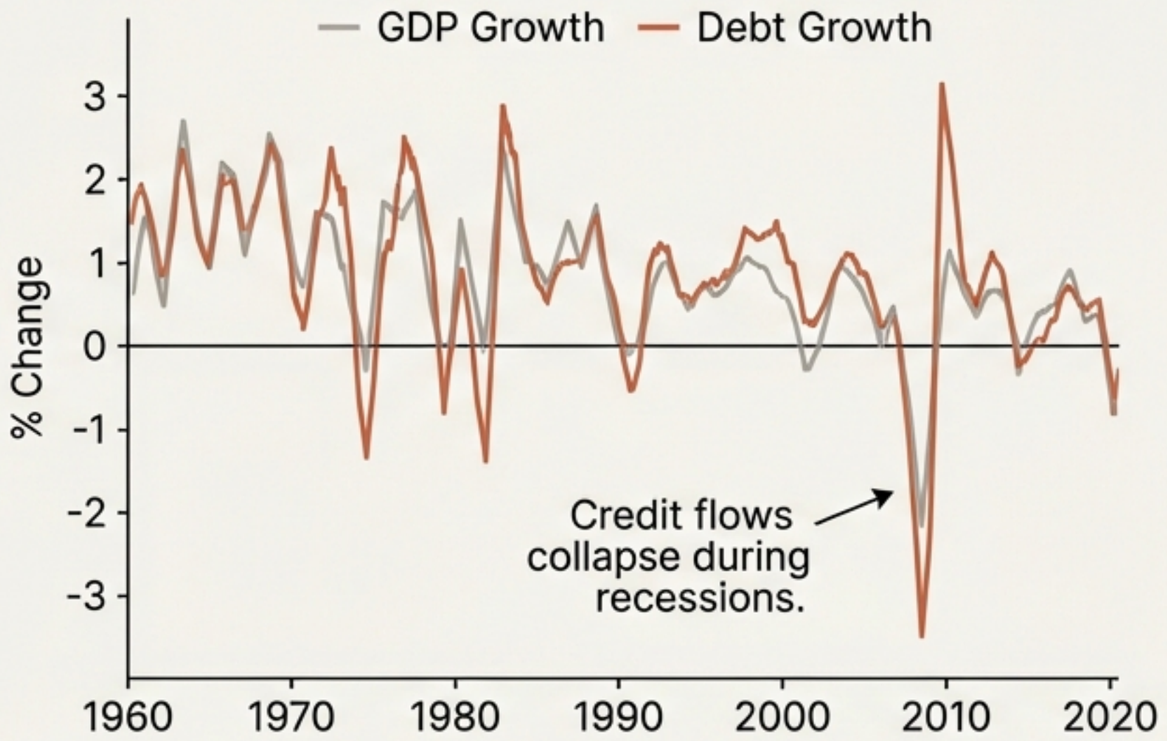
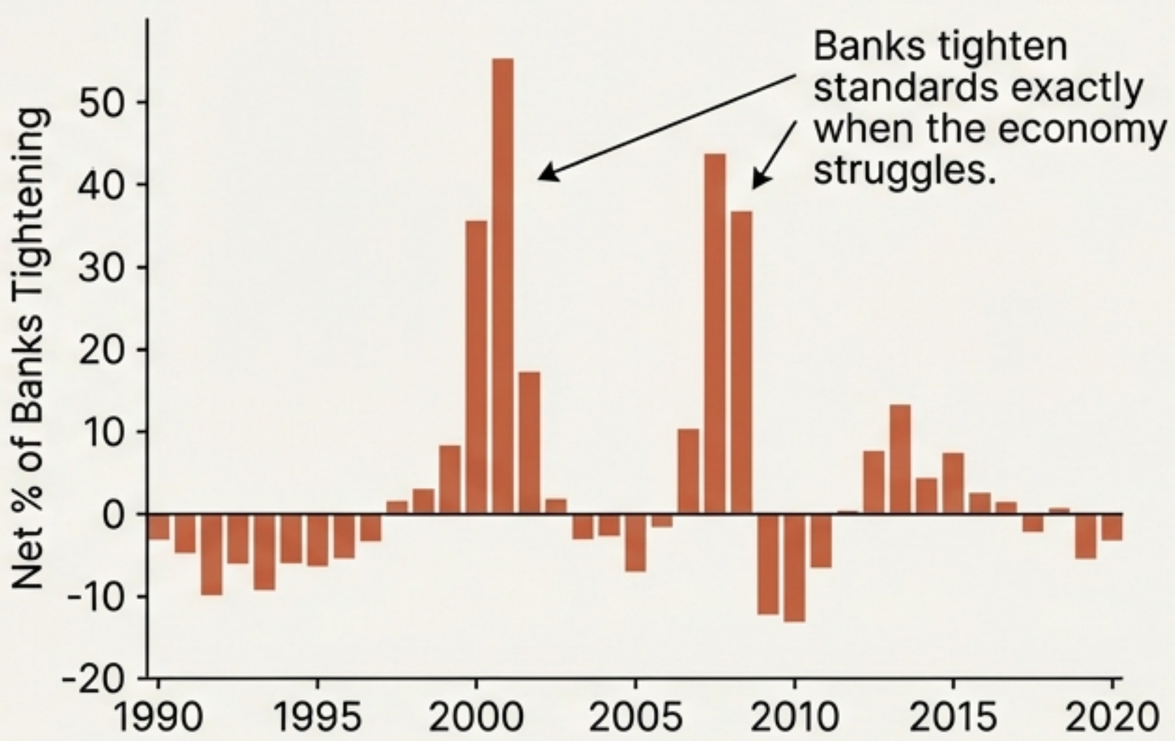


Figure 2: Counter-cyclical Credit Standards



The Theoretical Conflict: In a frictionless "Complete Market," agents would borrow MORE during recessions to smooth consumption. The data shows the opposite.

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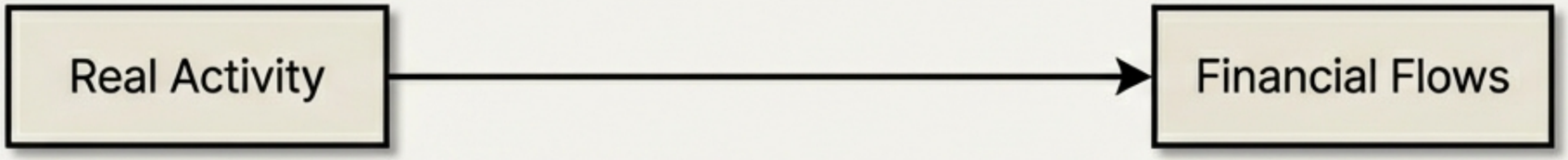
Three Views on Causality & Transmission

Defining the role of the financial sector in macro models.

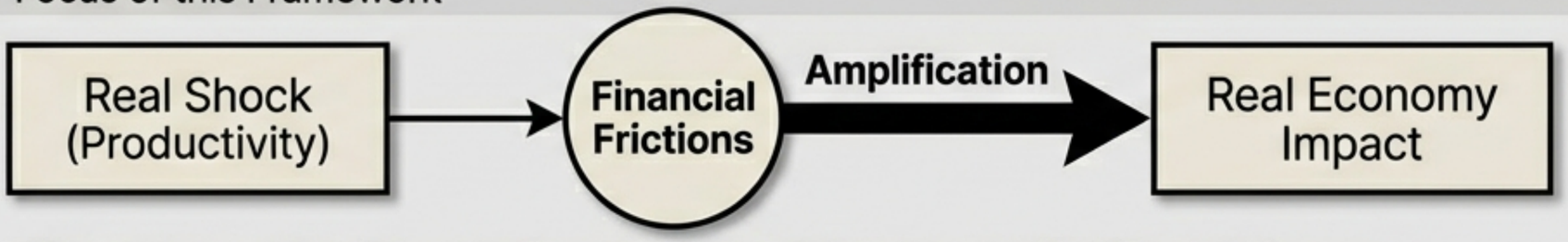
The Passive View
(Neoclassical)



Finance merely supports transactions. Explicit modeling is unnecessary.

Focus of this Framework

The Propagation View
(Financial Accelerator)



Frictions make the impact of small productivity shocks significantly larger.

Focus of this Framework

The Source View
(Credit Supply Shocks)

Disruptions originate in credit supply, independent of productivity.

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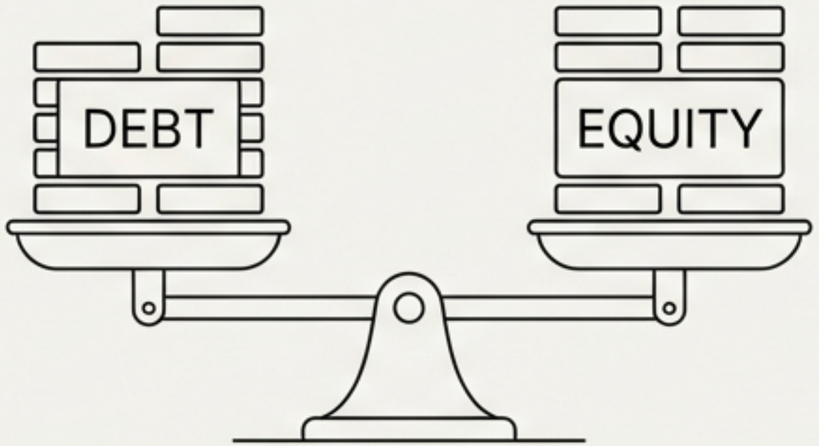
The Benchmark: Modigliani-Miller Irrelevance

The Core Principle

In a **frictionless** world with **complete markets**, the source of funding does not affect real decisions (Investment/Hiring).

Firms are indifferent between borrowing and issuing shares.



Firm Value is Constant.

The Logic

If all assets are priced competitively, the cost of capital is uniform.

Maximizing equity value is identical to maximizing total firm value.

To make finance matter, we must break this neutrality via Missing Markets & Heterogeneity.

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Ingredients of Friction: Missing Markets & Heterogeneity

Missing Markets (Constraints)

Exogenous Limits → Imposing a hard cap (Debt < X).

Endogenous Limits → Arising from Agency Problems

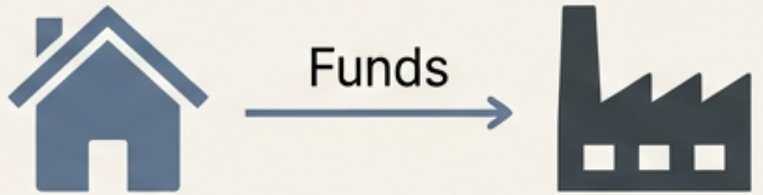
Limited Enforcement

Lenders cannot force repayment, leading to collateral requirements.

Heterogeneity (Why Trade Occurs)

Different Agents → Patient Lenders vs. Impatient Borrowers

Structural Separation → Households vs. Firms



Households (Lenders)

Firms (Borrowers)

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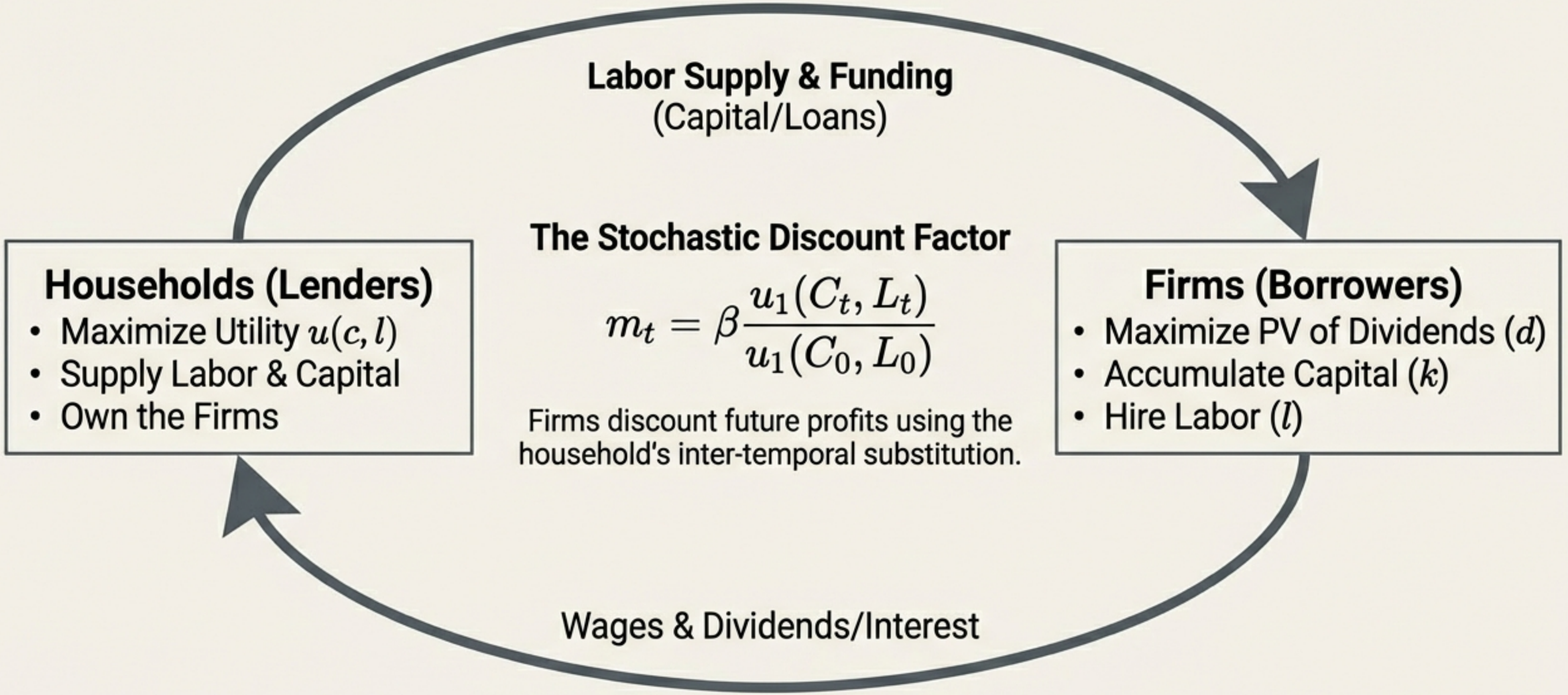
Structural Changes to the Neoclassical Model



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The Three "Wedges" That Break Neutrality

Mathematical assumptions that force financial decisions to alter real outcomes.

Tax Advantage

Concept: The Incentive to Leverage.

Logic: Debt is cheaper than equity due to tax deductibility.

$$R_{effective} < R$$

Result: Firms prefer debt financing.

Collateral Constraint

Concept: The Limit on Leverage.

Logic: Borrowing is limited by a fraction of physical capital.

$$\frac{b_{t+1}}{\tilde{R}_t} \leq \xi p_t k_{t+1}$$

Result: Capital becomes collateral.

Dividend Smoothing

Concept: The Equity Friction.

Logic: Changing equity payouts is costly.

$$\text{Cost} = \kappa(d_t - \phi)^2$$

Result: Firms cannot costlessly swap debt for equity.

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Mechanism 1: The Investment Distortion

$$(1 - \mu\xi)p = E\left[m' \cdot \frac{\phi'}{\phi''} \cdot ((1-\delta)p' + F_k)\right]$$

Effective Cost of Capital

Shadow Value of Credit (Constraint Multiplier)

Collateral Capacity

The Collateral Premium

- When the constraint binds (μ > 0), the effective cost of buying capital drops below price *p*.
- Why? Because capital is no longer just a tool for production; it is an asset that unlocks borrowing capacity.

The Result

Investment decisions depend on credit tightness (μ). A credit crunch raises the effective cost of capital, crushing investment.

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Mechanism 2: The Labor Wedge (Working Capital)

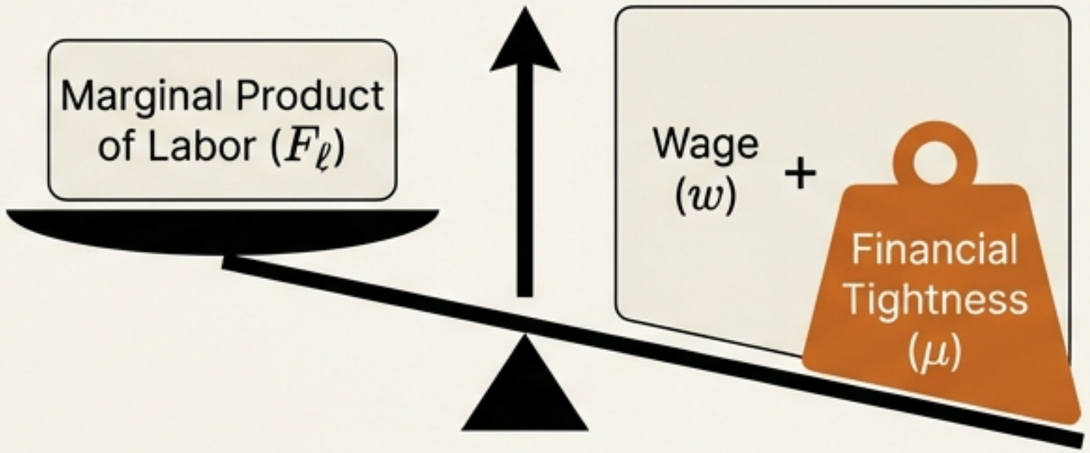
Concept

Firms must pay wages BEFORE revenues arrive. This requires "Working Capital" loans.

Constraint:

$$w\ell + \frac{b'}{R} \leq \xi p k'$$

The Distortion Visual



$$F_\ell = (1+\mu)w$$

Tighter credit (μ > 0) acts like a tax on labor. Financial crises don't just stop investment; they directly reduce employment demand because firms cannot finance the payroll.

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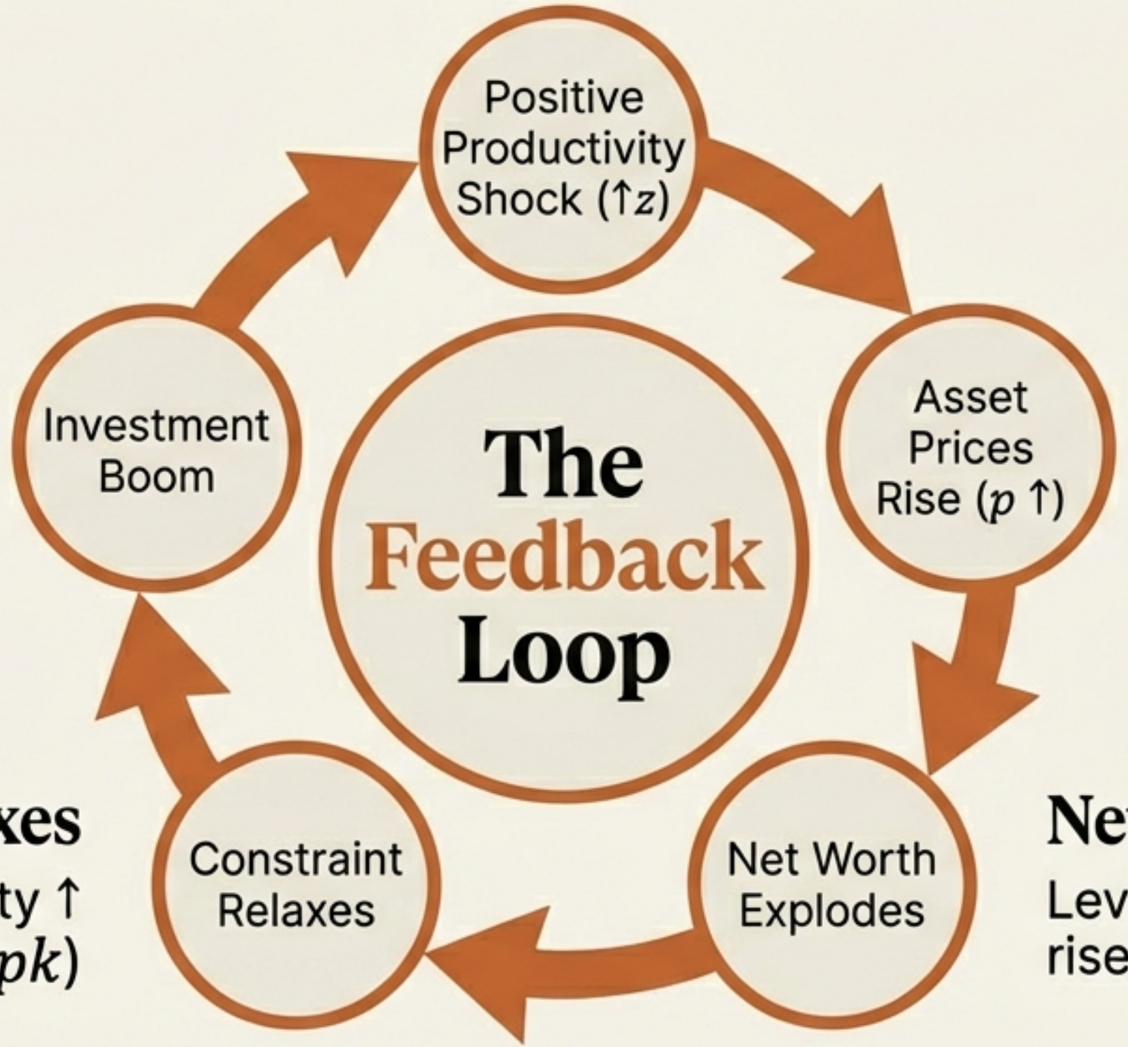
Propagation: The Financial Accelerator Loop

How leverage amplifies small shocks into large fluctuations.



Investment Boom

Firms borrow more to buy more capital.

Asset Prices Rise (p ↑)

Demand for capital increases.

Constraint Relaxes

Borrowing Capacity ↑
($b \leq \xi pk$)

Net Worth Explodes

Leverage makes net worth rise disproportionately.

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The Financial Shock (The ξ Factor)

What is ξ?

The Loan-to-Value ratio. It represents the health of the banking sector.

Examples:

- Regulation changes
- Securitization collapse
- Bank balance sheet erosion.

The Transmission (Chain Reaction)

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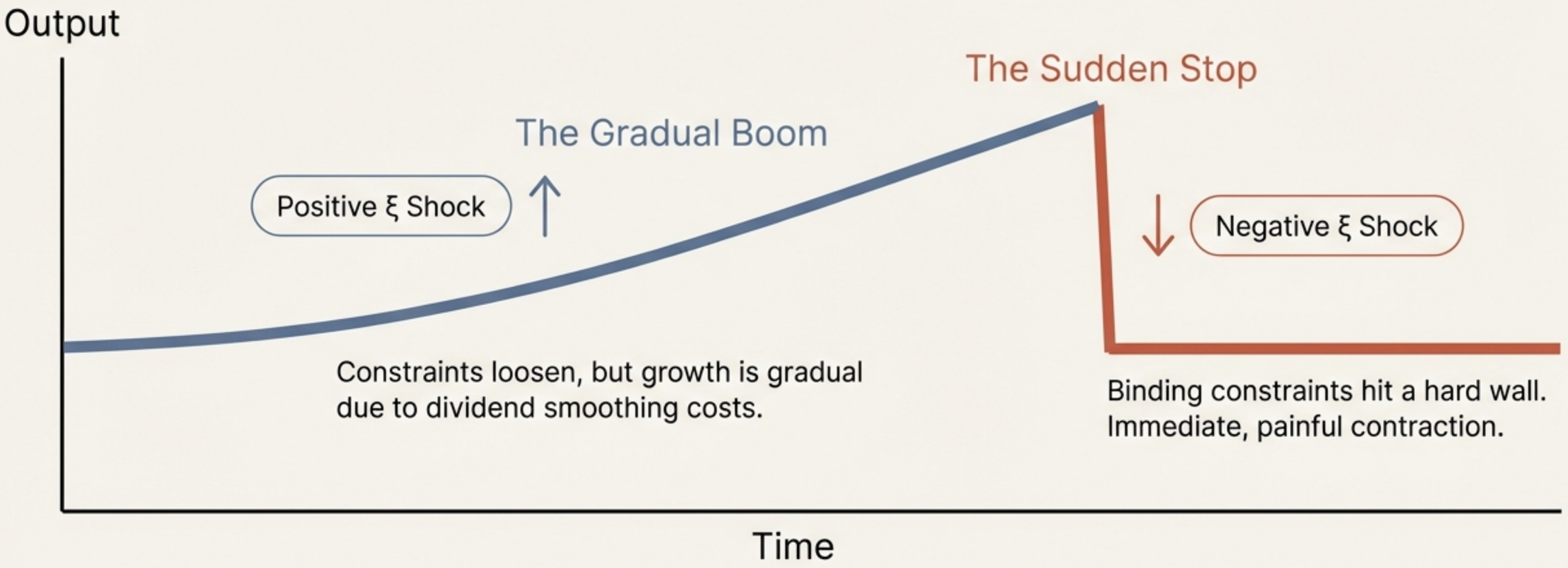
The Asymmetry of Booms and Busts



Key Insight: Financial constraints act as a floor. You can float above them (boom), but hitting them (bust) causes immediate damage.

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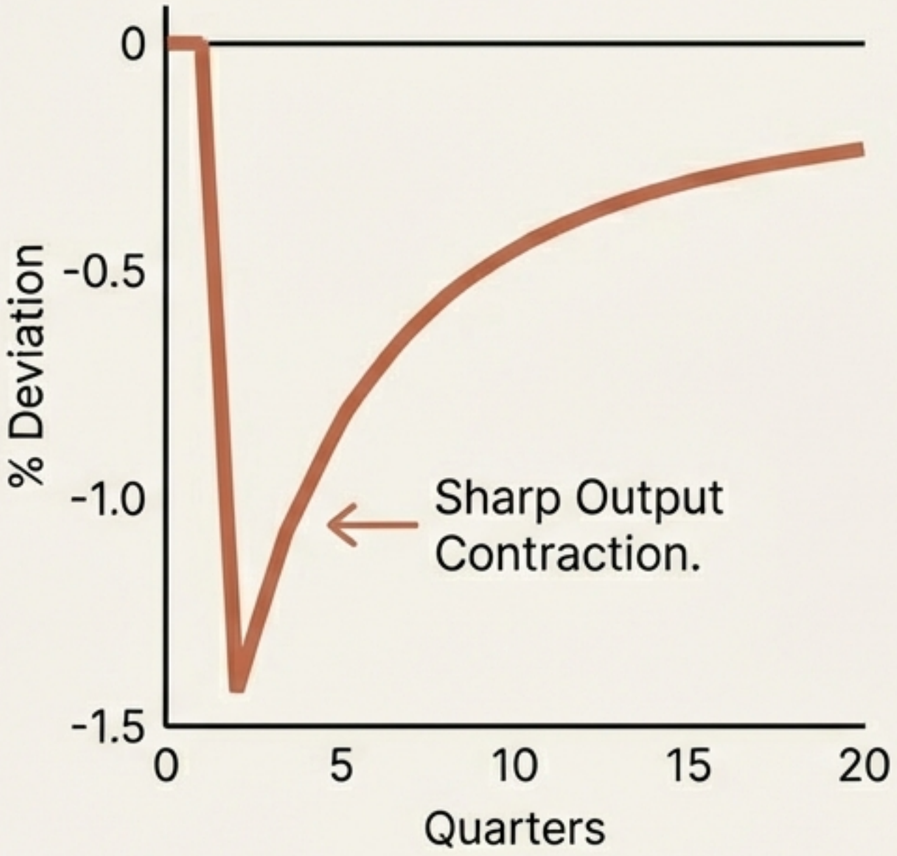
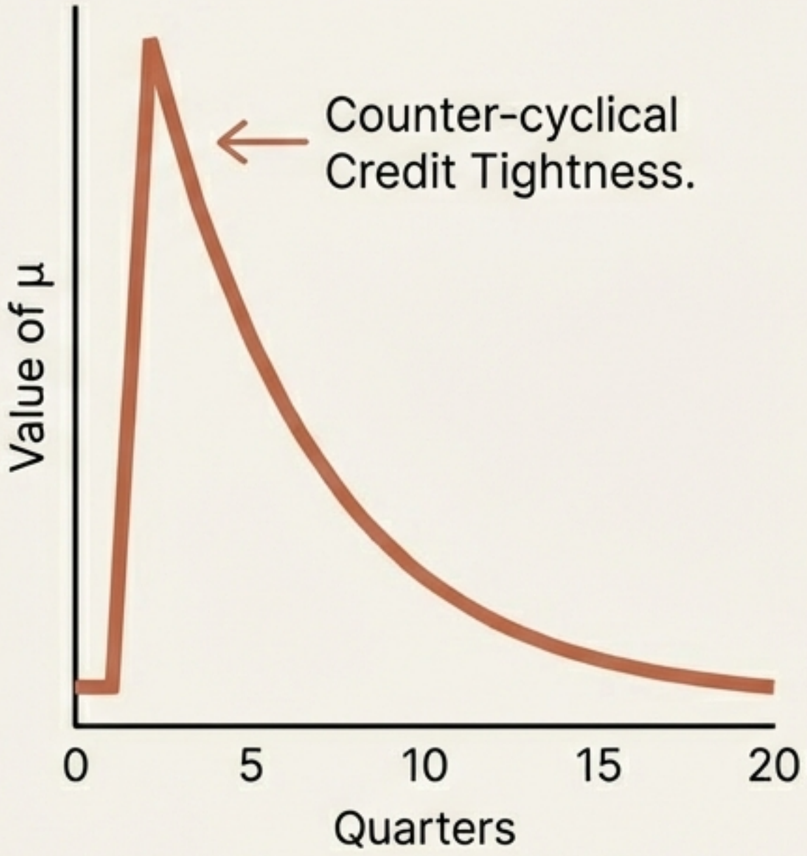
Simulation Results: Matching the Empirics

Output Response to Negative Financial Shock



Financial Tightness (μ) Response



The model successfully replicates the data:

1. **Asymmetry**: Busts are sharper than booms.
2. **Counter-cyclicality**: Credit becomes expensive (μ ↑) exactly when output falls.

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Summary & Key Takeaways

Frictions Matter: Modigliani-Miller neutrality fails in the face of tax incentives and agency costs.

The Wedge: Collateral constraints create a 'premium' on capital and a 'tax' on labor (via working capital).

The Accelerator: Leverage amplifies real economic shocks through asset prices and net worth.

The Asymmetry: Economies are uniquely vulnerable to 'Sudden Stop' crises that standard models cannot predict.

> “To understand the depth and persistence of modern business cycles, we must model the friction.”

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