Consumption: From Micro-Foundations to Macro-Implications

An analysis of how household risk, constraints, and heterogeneity drive the aggregate economy.

The Stakes

Consumption is the ultimate engine of welfare. Understanding it requires moving beyond aggregate averages to the distribution of risk.

The Core Question

How do households translate volatile, uncertain income streams into stable standards of living?

The Macro Impact

Individual choices aggregate to determine asset prices, interest rates, and the structural causes of wealth inequality.

Two Extremes Define the Spectrum of Risk Sharing

Economic theory provides two benchmark models that bracket reality.

The Theoretical Bounds of Consumption Risk

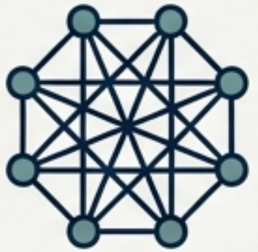
AUTARKY

No Insurance.
You eat what you kill.

$$c_{i,t}(\omega_t) = y_{i,t}(\omega_t)$$

Full pass-through of income shocks to consumption. Volatility is maximized.

COMPLETE MARKETS



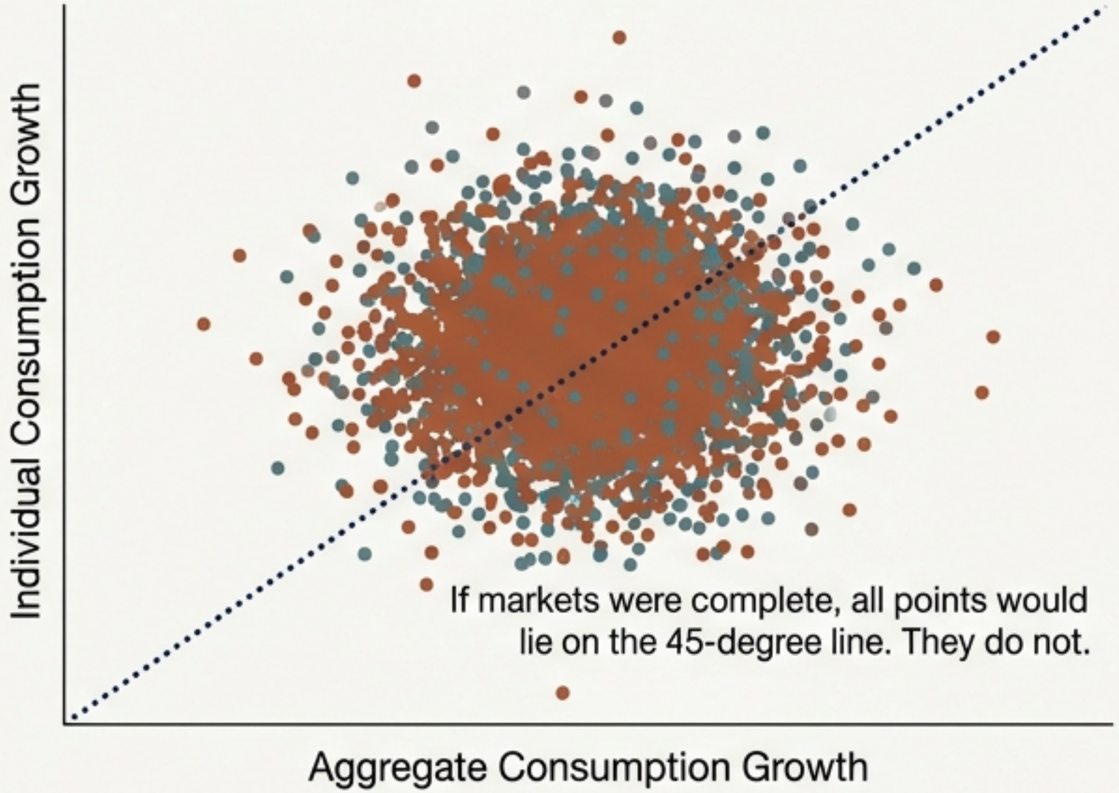
Full Insurance.
Arrow-Debreu World.

$$\frac{u'(c_i)}{u'(c_j)} = \frac{\lambda_i}{\lambda_j}$$

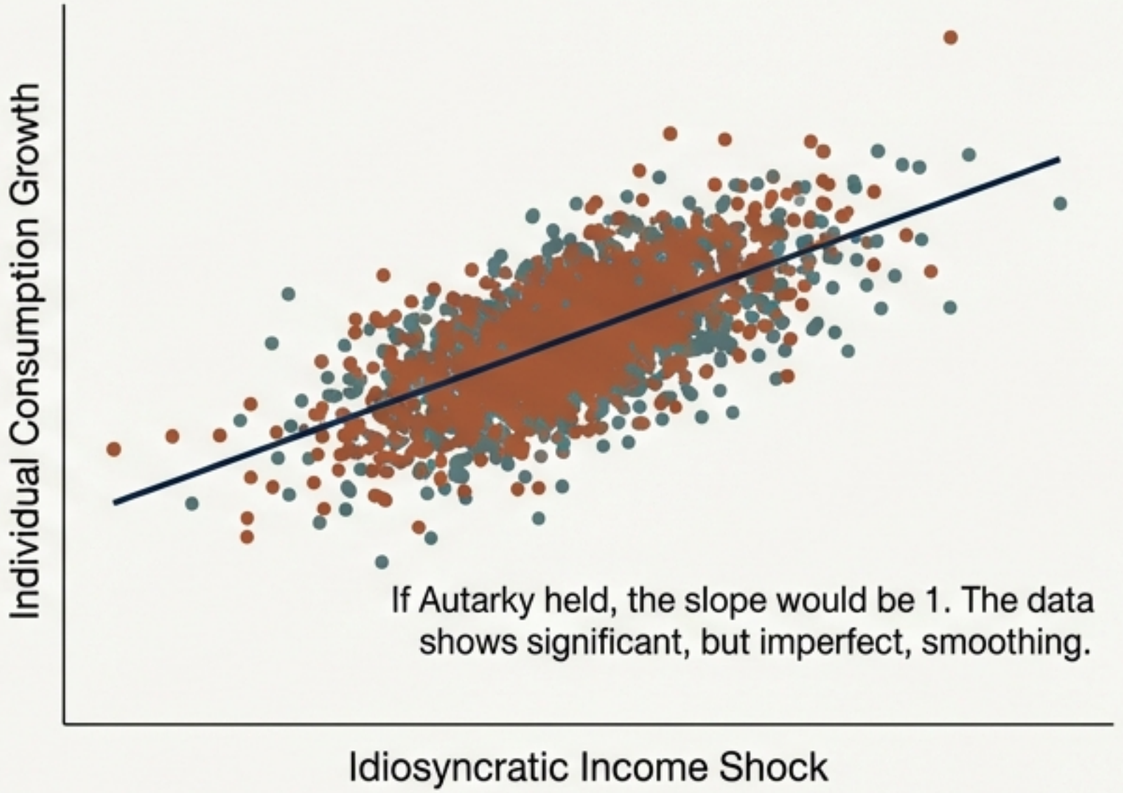
Consumption tracks aggregate endowment (C_t), not individual income. Idiosyncratic risk is eliminated.

The Data Rejects Both Extremes: The Case for Partial Insurance

Rejection of Complete Markets (Based on Mace, 1991)



Rejection of Autarky (Based on Cochrane, 1991)

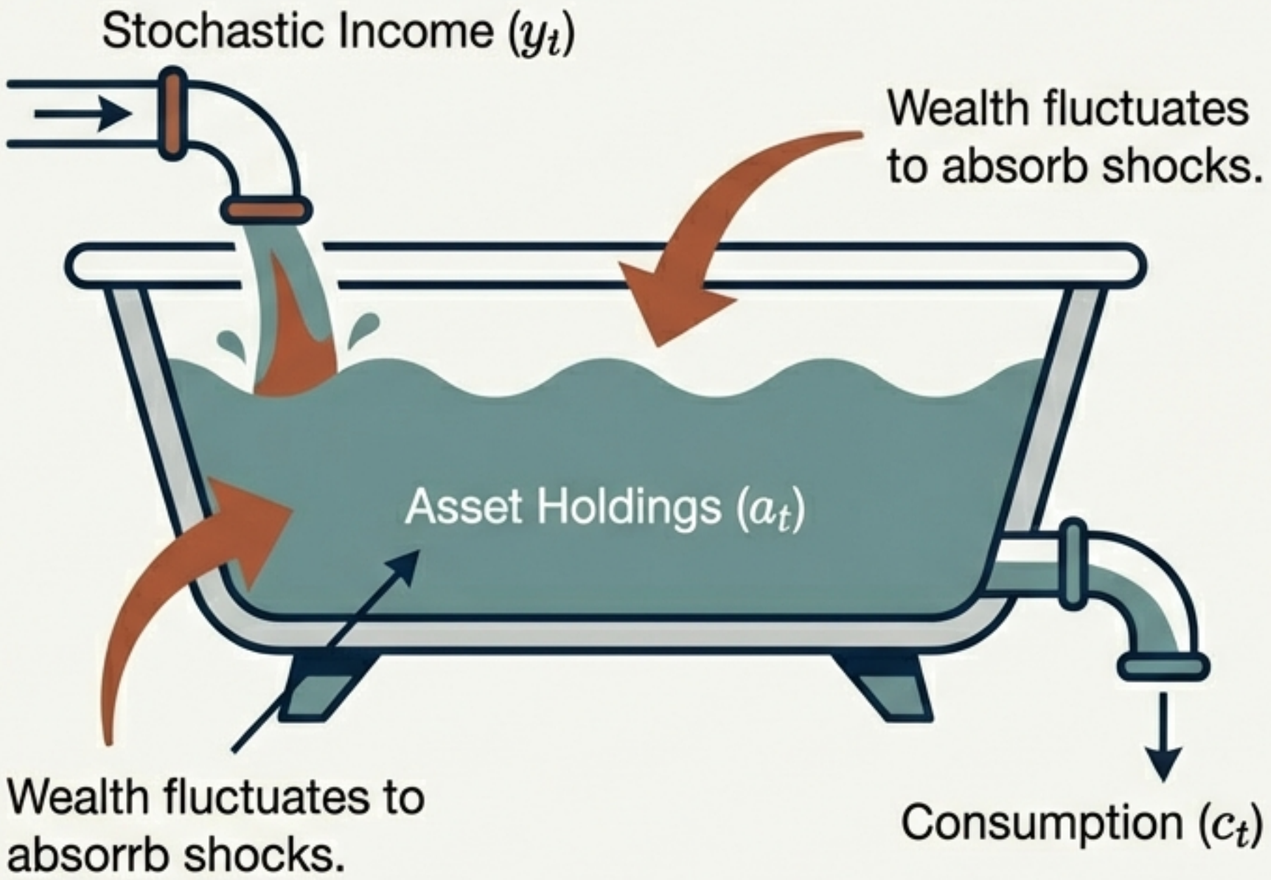


The Missing Middle: The Bond Economy

Households do smooth shocks, but not perfectly. We need a model where agents self-insure using a risk-free asset, but cannot trade state-contingent contracts. This is “Exogenous Incomplete Markets”.

The Tool: The Bond Economy & Self-Insurance

The Bathtub Model of Savings



The Mechanism

Market Structure: No insurance markets. Only a risk-free bond (r).

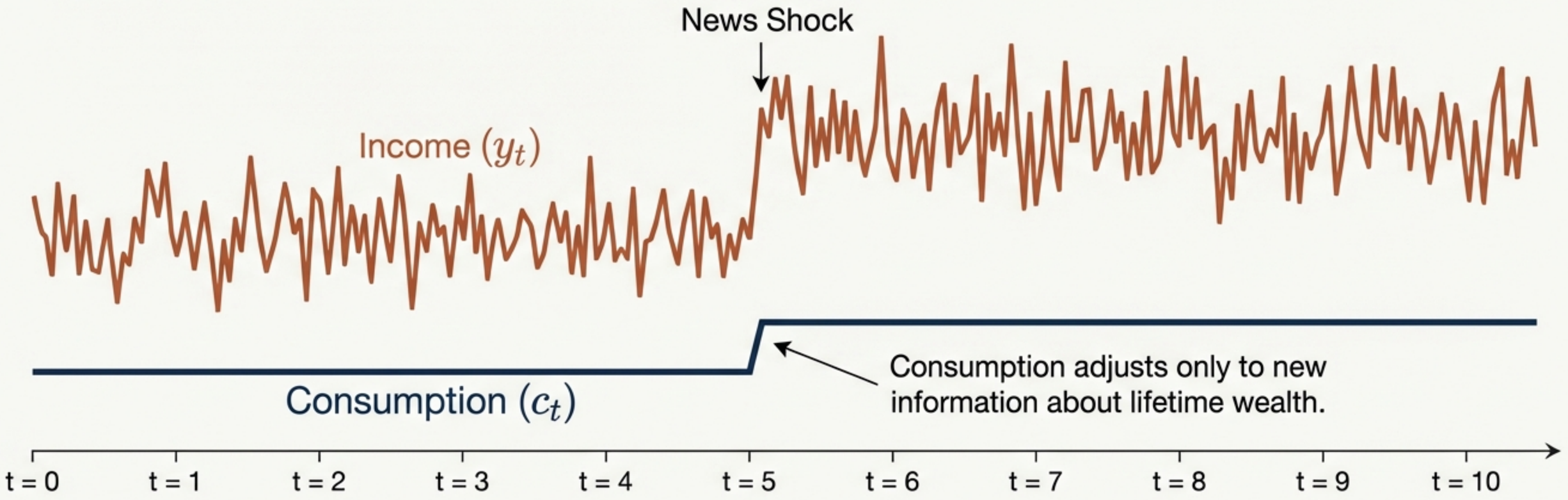
The Strategy: Save during high income (fill the tub); dissave during low income (drain the tub).

$$a_{t+1} = (1+r)(y_t + a_t - c_t)$$

Constraints:

- No-Ponzi Game Condition (Cannot borrow indefinitely)
- Ad-hoc Borrowing Limits ($a_{t+1} \geq -\underline{a}$)

The Baseline: Permanent Income Hypothesis (PIH)



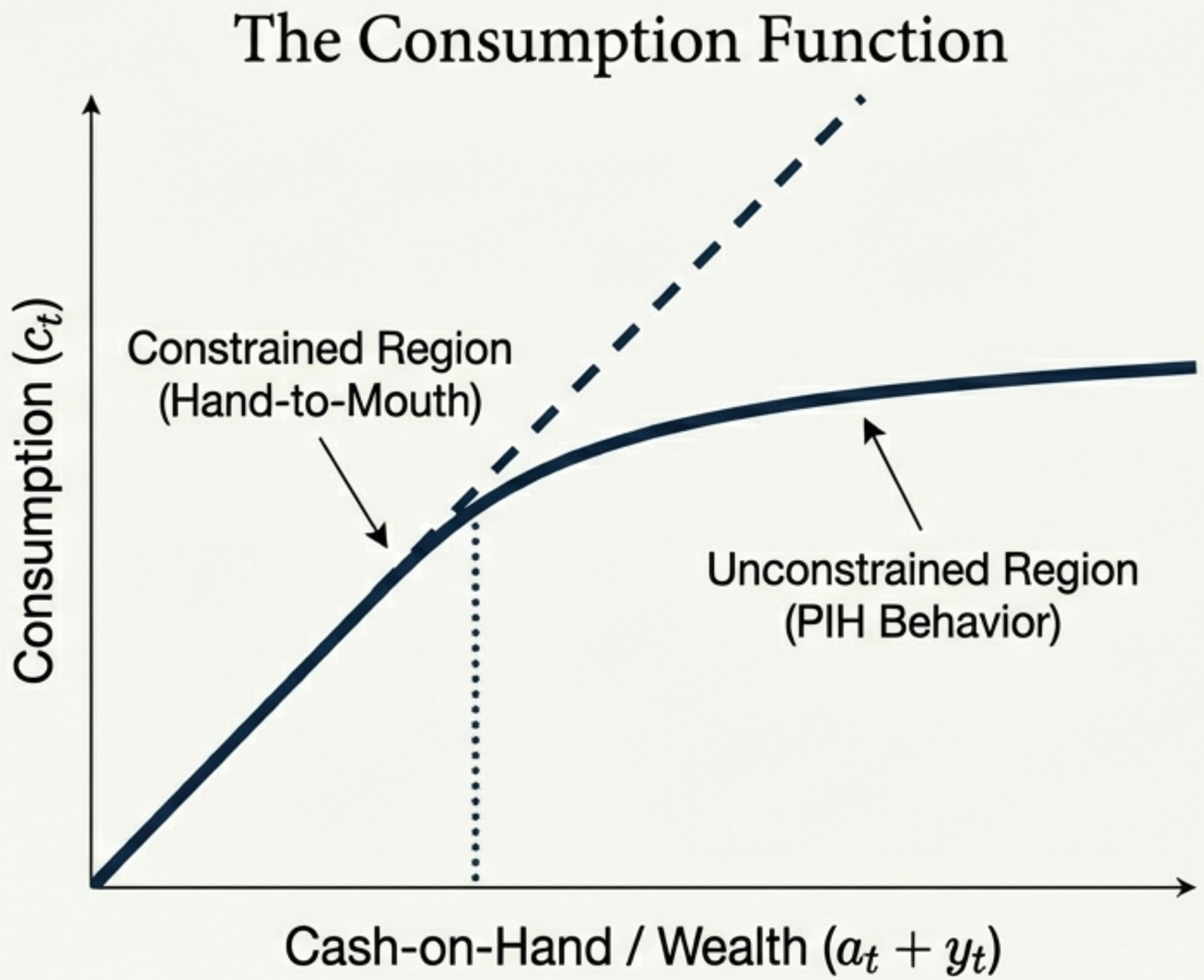
Key Assumptions: Quadratic Utility (No Prudence), No Borrowing Constraints, $\beta(1 + r) = 1$.

The Result (Hall, 1978): Consumption is a Random Walk.

$$c_t = E_t c_{t+1}$$

Certainty Equivalence: Only the MEAN of future income matters. Risk is irrelevant to the level of consumption.

Friction #1: The Impact of Borrowing Constraints



The Breakdown of Euler Equation

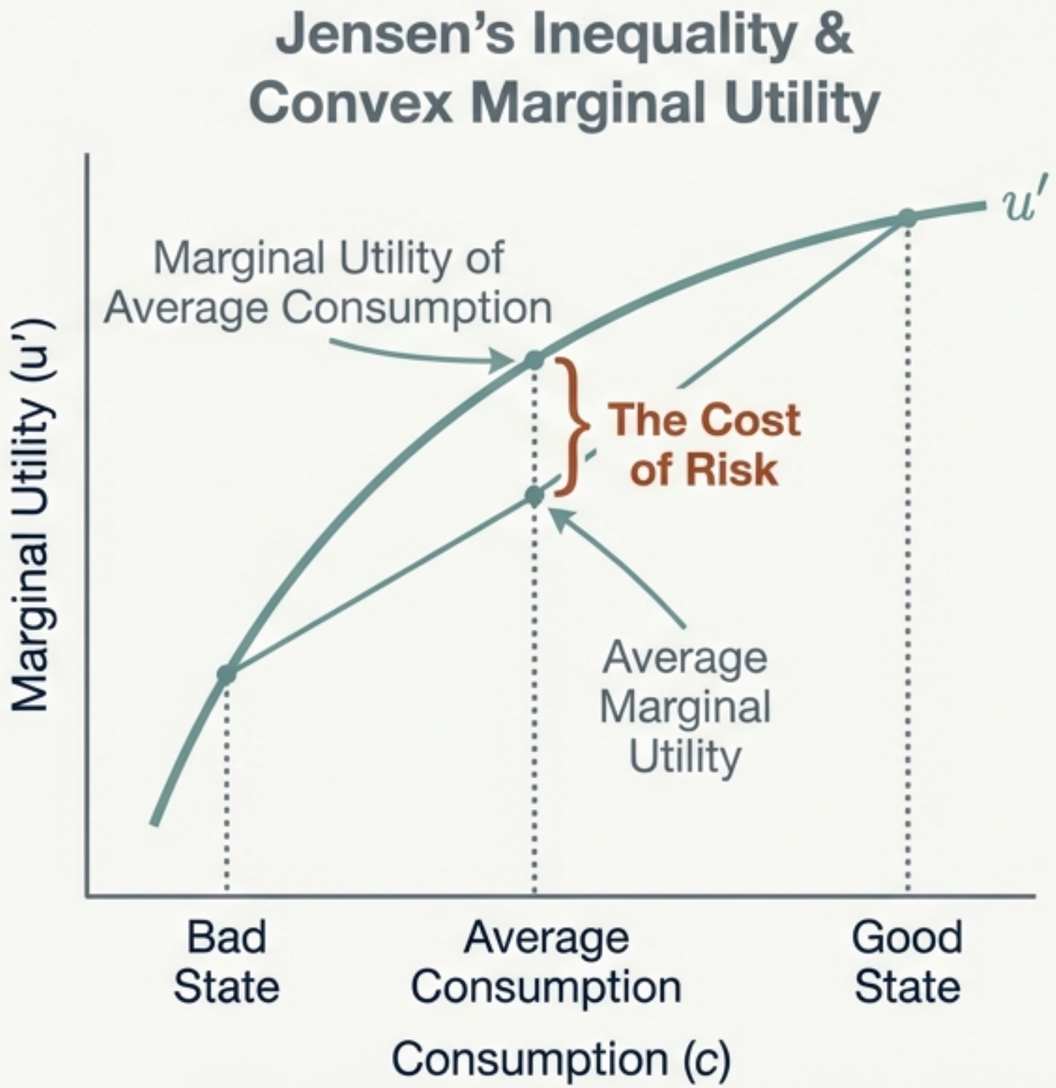
$$u'(c_t) \geq \beta R E_t[u'(c_{t+1})]]$$

When the constraint binds ($a_{t+1} = 0$), the agent cannot smooth. They consume everything available.

The **TIMING** of income suddenly matters. A dollar received today is worth more than a dollar tomorrow for a constrained household.

MPC = 1 for the poor.

Friction #2: Prudence and Precautionary Savings



The Definition of Prudence

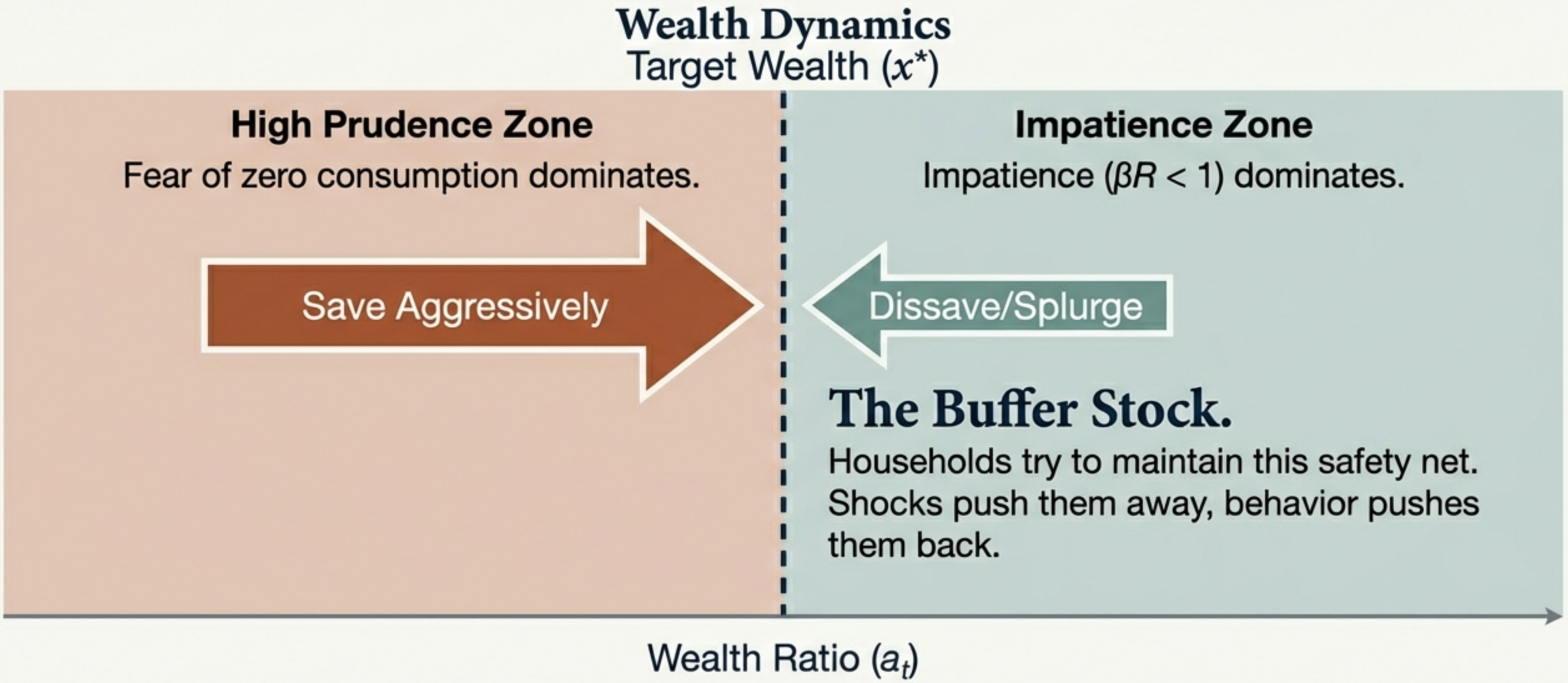
$$u''' > 0 \text{ (Convex Marginal Utility)}$$

Behavioral Shift: Saving for a Rainy Day

- Even without binding constraints, the mere FEAR of low income states induces saving.
- Unlike PIH, risk reduces welfare. Agents accumulate extra wealth to "smooth over states".
- Decomposition: Growth ≈ Smoothing $(r-\rho)$ + Precautionary (Variance).

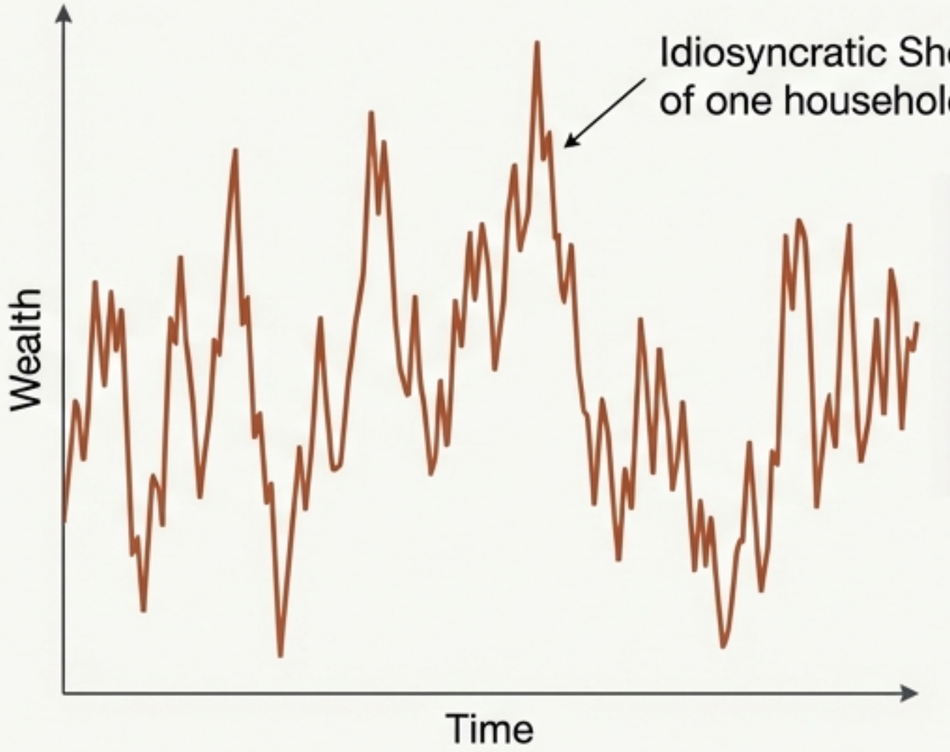
Synthesis: The Buffer-Stock Saver

Balancing Impatience against Fear.



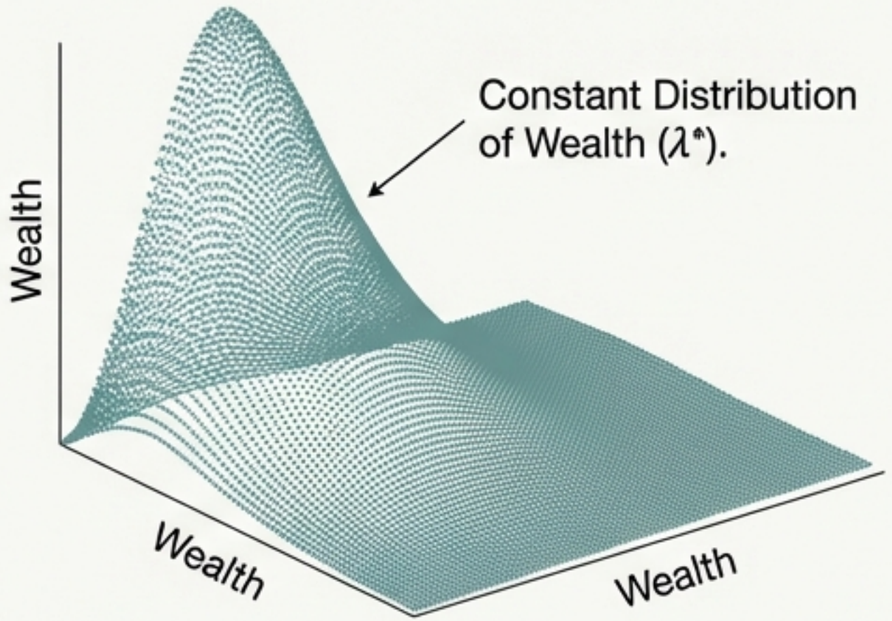
Aggregation: From the Individual to the Economy

The Micro Path (Income Fluctuation Problem)



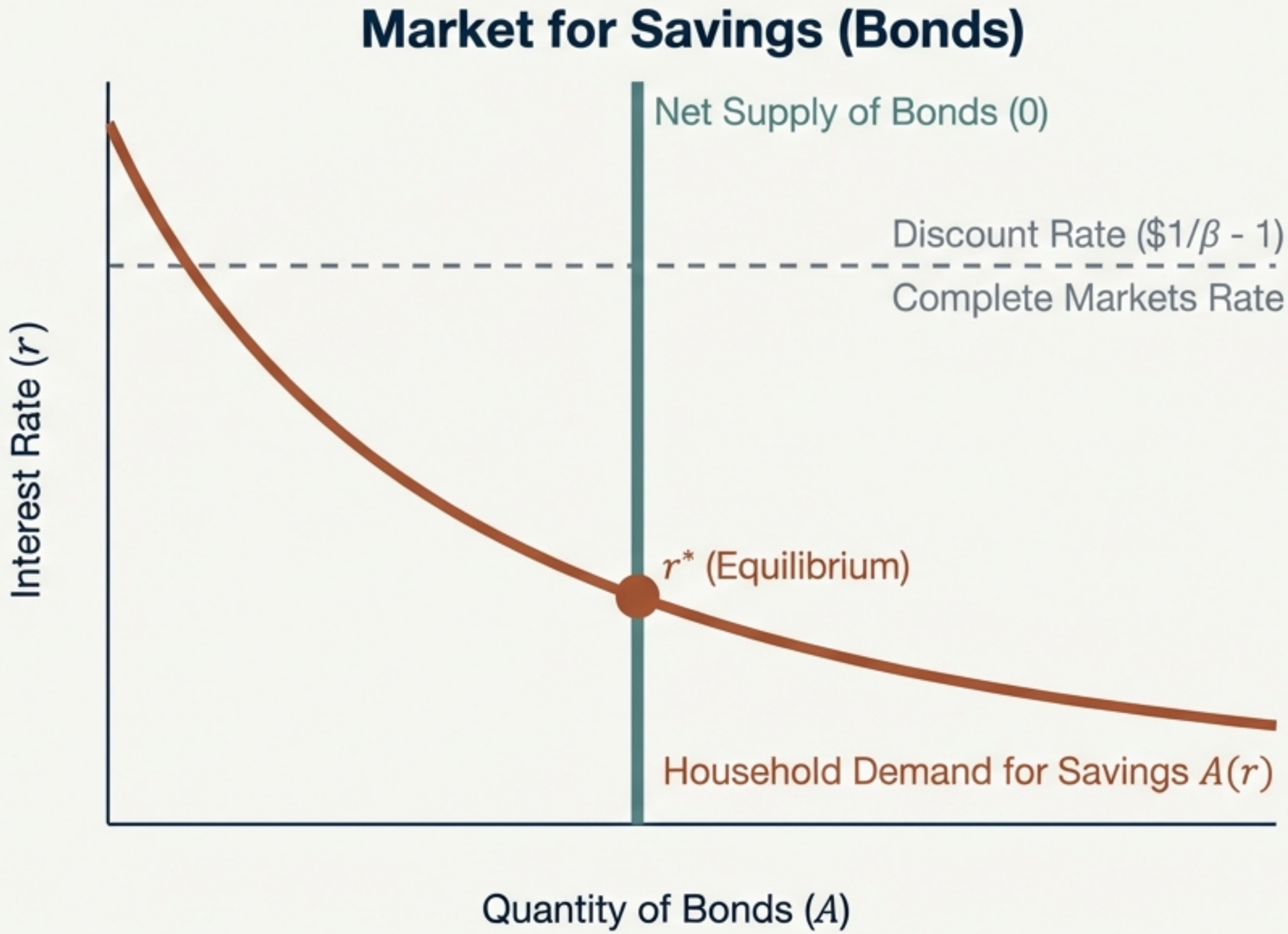
While every individual is moving up and down constantly, the aggregate distribution remains fixed.

The Macro Distribution (Stationary Equilibrium)



The Goal: Find the prices (r, w) that clear the markets given this complex distribution of heterogeneous agents.

The Huggett Economy: Solving the Risk-Free Rate Puzzle



Why is r^* low?
Because of the Precautionary Motive, everyone wants to save. But since net bonds are zero, the interest rate must fall drastically to discourage saving and clear the market.

The Aiyagari Economy: Precautionary Savings Drive Capital

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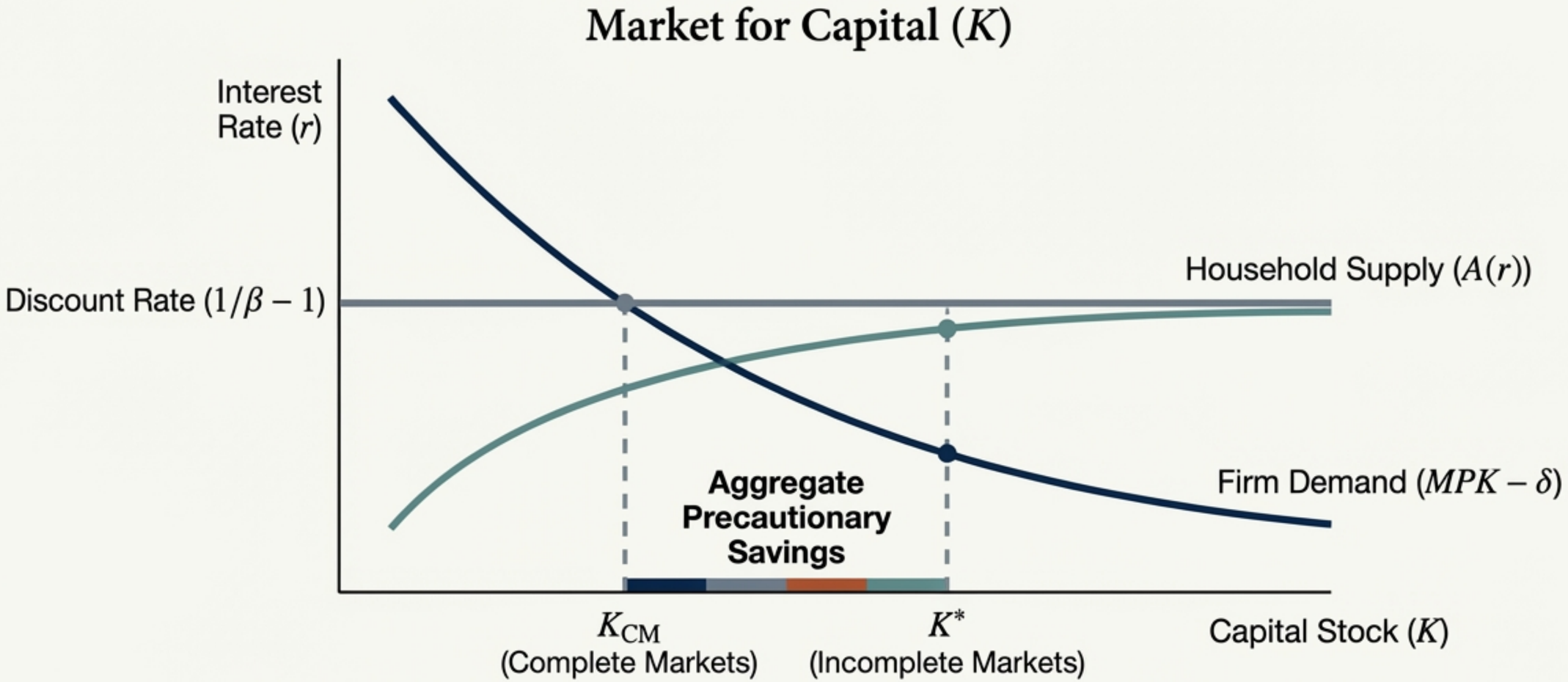
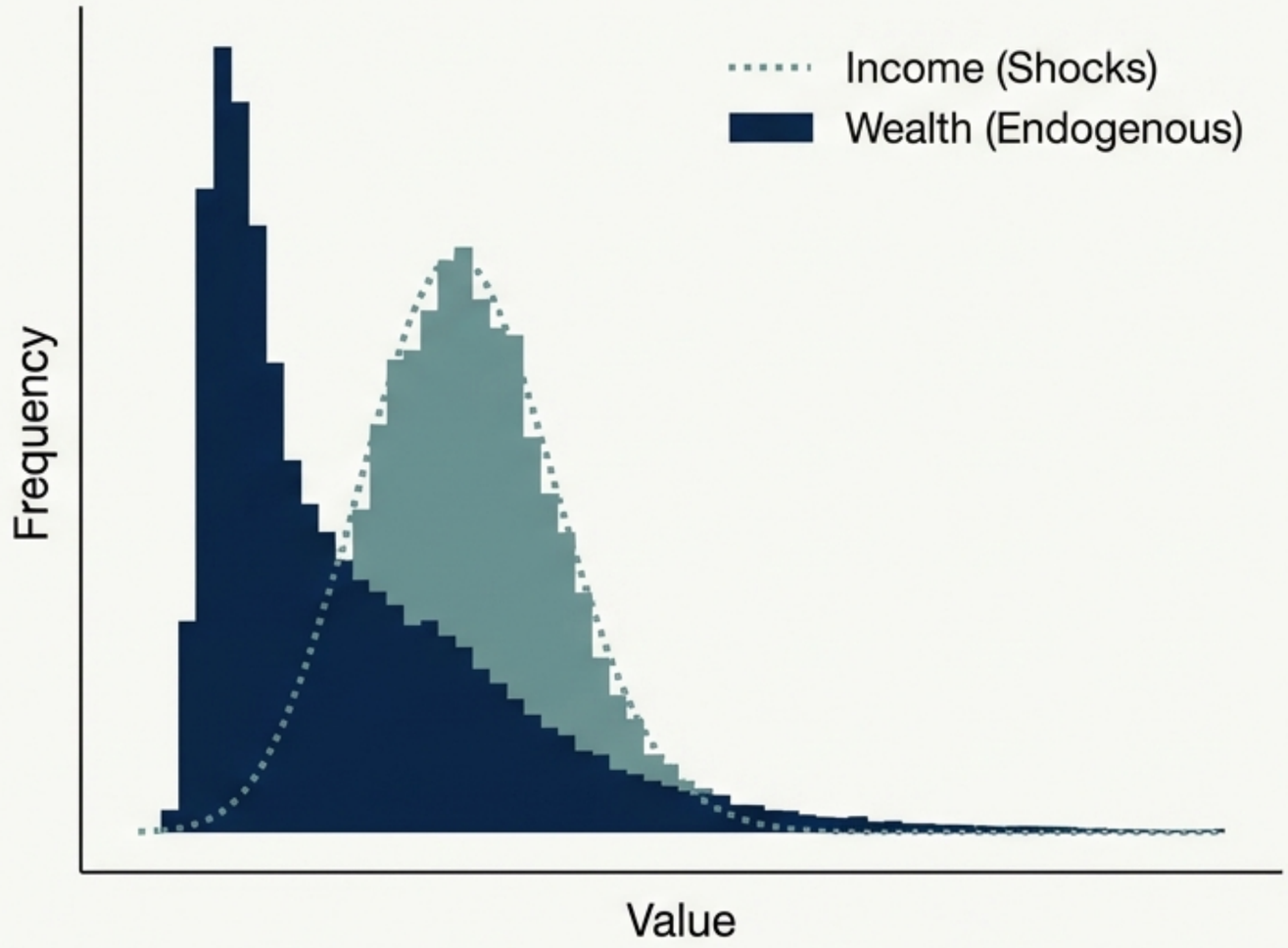


Result: In an incomplete market, the economy accumulates MORE capital than the efficient benchmark to buffer against risk.

Quantitative Win: Endogenous Wealth Inequality



The Model Success:

Households hit by lucky shocks accumulate assets; unlucky ones hit constraints. This naturally generates wealth inequality ($Gini_{wealth} > Gini_{income}$).

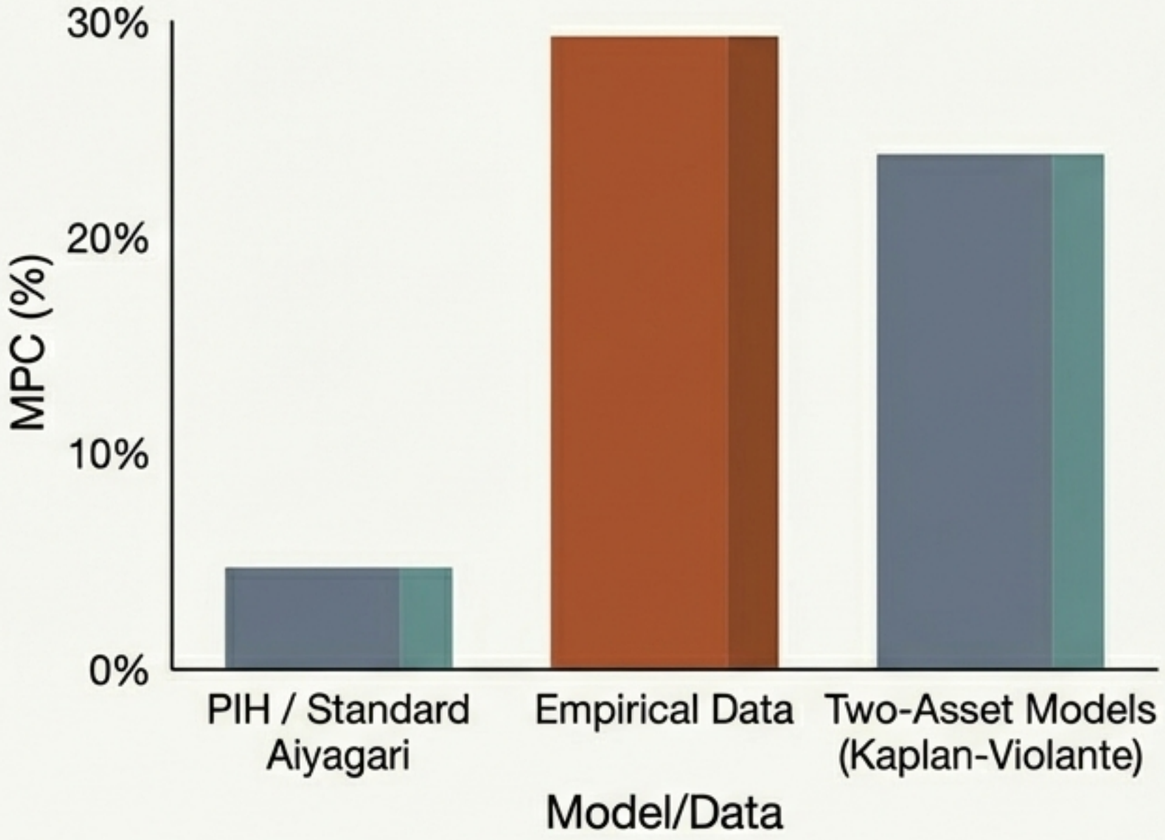
The Limitation:

The Top 1%: The model fails to match the 'fat tail' of the super-rich seen in US data.

The Bottom: It predicts too few people with 0 or negative wealth compared to reality.

The MPC Conflict and 'Wealthy Hand-to-Mouth'

Marginal Propensity to Consume (MPC)



The Solution: Two-Asset Model

Illiquid Wealth
(High Return, High Cost to Access)

Liquid Wealth
(Cash)

Wealthy Hand-to-Mouth

Households may be rich in housing but cash-poor. They behave like constrained agents in response to small stimulus checks.

Summary: The Drivers of Consumption Decisions

Intertemporal Motive

Driver: Patience (β) vs Return (*r*).
Action: Smoothing consumption over TIME.

Precautionary Motive

Driver: Prudence (u''') and Risk.
Action: Smoothing consumption over STATES. Saving for rainy days.

Borrowing Constraints

Driver: Liquidity Limits ($a \geq 0$).
Action: Decoupling from the Euler Equation. Hand-to-Mouth behavior.

The New Standard Model

Conclusion:

Markets are Incomplete: Risk is not fully insurable.

Inequality is Structural: The wealth distribution determines aggregate prices (r*, K*).

Policy Matters: Redistribution and social insurance stabilize the economy by dampening the pass-through of shocks.

Macroeconomics is the sum of Micro-level risks.