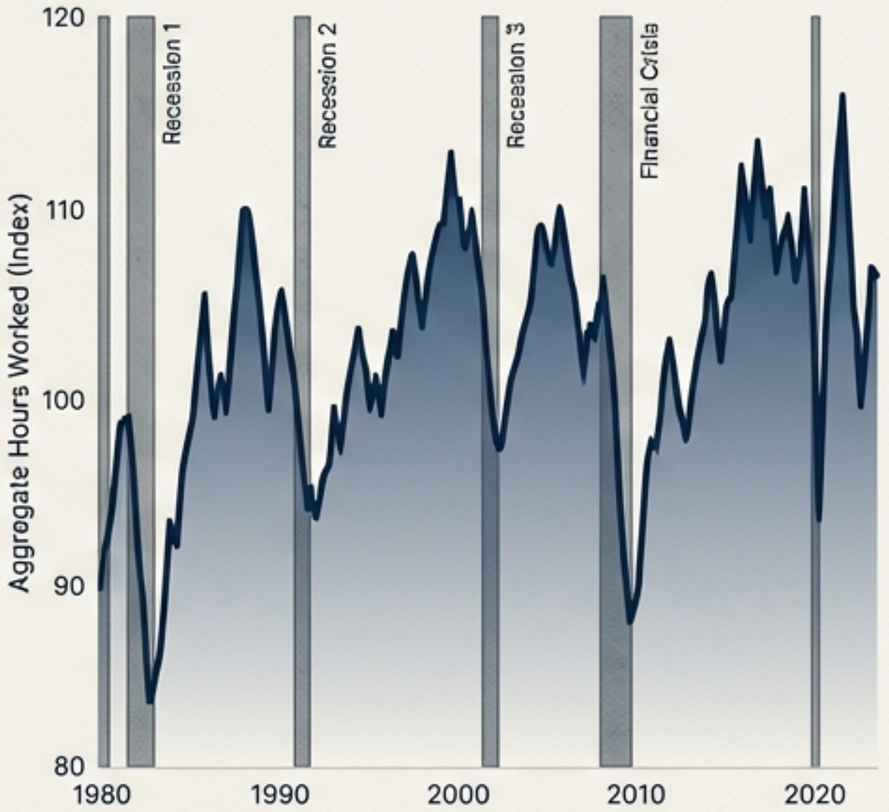
Labor Supply: From Individual Choice to Aggregate Outcomes

A Macroeconomic Perspective on Hours, Incentives, and Elasticities

MICRO FOUNDATIONS: INDIVIDUAL CHOICE

The Aggregation Problem →

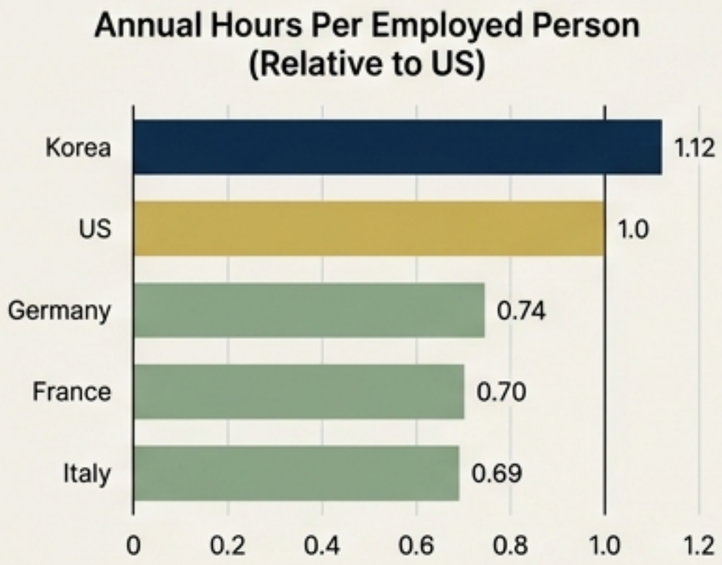


MACRO OUTCOMES: AGGREGATE FLUCTUATIONS

Based on Chapter 12: Labor Supply by Richard Rogerson and Giovanni L. Violante

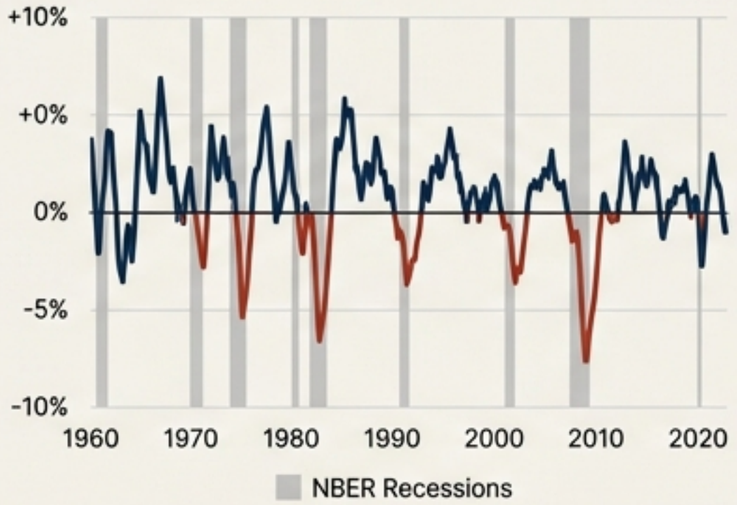
Labor supply is not constant—it breathes and shifts across three dimensions.

Across Countries (The Level)



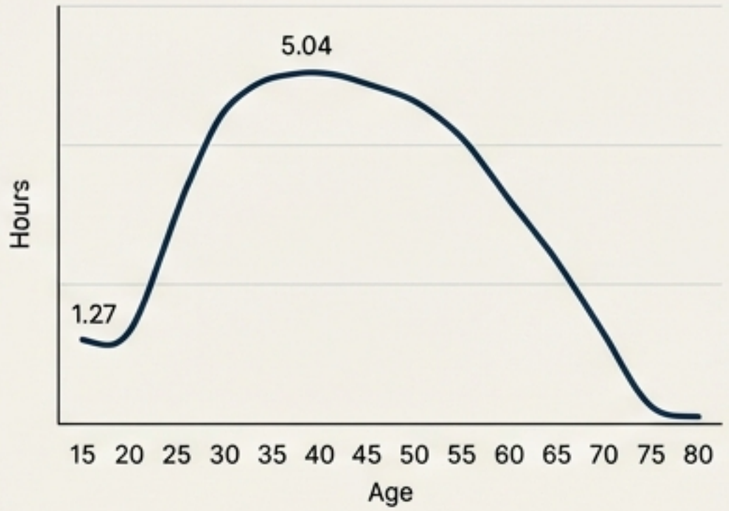
The U.S. works significantly more than Europe. Americans work ~1,825 hours/year vs. ~1,500 in France/Germany.

Over Time (The Cycle)



Hours are volatile and pro-cyclical. Fluctuations from peak to trough often exceed 10%.

Demographics (The Lifecycle)



Labor supply follows a hump-shaped profile, peaking during prime working ages (25-54).

At its core, labor supply is a trade-off between consumption and the disutility of work.

The Equations

Benefit of Consumption

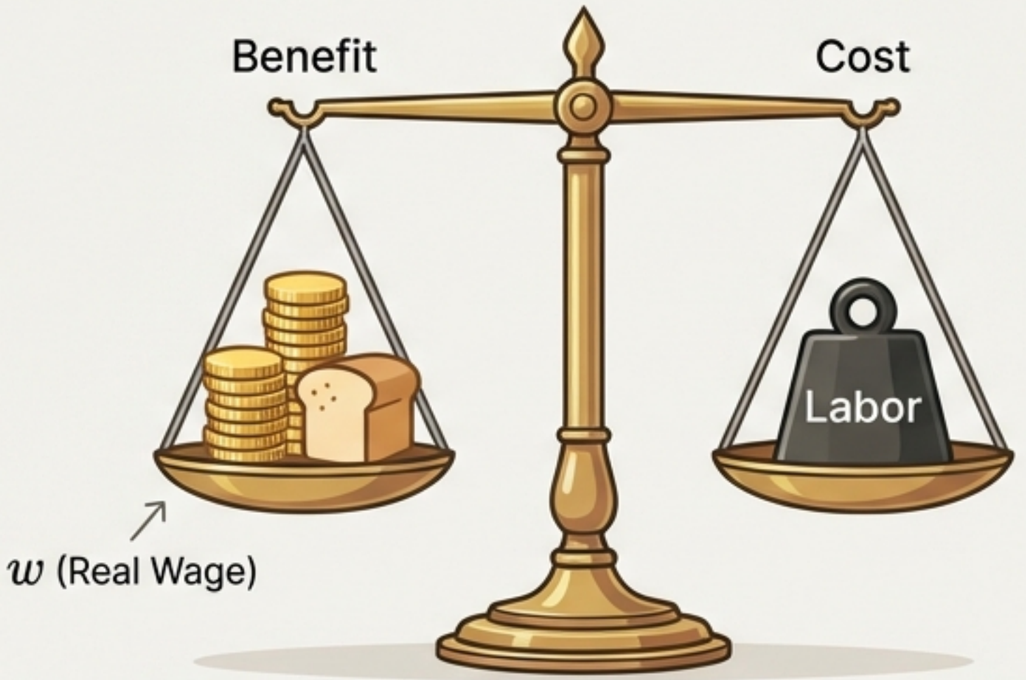
$$U(c, l) = u(c) - v(l)$$

Pain/Cost of Working

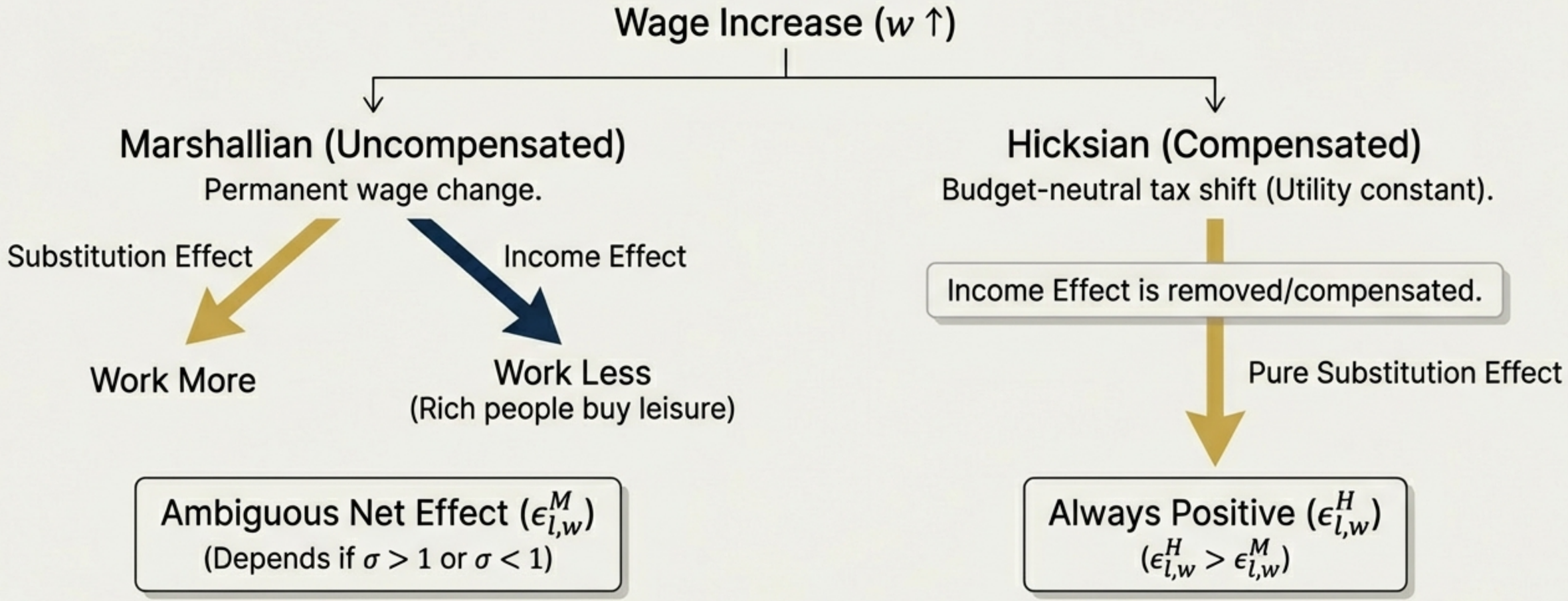
$$\frac{v'(l)}{u'(c)} = w$$

Marginal Rate of Substitution (MRS) = Real Wage

The Visual Metaphor

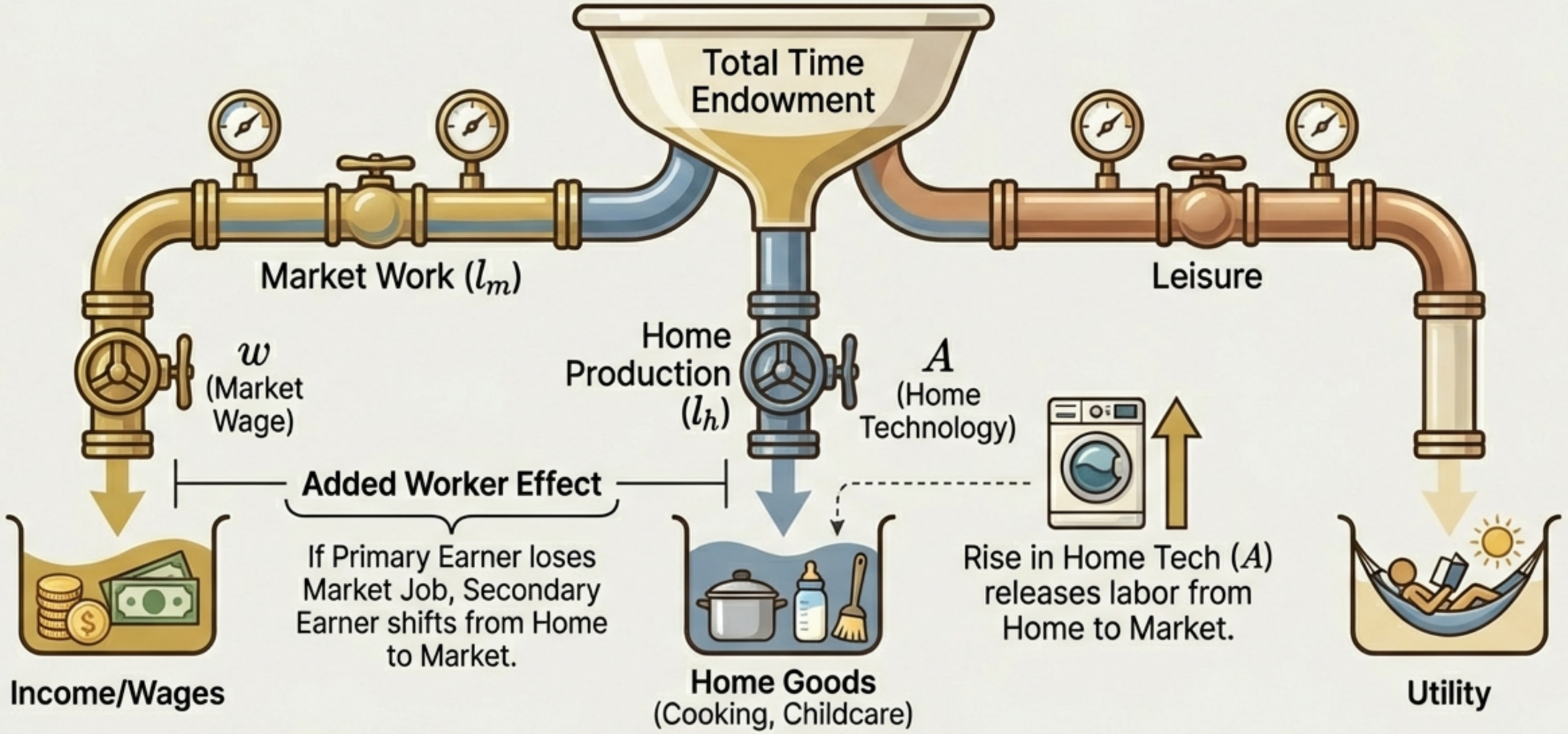


How do people respond to wage changes? It depends on the nature of the shock.

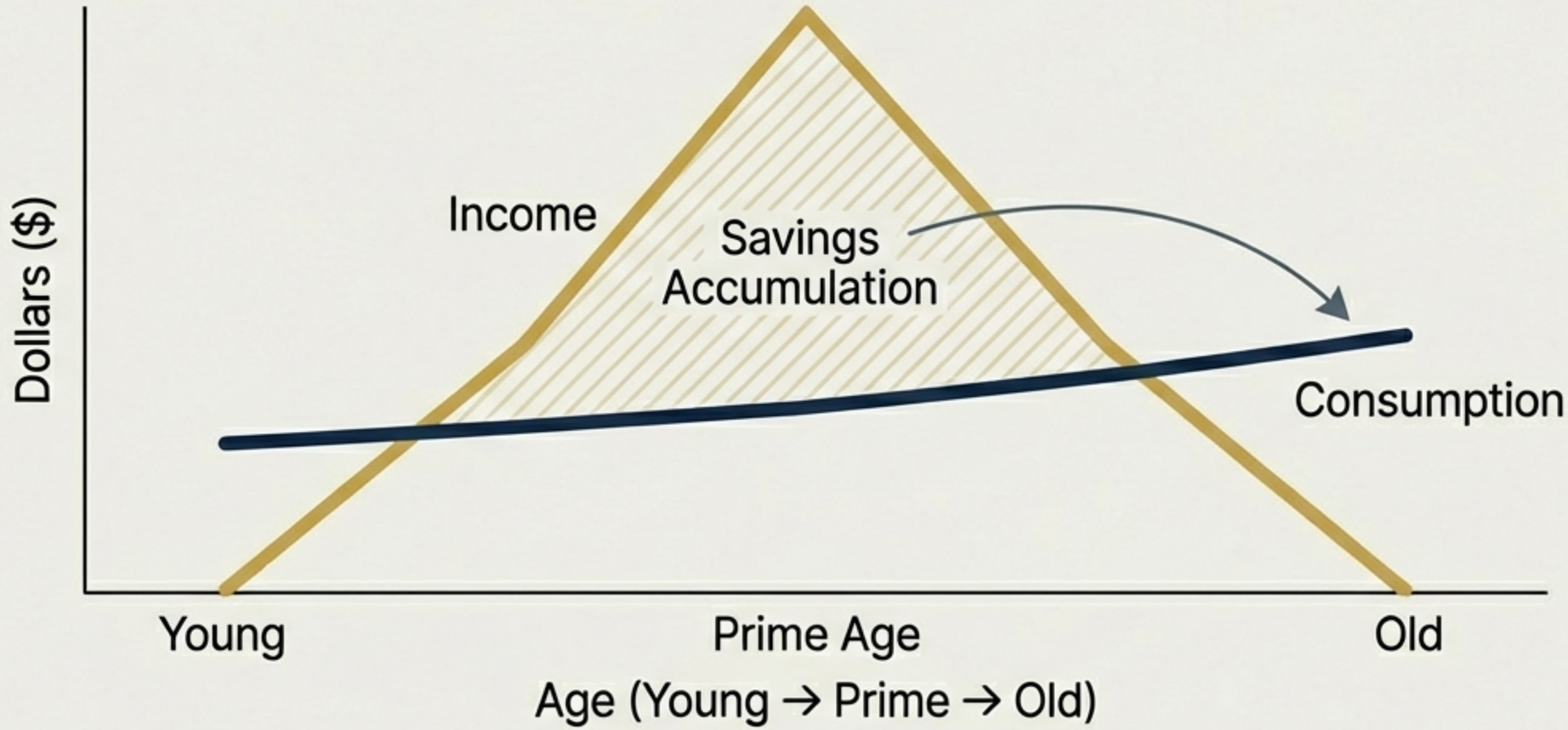


Key Insight: Hicksian elasticity is always larger because the income effect acts as a drag on the incentive to work.

Time is not just Work vs. Leisure; it is Market Work vs. Home Work vs. Leisure.



Dynamic Two-Stage Budgeting decouples current income from current consumption.



Implication: Non-labor income is endogenous. We allocate lifetime wealth, not just today's paycheck.

The Frisch Elasticity governs the response to temporary wage shocks.

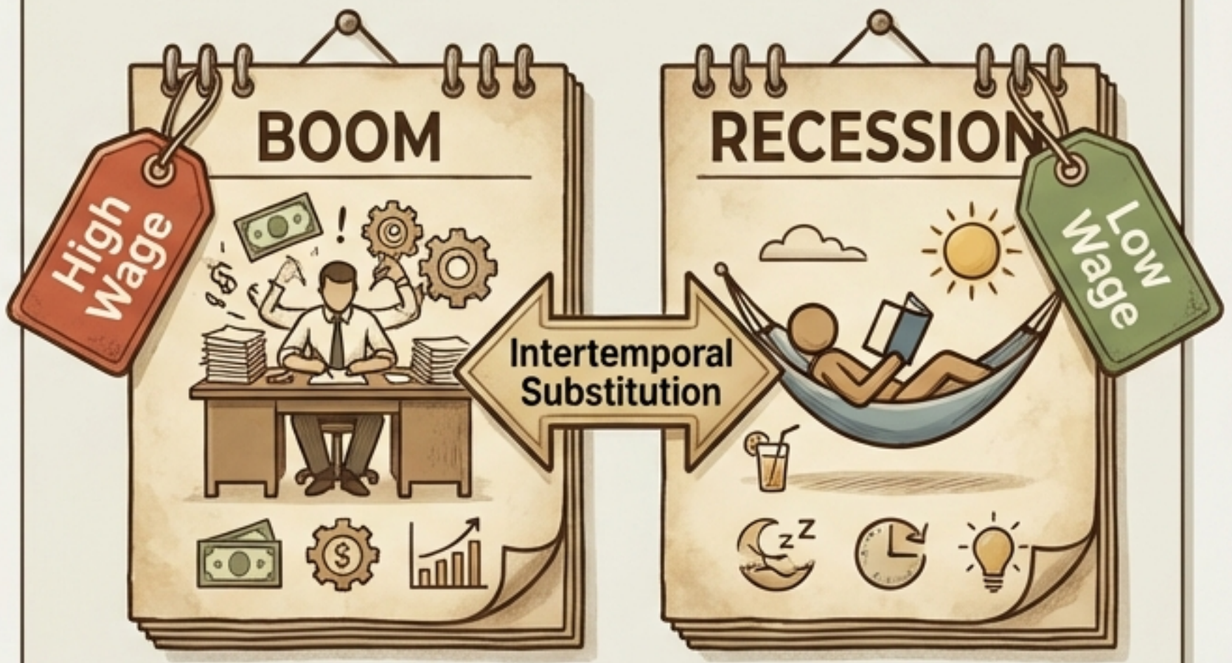
The Definition

- **Definition:** Frisch Elasticity (γ): Response to wage change holding marginal utility of wealth (λ) constant.

$$\text{Frisch} \geq \text{Hicksian} \geq \text{Marshallian}$$

- **Use Case:** Recessions, Bonuses, Temporary Tax Holidays.

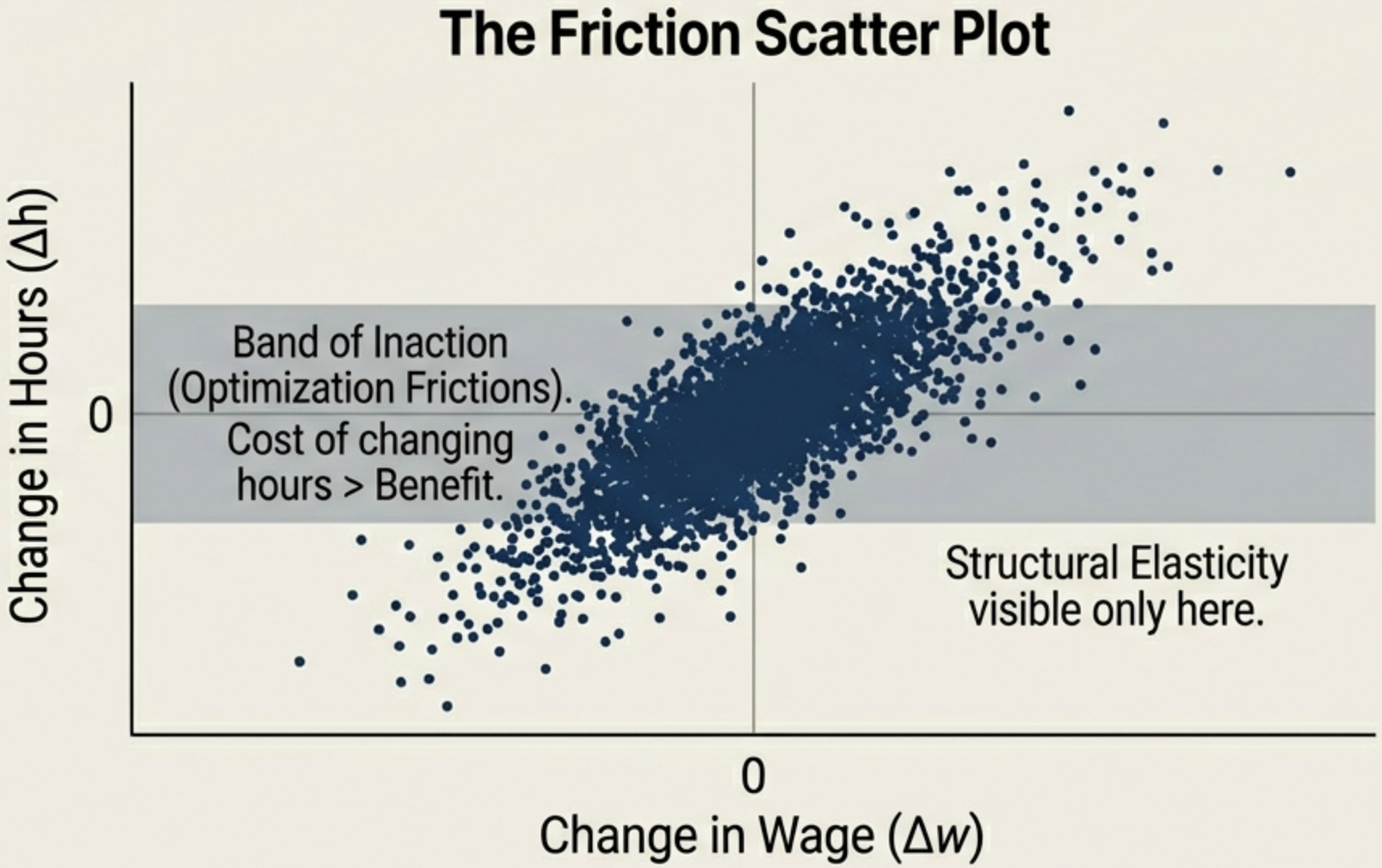
The Visual Metaphor



Leisure is expensive. Sell labor now.

Leisure is on sale. Buy leisure now.

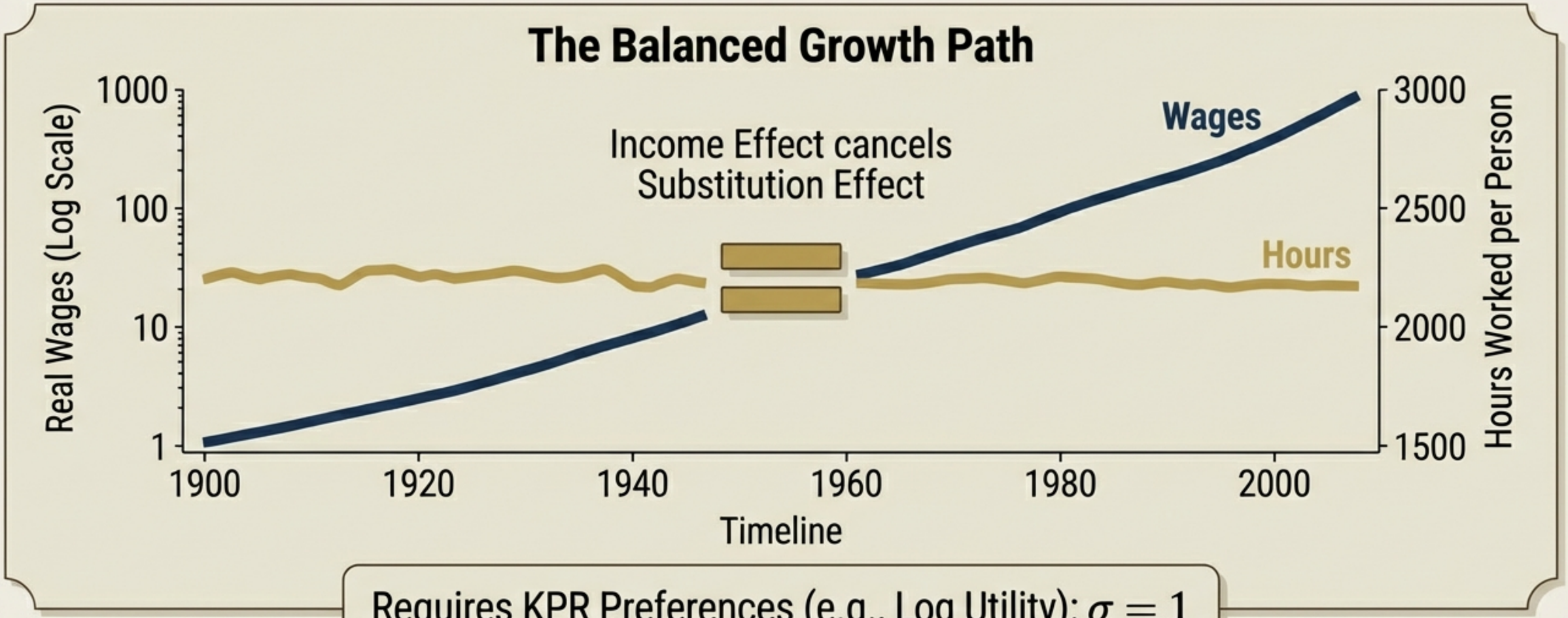
Why is measuring the Frisch elasticity (γ) so difficult?



The Identification Trap

OLS biases downward because it conflates "no response" due to frictions with 'inelastic preferences'.

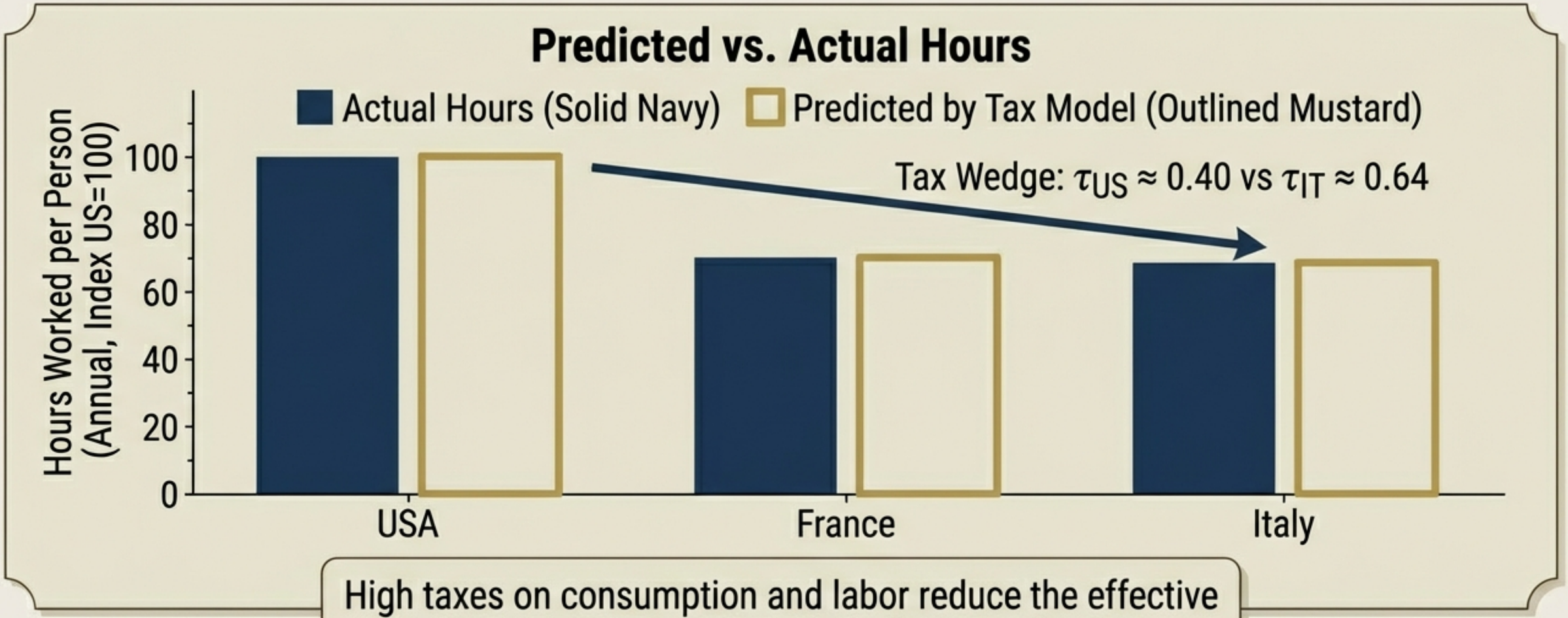
History presents a puzzle: Wages have skyrocketed, yet hours per worker are stable.



Requires KPR Preferences (e.g., Log Utility): $\sigma = 1$

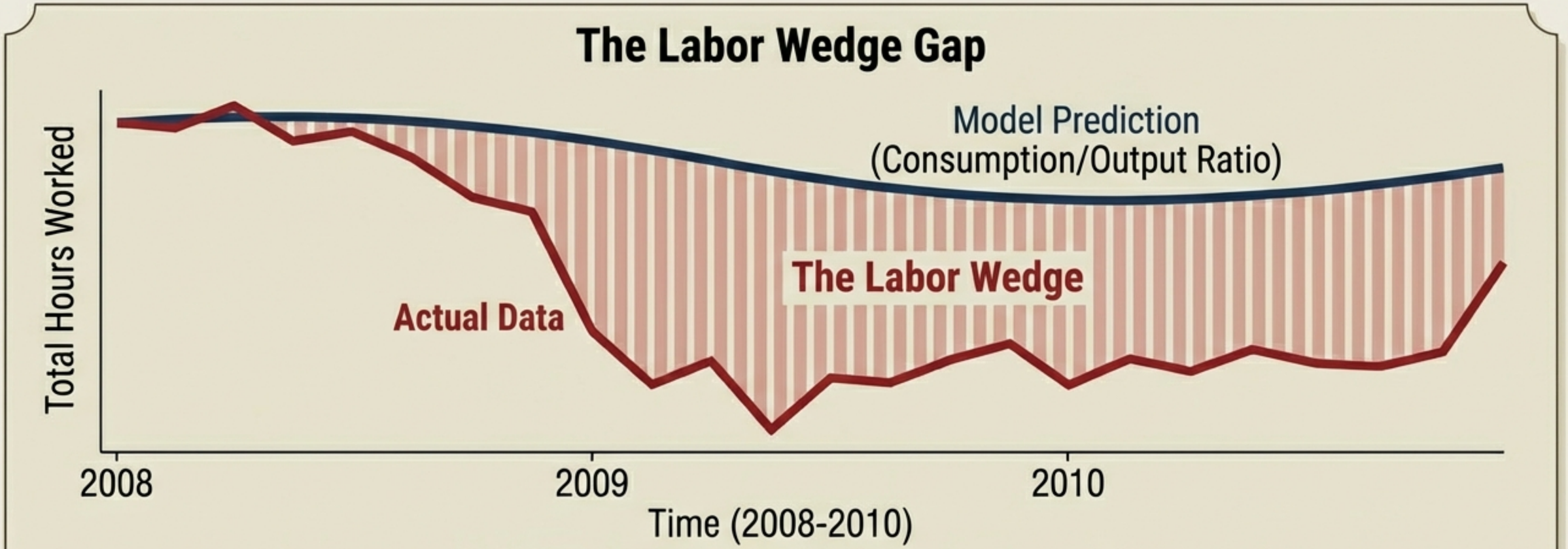
Why do Americans work 50% more than Italians?

Prescott's Experiment (2004): Taxes explain the gap.



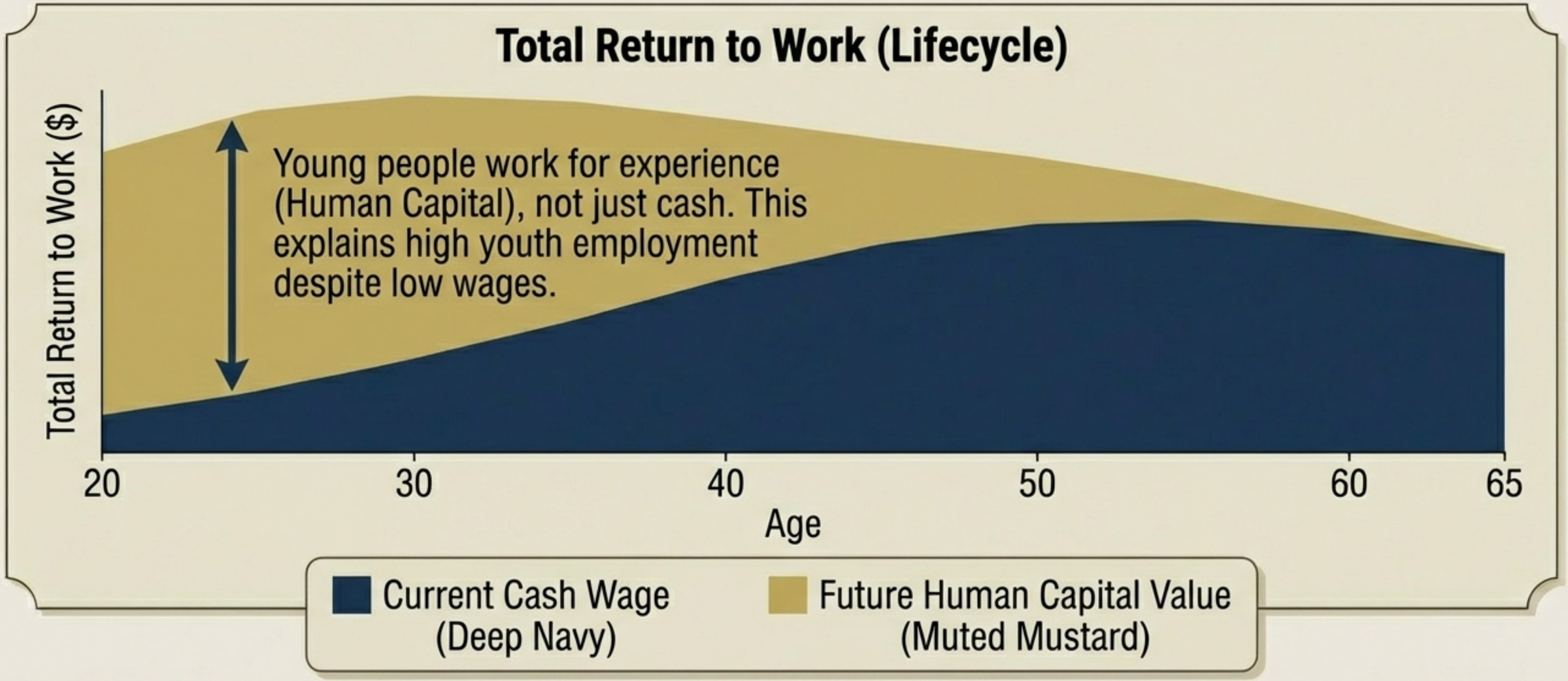
High taxes on consumption and labor reduce the effective return to work, driving the substitution to leisure.

The Standard Model struggles to explain the depth of recessions.



Interpretation: The wedge acts like a “phantom tax” or friction (hiring costs/unemployment) that the standard frictionless model misses.

Work is an investment: We work for wages today *and* higher wages tomorrow.



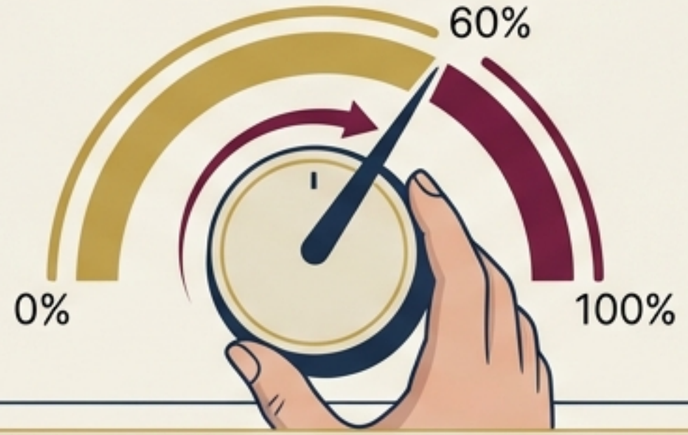
Indivisible Labor: Individuals face binary choices, but the economy moves smoothly.

Individual View (Micro)

Binary Choice: Work 40 hours or 0 hours.

Aggregate View (Macro)

Aggregate Outcome: Continuous adjustment via the Extensive Margin (Entry/Exit).



Aggregate Outcome: Continuous adjustment via the Extensive Margin (Entry/Exit).

Paradox: Individual elasticity is near zero (fixed shift), but Aggregate elasticity is infinite (perfectly elastic).

The Micro-Macro Disconnect: Reconciling the estimates.

We cannot simply plug micro-estimates into macro-models without accounting for entry and exit.

To understand GDP, we must understand the incentives to work.

Incentives Matter

Taxes and wages drive cross-country differences (US vs. Europe).

Timing Matters

The Frisch elasticity governs how we shift labor in response to business cycles.

Aggregation Matters

Frictions and extensive margins mean the macroeconomy is more elastic than any single individual.

End of Chapter 12: Labor Supply.