Reframing Markov Regime Classification for Financial Historians

Soumadeep Ghosh

Kolkata, India

Abstract

This paper reframes Markov Regime Classification as a framework for financial history. It argues that economic history can be reconstructed through the joint evolution of time valuation and risk valuation, treating interest rates and risk premia as primary historical objects rather than outcomes. By embedding asset pricing into a regime-switching, control-theoretic, and uncertainty-aware structure, the framework provides financial historians with a disciplined language for periodization, persistence, policy irreversibility, and long-run stagnation.

The paper ends with "The End"

1 Introduction: Financial History as Valuation History

Traditional financial history has relied on narrative chronology, institutional change, and episodic crisis analysis. In contrast, a valuation-based approach treats financial prices as archival records of collective beliefs. The decomposition of returns into a risk-free rate and a risk premium allows historians to study how societies priced time and uncertainty across eras. Financial history thus becomes the study of persistent valuation regimes rather than isolated shocks.

2 Valuation Space and Historical Regimes

Let asset returns be decomposed as

$$r(t) = r_f(t) + p_c(t), \tag{1}$$

where $r_f(t)$ represents time valuation and $p_c(t)$ represents risk valuation. The joint evolution of (r_f, p_c) defines a two-dimensional valuation space. Historical eras correspond to persistent regions in this space.

2.1 Canonical Regime Typology

A parsimonious classification yields four regimes: efficiency-dominant, risk-dominant, offsetting boundary, and time-dominant. These regimes are not imposed ex post but inferred probabilistically from valuation data.

3 Markov Structure and Persistence

Valuation regimes evolve according to a first-order Markov process. Persistence, rather than volatility, is the defining historical feature. The transition matrix encodes asymmetries familiar to financial historians: crises are abrupt, recoveries are slow, and stagnations are durable.

4 Absorbing and Near-Absorbing Regimes

An absorbing valuation regime is one in which expected valuation pressure and variance collapse. Such regimes correspond historically to entrenched financial repression, demographic stagnation, or debt overhangs. Near-absorbing regimes generate hysteresis: marginal policy changes fail to restore valuation mobility.

5 Policy Irreversibility and Loss of Controllability

From a financial-historical perspective, policy failure is reinterpreted as loss of controllability. Monetary and regulatory tools may remain active while losing their ability to alter valuation dynamics. This formalizes why sustained activism can coexist with persistent low yields and high precaution.

6 Knightian Uncertainty and Defensive Valuation

Under deep uncertainty, policymakers and markets adopt robust control strategies. These distort valuations defensively: lowering risk-free rates, elevating risk premia, and compressing variance. Financial conservatism thus appears as a rational historical outcome rather than institutional inertia.

7 Visualization: Valuation Regimes in Historical Space
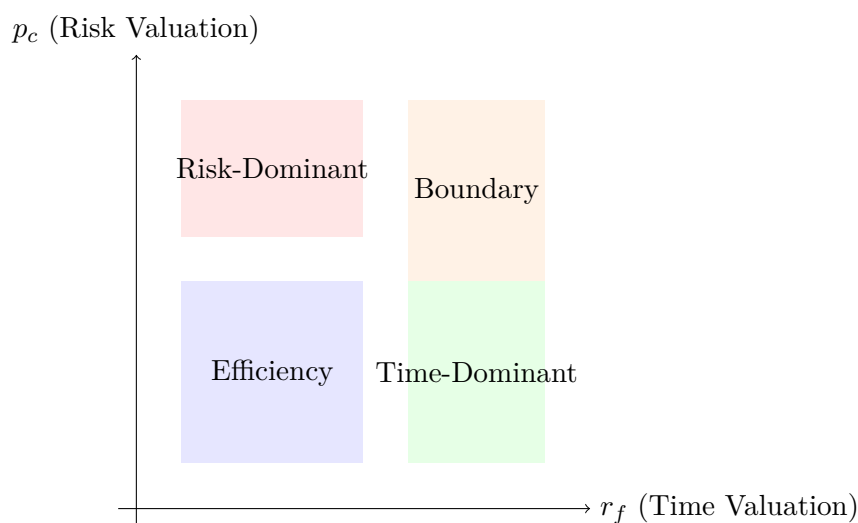
8 Historical Exemplars: Valuation Regimes in Practice

This section illustrates how the valuation-regime framework organizes canonical episodes in financial history. The goal is not retrospective fitting, but disciplined reinterpretation of well-known eras through persistent configurations of time and risk valuation.

8.1 The Classical Gold Standard (1870–1913)

The classical gold standard corresponds closely to an efficiency-dominant valuation regime. Risk-free rates were anchored by convertibility and credible fiscal constraints, while risk premia in core economies remained compressed by high arbitrage capacity and institutional trust. Financial crises occurred, but valuation dynamics were typically transient: risk premia spiked

briefly and normalized rapidly. The historical significance of this era lies not in stability per se, but in the high reachability of valuation states, which preserved policy and market flexibility.

8.2 The Interwar Period (1919–1939)

The interwar period represents a sequence of unstable transitions between risk-dominant and offsetting boundary regimes. War finance, reparations, and the collapse of prewar credibility structures permanently altered time valuation, while recurrent banking crises elevated risk premia. Attempts to restore the gold standard failed not because of poor optimization, but because the valuation regime had become weakly reachable at best. The Great Depression emerges as a near-absorbing regime in which variance collapsed and policy traction eroded.

8.3 Post-1970s Financial Repression and Disinflation

The breakdown of Bretton Woods initiated a prolonged transition toward time-dominant regimes. High inflation initially elevated both risk premia and discount rates, but subsequent disinflation, debt accumulation, and regulatory expansion compressed risk-free rates over decades. Financial repression in advanced economies appears here as an intentional stabilization within a near-absorbing valuation regime, trading allocative efficiency for controllability.

8.4 The Post-2008 Low-Rate Era

The post-2008 period is best understood as a globally synchronized near-absorbing regime shaped by Knightian uncertainty. Persistent low risk-free rates, elevated precautionary savings, and compressed volatility reflect robust control rather than cyclical weakness. Despite unprecedented policy intervention, valuation dynamics remain tightly constrained, illustrating the loss of reachability emphasized by the framework.

9 Implications for Financial Historiography

This framework reorganizes financial history around valuation persistence, reachability, and uncertainty. It complements archival and institutional narratives with a unified quantitative backbone. Prices become carriers of historical structure, revealing what societies believed was insurable, controllable, and credible.

10 Conclusion

Reframing Markov Regime Classification for financial historians transforms asset pricing into a historical science. Financial history emerges as the study of constrained valuation trajectories shaped by policy irreversibility and uncertainty. Long stagnations and repressions are not anomalies but structural regimes in valuation space.

References

[1] Ghosh, S. (2025). *Markov Regime Classification.* Kolkata, India.

[2] Hamilton, J. (1989). A New Approach to the Economic Analysis of Nonstationary Time Series. *Econometrica.*

[3] Hansen, L. and Sargent, T. (2008). *Robustness.* Princeton University Press.

[4] Shiller, R. (2000). *Irrational Exuberance.* Princeton University Press.

A Empirical Appendix: Stylized Calibration and Regime Characteristics

A.1 Stylized Regime Calibration

Table 1 presents stylized calibration targets for valuation regimes based on long-run historical evidence. These values summarize broad historical tendencies rather than precise estimates.

Regime	Mean r_f	Mean p_c	Persistence π_{kk}
Efficiency-Dominant	Moderate (3–5%)	Low (1–2%)	0.80
Risk-Dominant	Low or volatile	High (5%+)	0.60
Offsetting Boundary	Very Low (0–2%)	Moderate (2–4%)	0.90
Time-Dominant	Near Zero	Low–Moderate	0.95

Table 1: Stylized valuation characteristics by regime

A.2 Historical Mapping of Regimes

Table 2 maps canonical historical periods into dominant valuation regimes.

Historical Period	Dominant Valuation Regime
1870–1913 Gold Standard	Efficiency-Dominant
1919–1939 Interwar	Risk / Boundary
1975–1995 Disinflation	Transition to Time-Dominant
2009–Present	Near-Absorbing Time-Dominant

Table 2: Historical exemplars and valuation regimes

B Data Appendix: Historical Valuation Proxies

This appendix summarizes representative financial indicators that operationalize time valuation, risk valuation, and uncertainty across historical eras. The purpose is to anchor valuation regimes in observable financial data commonly used by financial historians.

B.1 Risk-Free Rate Proxies

Risk-free rates are proxied using long-term government bond yields or policy-controlled short rates, depending on institutional context.

Era	Proxy Instrument	Typical Range
1870–1913	UK Consols, Core Sovereign Bonds	2–3%
1919–1939	Government Bonds (volatile)	3–8%
1975–1995	Policy Rates / Treasuries	5–10% (disinflation)
2009–Present	OIS / Sovereign Yields	0–1%

Table 3: Historical proxies for time valuation

B.2 Risk Premium Proxies

Risk premia are proxied by credit spreads, equity risk premia, or sovereign spreads.

Era	Proxy Instrument	Typical Range
1870–1913	Railway / Colonial Spreads	1–2%
1919–1939	Corporate and Sovereign Spreads	4–10%
1975–1995	Corporate Credit Spreads	2–4%
2009–Present	IG/HY Spreads, ERP	2–6%

Table 4: Historical proxies for risk valuation

B.3 Volatility and Uncertainty Proxies

Valuation uncertainty is proxied by realized volatility, yield dispersion, or option-implied measures where available.

Era	Proxy	Interpretation
1870–1913	Yield Dispersion	Low uncertainty
1919–1939	Equity and Yield Volatility	High systemic risk
1975–1995	Inflation Volatility	Policy credibility transition
2009–Present	Implied Volatility Indices	Compressed but persistent uncertainty

Table 5: Volatility and uncertainty proxies by era

B.4 Suggested Data Sources for Financial Historians

The valuation-based framework is deliberately compatible with standard long-run financial datasets. The following sources are particularly well suited for reconstructing time valuation, risk premia, and uncertainty across historical eras:

- **Homer, S. and Sylla, R.** (2005). *A History of Interest Rates.* The canonical source for long-run sovereign and benchmark interest rates, especially for the pre-World War II period.

- **Schmelzing, P.** (2020). "Eight Centuries of Global Real Interest Rates." Provides a unified long-run series for safe rates, suitable for historical time-valuation analysis.

- **Jordà, O., Schularick, M., and Taylor, A.** (2017). "Macrofinancial History and the New Business Cycle Facts." Offers extensive cross-country datasets on returns, credit spreads, and crises.

- **Global Financial Data**. Commercial database aggregating historical yields, equity indices, spreads, and volatility measures across countries and centuries.

- **Bank for International Settlements (BIS)**. Long-run series on policy rates, credit aggregates, and financial conditions for the postwar era.

- **Option-Implied Volatility Indices** (e.g., VIX). Modern proxies for valuation uncertainty, especially relevant for post-1990 regimes.

These sources allow historians to estimate valuation trajectories, identify regime persistence, and test hypotheses about absorption, reachability, and policy irreversibility.

C Glossary

Time Valuation (r_f) The risk-free rate capturing how societies discount the future.

Risk Valuation (p_c) The risk premium reflecting perceived uncertainty and tail risk.

Valuation Regime A persistent configuration of time and risk valuation.

Absorbing Regime A valuation state from which exit is infeasible within the historical horizon.

Near-Absorption High persistence with limited but nonzero mobility.

Policy Irreversibility Loss of policy leverage over valuation dynamics.

Knightian Uncertainty Uncertainty about the correct model governing the economy.

Reachability The set of valuation states attainable under feasible policies.

The End