00_project_overview

December 17, 2025

1 Leviathan: Macro-Aware Decision Allocation in Housing Markets

This project studies **when not to act** under macro stress, rather than attempting to maximize returns. It proposes a decision-layer framework that conditions exposure on affordability-driven macro regimes.

1.1 Research Question

Can macro signals be used to improve **decision quality**—specifically stability, robustness, and drawdown control— rather than raw return prediction?

Most housing and macro strategies focus on signal strength. This project focuses on **decision timing**.

1.2 Method Overview

1. Construct affordability-based macro signals (DTI, PTI, rent burden).
2. Define macro regimes and validate signal behavior across regions.
3. Introduce a decision layer that gates exposure based on macro stress.
4. Evaluate robustness out-of-sample under regime transitions.

1.3 Phase 9: Out-of-Sample Decision Robustness

Out-of-sample tests show that macro-aware gating significantly reduces decision instability during regime transitions and stress periods.

This improvement comes from **error avoidance**, not alpha amplification.

1.4 Phase 10: Decision Surface Learning

Binary gating rules are replaced with a learned, interpretable decision surface.

The learned surface scales exposure conservatively when affordability pressure exceeds ~2.4 , resulting in substantial volatility compression out-of-sample.

1.5 Why This Matters

This project reframes housing strategies from alpha generation to **macro-aware decision allocation**.

The framework is asset-agnostic and can extend to credit, real estate lending, and other macro-sensitive assets.