

Research Statement

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I am a quantitative macroeconomist studying the currency and maturity composition of sovereign debt. Emerging-market governments borrow through portfolios that mix domestic- and foreign-currency bonds across a range of maturities, and the composition of these portfolios shapes a country's exposure to crises, its incentives to inflate or default, and the risk premia it pays. My research asks how sovereigns should—and do—assemble these portfolios, and what the resulting composition reveals about the frictions they face. A common thread runs through the work: I pair structural quantitative models of sovereign default with the computational methods needed to solve them credibly in high dimensions, and I discipline both against emerging-market data. Alongside this agenda, I maintain an empirical interest in how policy shapes firm behavior in labor markets.

1 The Currency and Maturity Composition of Sovereign Debt

Most sovereign borrowing is denominated in a mix of the government's own currency and foreign currency, and a striking regularity in the data is that governments tend to issue domestic-currency (DC) debt at *shorter* maturities than foreign-currency (FC) debt. Standard quantitative default models, which treat debt as real and single-currency, are silent on this fact. My dissertation builds the theory and computation needed to explain it.

A four-bond model of portfolio choice (job market paper). My job market paper, “*Short in Local, Long in Foreign: The Currency-Maturity Composition of Sovereign Debt*” [1], develops an infinite-horizon quantitative sovereign default model in which the government chooses each period how much to borrow in short- and long-maturity bonds denominated in either domestic or foreign currency, whether to default, and how much to inflate. The resulting four-bond portfolio (short/long $\times$ DC/FC) lives in a six-dimensional state space that also tracks a persistent endowment process and the real exchange rate, which I estimate jointly for Turkey. Domestic-currency debt is distinctive in two respects: its real repayment value can be eroded by inflation, and—because inflation tends to rise in bad states—it delivers state-contingent relief that foreign-currency debt cannot.

The model organizes the currency-maturity choice around a tension between *hedging* and *inflation incentives*. On the hedging side, because the government inflates when times are bad, DC repayments fall precisely when the marginal utility of consumption is high; this makes DC debt a valuable insurance instrument in normal states. But the same debasement option is a temptation. The longer the maturity of DC debt, the larger the outstanding stock whose real value the government is tempted to inflate away, the more inflation it is drawn to *ex post*, and the more this is priced by lenders and paid for through the costs of inflation. The government resolves this by keeping DC debt short—limiting the inflation temptation—while issuing FC debt, which carries no such temptation because it cannot be inflated, at longer maturities. Solving the calibrated model, I find that the domestic-currency hedge is strongest in normal states, becomes hump-shaped as conditions deteriorate, and evaporates in the worst states, where the optimal inflation policy hits a corner and DC debt can no longer cushion the sovereign.

An analytical mechanism: maturity, duration, and the inflation temptation. The quantitative model’s central intuition rests on a mechanism I characterize analytically in a companion chapter, “*Debt Maturity and the Inflation Temptation*” [2]. Working with a nominal-debt extension of the Arellano–Ramanarayanan (2012) framework, I show that in an infinite-horizon perpetuity setting—holding total borrowing fixed as I vary composition—optimal inflation is *increasing* in both the long-term debt share and in the duration of debt ($1 - \delta$). Longer-duration nominal debt raises the sovereign’s temptation to inflate, so inflation discipline favors short-term debt. This result is sharp, and it overturns the ambiguous prediction of the corresponding three-period model, demonstrating that the perpetuity structure is essential to isolating the mechanism. The analytical result gives the quantitative model a transparent theoretical backbone and, on its own, a clean prediction linking maturity structure to inflation incentives.

Solving multi-instrument models (methods, joint work). Solving sovereign default models with rich debt portfolios is genuinely hard, for a reason that is easy to mistake for economics. In “*Portfolio Indifference or Numerical Artifact? Solving Sovereign Debt Models with Multiple Instruments*” [3] (joint with [co-author]), we document that standard CRRA preferences combined with interpolation-based solution methods produce policy functions that are nearly flat across the portfolio-composition margin—an apparent indifference across meaningfully different portfolios that can be misread as a substantive economic finding. We show that this flatness is a numerical artifact rather than a property of the environment: combining Epstein–Zin preferences, which separate risk aversion from the intertemporal elasticity of substitution, with adaptive sparse grids or Gaussian process regression restores curvature along the relevant margin and recovers a well-identified optimal portfolio. This paper both offers a cautionary methodological result for a fast-growing computational literature and supplies the solution toolkit—high-dimensional Gaussian process regression with Bayesian active-learning point selection—that makes the four-bond model above tractable. Throughout this agenda I calibrate to Turkey, constructing domestic- and foreign-currency sovereign spread curves and estimating the joint output–real-exchange-rate process from Turkish data.

2 Pay Transparency and Firm Wage-Posting Behavior

A distinct empirical agenda examines how labor-market regulation changes firm behavior. In “*Pay Transparency Laws and Wage-Posting Behavior*” [4], I estimate the causal effects of the recent wave of state-level pay-transparency mandates—in Colorado, New York, California, and Washington—on employment and wage outcomes. The analysis draws on Lightcast data covering more than 200 million U.S. online job advertisements from 2018 onward, which lets me observe posting behavior at the vacancy level before and after each law takes effect. I use difference-in-differences designs robust to staggered adoption, principally the Sun–Abraham estimator, and study effects on both the extensive margin (whether firms post wages) and the intensive margin (posted wage levels and within-market dispersion), defining labor markets by economically meaningful occupation–geography cells rather than forcing firm-level comparisons across dissimilar jobs. The employment estimates cluster tightly around zero, with confidence intervals that include zero throughout the pre- and post-treatment periods, and I find the results sensitive to specification in ways that counsel caution. The measured conclusion—that these laws do not appear to generate meaningful employment effects—speaks directly to an active policy debate, and the emphasis on specification robustness and the distinction between statistical and economic significance reflects how I read fragile empirical

results.

3 Future Research

Several directions extend the sovereign-debt agenda. First, I plan to revisit the modeling of inflation costs: the standard specification ties the *level* and *volatility* of inflation to a single curvature parameter, which makes it difficult to match both the average inflation rate and its variability while reproducing observed local-currency debt shares. Specifications that penalize inflation surprises or changes, or that microfound inflation costs through nominal rigidities, could decouple these targets and sharpen the model’s quantitative fit. Second, I am incorporating risk-averse lenders through a reduced-form stochastic discount factor in bond pricing, which raises foreign-currency spreads toward their empirical counterparts without changing the sovereign’s problem; this opens the door to studying how global risk conditions transmit into the currency-maturity composition of debt. Third, I intend to extend the calibration beyond Turkey to a cross-country emerging-market panel, using the model to ask how country characteristics map into optimal debt composition and to conduct welfare and debt-management policy analysis. Finally, I plan to generalize the computational methods from my joint work to broader classes of multi-instrument portfolio-choice models, where spurious indifference is likely a wider and underappreciated hazard.

References

- [1] Raymond He. *Short in Local, Long in Foreign: The Currency-Maturity Composition of Sovereign Debt*. Job Market Paper, 2026.
- [2] Raymond He. *Debt Maturity and the Inflation Temptation*. Working paper, 2026.
- [3] Raymond [He] and Zachary Stangebye. *Portfolio Indifference or Numerical Artifact? Solving Sovereign Debt Models with Multiple Instruments*. Working paper, 2026.
- [4] Raymond He and Suryansh Upmanyu. *Pay Transparency Laws and Wage-Posting Behavior*. Working paper, 2026.