Module 1 — Slide Notes

What is sovereign debt? What is a sovereign debt crisis?

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The big question

What is sovereign debt, and why should you care?

The lecture builds the answer in four steps: framework (A) → what it looks like (B) → what happens when things go wrong (C) → a case study that ties it all together (D). The red thread is the government budget constraint: introduced in A, applied empirically in C, and illustrated historically in D.

Part A — Why Sovereign Debt Matters & Macro Framework

Part A establishes that sovereign debt is the object connecting fiscal policy, monetary policy, and macroeconomic outcomes — and introduces the two key equations (GBC/IBC and debt dynamics) needed to reason about it.

Slide 1 → 2 (Title → Roadmap) The roadmap sets out the four-part structure before the content begins.

Slide 3 (Part A divider)

Slide 4 (Why is sovereign debt interesting?) Five roles: safe asset, bank holdings, saving vehicle, nexus of government policy, history of debacles. Sovereign debt is not just a fiscal accounting item — it is embedded throughout the financial system. Properties (maturity, ownership, currency) shape crisis dynamics, previewing Part B.

Slide 5 (The current landscape) The motivation grounded in current numbers: 93% of GDP, >$100T, interest exceeding defense spending. The IMF figure makes the post-

COVID step-change visual. *Transition*: sovereign debt is big and growing — what is the analytical framework to think about it?

Slide 6 (The GBC) The standard consolidated budget constraint, with every term spelled out. The point is accounting — sources = uses of funds. *Transition*: rearranging reveals what the equation really says.

Slide 7 (The GBC reveals the fiscal–monetary nexus) Rearranging: primary deficit = seigniorage + net bond issuance. The deficit must be financed by printing money or issuing debt — there is no third option. Sovereign debt is the intertemporal link between fiscal and monetary policy. *Transition*: what does this constraint imply over time?

Slide 8 (The Intertemporal Budget Constraint) Forward-iterating the GBC: today's debt must be "backed" by the present value of all future surpluses plus seigniorage. If the fiscal path is fixed, the monetary path is pinned down. *Transition*: who adjusts — the fiscal or the monetary authority?

Slide 9 (Sargent & Wallace: Unpleasant Monetarist Arithmetic) The IBC implies two regimes. Monetary dominance: the CB sets money growth, the fiscal authority adjusts. Fiscal dominance: the fiscal authority sets deficits, the CB must accommodate. The regime determines whether the CB can control inflation. *Transition*: under fiscal dominance, what happens if the CB tries to be tough?

Slide 10 (The "unpleasant" result) The module's punchline: if R > n under fiscal dominance, tighter money today → more inflation tomorrow. The IBC must hold, so delayed monetization is inevitable. Sovereign debt levels and dynamics are the nexus connecting monetary policy, fiscal policy, and macroeconomic outcomes. *Transition*: now the flow version — how does D/Y actually evolve?

Slide 11 (Debt dynamics) The debt dynamics equation derived from the GBC: $\Delta(D/Y) \approx (r-g)\cdot D/Y - s + SFA$. Four channels to reduce D/Y: growth, primary surpluses, inflation, default. This is the workhorse equation for the DSA in Part C. *Transition*: theory in hand — what does sovereign debt actually look like in practice?

Part B — Properties of Sovereign Debt

After the conceptual framework, Part B is a data tour of what sovereign bonds actually look like — mostly figures, with a definitional anchor up front.

Slide 12 (Part B divider)

Slide 13 (Key properties of sovereign bonds) The grid: maturity, yield (and its determinants), ownership, currency denomination, instrument type. Each subsequent figure maps to one of these properties. *Transition*: each in turn.

Slide 14 (Maturity structure and instruments) OECD snapshot. Fixed-rate nominal bonds dominate. *Transition*: and what yields do they carry?

Slide 15 (Yields: the post-pandemic regime shift) Yields have returned to pre-GFC levels. The zero-rate era is over. *Transition*: but higher yields don't immediately mean higher interest payments — why?

Slide 16 (Yields, maturity profile, and interest payments) Because average maturity is long, the pass-through is slow — a "slow burn." *Transition*: who bears this cost?

Slide 17 (Who holds sovereign debt?) R&R historical figure: domestic debt is the majority, and has been for a century. Domestic default = taxing your own citizens. *Transition*: how has the investor base shifted recently?

Slide 18 (Investor base composition) Post-QT: central banks retreating (29% → 19%), households and foreigners stepping in. The three panels show the composition shift. *Transition*: how big is sovereign debt in the global financial system?

Slide 19 (Sovereign debt in the global financial system) Mitchener & Trebesch long-run D/Y: advanced economies at all-time highs, secular rise since the 1970s. *Transition*: who has been absorbing all this debt?

Slide 20 (Central banks as holders of last resort) CB holdings of government debt over 150 years. QE was not unprecedented — wartime CBs did the same. *Transition*: what is the fiscal consequence?

Slide 21 (Interest payments now exceed defense spending) Interest spending is now a bigger line item than defense in the OECD — and rising. *Transition*: is this new?

Part C — Historical Perspective

Part C establishes that default is not an anomaly — it is the historical norm — then uses the debt dynamics equation from Part A to read the data, and closes with the

investor perspective.

Slide 22 (Part C divider)

Slide 23 (Sovereign debt crises through history) The R&R framing: 66 countries, 8 centuries, five default waves. "This time is different" is always wrong. *Transition*: how big are these defaults in economic terms?

Slide 24 (Default waves — GDP-weighted) R&R Fig 2: weighting by world income makes the 1930s–40s wave enormous — large economies defaulting simultaneously. *Transition*: what triggers these crises?

Slide 25 (Capital mobility and banking crises) R&R: striking correlation between capital openness and crisis incidence. Capital inflows fuel booms; sudden stops trigger crises. *Transition*: is this just an emerging market problem?

Slide 26 (Defaults in advanced vs. emerging economies) Mitchener & Trebesch: no — advanced economies also default, especially pre-WWII. The "emerging market" framing is incomplete. *Transition*: when countries get into fiscal trouble, do they default or inflate?

Slide 27 (Inflation and default go hand-in-hand) R&R: the correlation is 0.75 post-WWII. Inflation and default are not substitutes — they are complements. This connects back to Sargent-Wallace: fiscal dominance produces both. *Transition*: has the nature of crises changed over time?

Slide 28 (Evolution of crisis types) Mitchener & Trebesch: pre-WWI, ~80% of crises involved outright default. Post-1995, only ~25% — modern "spread crises" dominate (think Eurozone). This sets up Module 2. *Transition*: apply the debt dynamics equation from Part A to real data.

Slide 29 (Decomposition of debt-to-GDP ratios) The OECD figure decomposes $\Delta(D/Y)$ into contributions from growth, interest, inflation, and primary balance. This is the DSA in action. *Transition*: reading the figure period by period.

Slide 30 (Reading the decomposition) Four episodes: 2015–19 (stable, $r \approx 0$), 2020–21 (COVID spike), 2021–23 (inflation eroded debt), 2024–25 (debt rising again). The longer view: the 2010s were historically anomalous — the lowest $r-g$ in 150 years. *Transition*: the long-run pattern.

Slide 31 (The r−g differential: 150-year perspective) Mitchener & Trebesch: the 2010s were exceptional, and $r-g$ is now reverting. *Transition*: what did low $r-g$ mean for fiscal costs?

Slide 32 (Debt servicing costs: the decoupling) A remarkable recent paradox: D/Y rose to all-time highs while interest/GDP fell to all-time lows. The "free lunch" era is now ending. *Transition*: what does all this mean for investors?

Slide 33 (Risk and return on sovereign bonds) The sovereign bond puzzle: why hold bonds if defaults are so common? Excess return of ~7% real over 200 years (vs 3% for Treasuries). And defaults are partial: median haircut ~44%, full repudiation only 3%. *Transition*: the haircut distribution.

Slide 34 (200 years of creditor losses) Von Luckner et al.: haircuts cluster around 40–50% and have been remarkably stable over 200 years. Despite huge institutional changes (gold standard → floating rates), the terms for creditors have not changed much. *Transition*: how long do these episodes last?

Slide 35 (Serial restructurings and duration) Average default requires 1.6 restructurings. Duration has shortened (6 years → 3 years). *Transition*: the statistics made concrete with a historical case study.

Part D — Historical Vignette: The French Assignat (1790–1796)

Part D is a self-contained historical case tying everything back to Part A. The assignat is an instance of Sargent-Wallace fiscal dominance leading to hyperinflation. The France vs. Britain comparison is the institutional punchline.

Slide 36 (Part D divider)

Slide 37 (France 1789: a fiscal crisis) The scene: debt at 63% of GNP, collapsing revenues, no credit access. The experiment: paper money backed by church lands. Three phases — real bills (1790–92), Terror (1793–94), hyperinflation (1795–96). *Transition*: what the money looked like.

Slide 38 (The Assignat) The 400 livres note from 1792. Initially a debt instrument backed by national lands, it became fiat currency. *Transition*: why was France in such trouble?

Slide 39 (Pre-revolutionary debt burden: France vs. Britain) Sargent-Velde Fig 1: France spent 60–80% of tax revenues on debt service by the 1780s. Britain's ratio was declining despite rising debt — better fiscal institutions. *Transition*: what happened to the assignats once issued?

Slide 40 (Assignat issuance and debt liquidation) Initially, assignats retired old-regime debt ("real bills"). But the gap between total issuance and debt liquidation grew — that gap is deficit financing. The real-bills regime broke down. *Transition*: tax revenues meanwhile.

Slide 41 (Revenue collapse) Sargent-Velde Fig 5: real per capita revenues collapsed during the Revolution and didn't recover for two decades. The fiscal crisis was real, deep, and persistent. *Transition*: revenues collapsed and issuance exploded — what happened to the value of assignats?

Slide 42 (Real assignat balances: three regimes) Sargent-Velde Fig 8: real balances first rise (real-bills regime), then collapse (hyperinflation). The seigniorage Laffer curve in action: printing more eventually yields less in real terms. *Transition*: the underlying cause was the deficit gap.

Slide 43 (The deficit gap) Sargent-Velde Fig 11: spending vs. revenues. The persistent gap had to be financed by money creation — exactly the mechanism from Sargent-Wallace. *Transition*: was this outcome inevitable?

Slide 44 (France vs. Britain: same wars, opposite outcomes) Both countries started with similar debt levels, fought 22 years of war, and issued paper currency. Britain had the Bank of England and introduced income tax — no hyperinflation. France had no credible fiscal institutions — hyperinflation. Textbook Sargent-Wallace: fiscal dominance in action. Sovereign debt dynamics, unchecked by credible fiscal institutions, collapse into monetary chaos. *This closes the loop back to Part A.*

Wrap-up

Slide 45 (Key takeaways) Five takeaways mapping back to the four parts: 1. Sovereign debt = intertemporal link between fiscal and monetary policy [A] 2. Debt dynamics driven by four channels: g, r, s, π [A] 3. Default is partial, serial, and historically recurrent [C] 4. The low-r "free lunch" era may be ending [C] 5. Institutions and credibility matter [D]

Slide 46 (References)