Why Is Fiscal Analysis So Darn Hard?

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Good fiscal policy analysis is intrinsically hard—darn hard

- Some reasons:
  1. Confounding dynamics: operates at both business cycle & longer horizons
  2. Heterogeneity
     - 2.1 economic agents reacting to fiscal actions
     - 2.2 many types of government expenditures
     - 2.3 many kinds of taxes
  3. Confounding interactions: monetary-fiscal rules & regimes—current & expected
  4. Strong endogeneity of fiscal variables
  5. Difficult to nail down agents’ information sets
  6. Supranational policy institutions hold strong opinions about fiscal policy & apply pressure
  7. Inherently political—almost religious views

- These factors conspire to produce
  - some really bad analysis & little scientific scrutiny
What I’ll Do

- Provide some illustrations of these difficulties drawn from:
  - actual fiscal analyses
  - actual fiscal outcomes
  - actual fiscal policy advice

- Use experiences of a range of countries:
  - from what I can tell, most countries are susceptible to most of these difficulties

- Try to point toward...
  - a broad framework for analyzing fiscal policy
  - examples where aspects of the framework have borne fruit

- The talk will drift between positive & normative analyses—I hope that isn’t too distracting
Why are these projections useless?

Notice that debt explodes and *nothing* bad happens to economy—but the adjustments are what is interesting.

Projections violate Stein’s Law: “If something cannot go on forever, it will stop.”

Exponentially growing debt as share of GDP cannot happen

- its value will go to zero as bond yields rise precipitously
- high yields transmit to other interest rates
- can trigger a broader financial crisis & large output losses

A more useful approach

- model alternative resolutions to fiscal stress
- offer menu of policy options and their macro consequences
- expectations of future resolutions feedback to current equilibrium
Fiscal Consolidation: Latvia

- Latvian Real GDP
  - Fell 21% from 2007Q3 to 2009Q3

- Latvian Government Debt-GDP

- Latvian Government Spending Growth
Fiscal Consolidation

- A disservice: economists who trumpet “expansionary consolidations” based on
  - reduced-form empirics & case studies
  - flimsy theory
- Political leaders argue they cannot pre-commit, so must front-load consolidation for “credibility”
  - why is it credible if it devastates the economy?
  - many examples where fiscal policy pre-commits: tax code, safety-net programs, multi-year spending projects
  - in fact, consolidations themselves are about reversing previous commitments
- Huge fiscal contractions—especially in the midst of a recession—signal fiscal dysfunction
  - need to rethink fiscal institutions
- A heresy: place some aggregate fiscal decisions in hands of unelected technocrats
Below–Target Inflation: Sweden & Switzerland

Swedish Inflation

Swiss Inflation

Swedish Government Debt

Swiss Government Debt
Below–Target Inflation

- Policy interest rates: Sweden — .35%, Switzerland — .75%
- Rationale: depreciate currencies & import inflation
- Perspective: only monetary policy matters for inflation
- Both countries have fiscal rules
  - Sweden: net lending target—spending ceiling, balanced local budgets
  - Switzerland: debt brake—one-year ahead ceiling on spending equal to predicted cyclical revenues
- Rules designed to ensure sustainability of fiscal policy
  - in principle, this frees fiscal policy to pursue other objectives—growth, redistribution, stabilization
  - in practice, takes fiscal policy off the table
- Neither country has asked whether the fiscal rules are consistent in the long run with their 2% inflation targets
- Neither country has asked whether declining government debt might be related to low inflation
Confused Priorities: Japan

- GDP Growth
- Consumption Growth
- CPI Inflation
- Core CPI Inflation

Tax Increased from 5% to 8%
Confused Priorities

- Since 1993: inflation averaged 0.21%, GDP growth averaged 0.84%
- Since 1993: government debt has grown from 75% to 230% of GDP
- Abenomics’ three arrows: monetary expansion, fiscal stimulus, structural reform
- Japan raised consumption tax: from 3% to 5% in 1997; from 5% to 8% in April 2014
- Meanwhile, the IMF is applying pressure:
  - “The consumption tax rate increase in April to 8 percent was a major achievement, but is only a first step towards fiscal sustainability.”
  - “The second consumption tax rate increase in 2015 to 10 percent with a uniform rate should be confirmed.”
  - “A post–2015 fiscal consolidation plan is urgently needed. . . . Options. . . include gradually increasing the consumption tax to at least 15 percent. . . .”
Confused Priorities

- Japan postponed scheduled 2015 consumption tax hike to 10% until 2017
- What policy objectives do Japan & the IMF have?
  1. fighting deflation & escaping secular decline?
  2. reducing government debt?
- Abenomics about the first; IMF about the second
- Obsession with Japanese debt misplaced
  - no signs that it is causing problems
  - debt is in ¥ & Japan controls its monetary policy
  - current & future inflation can adjust to align market value of debt with fixed future surpluses
  - could achieve both policy objectives
- But policy advice & decisions have been too confused to anchor fiscal expectations as needed
- Japanese economy remains mired
Sovereign Risk: Spain

- **Spanish Inflation**
- **Euro Area Inflation**
- **Spanish Unemployment** (right scale)
- **Spanish Government Debt-GDP**
- **10-Year Spanish Bond Yield Over German Bund**
Sovereign Risk

- When spreads on Spanish bonds rose, many attributed it to “contagion,” expressing surprise that moderate debt levels might do this.
- How do we make sense of this?
- From 1998 through 2008, Spanish inflation exceeded Euro Area inflation by an average of 1 percentage point.
  - Investors probably became concerned about Spain’s competitiveness.
  - Reduced competitiveness manifests in weak future economic growth.
  - Weak growth prospects reduce revenues & increase expenditures expected in future.
  - This reduces expected path of future primary surpluses.
- At the same time, Spanish debt began to grow.
- Spain moved closer to its fiscal limit distribution, driving up risk premia.
- As Spanish inflation fell & growth rose, spreads declined.
Waffling Policy Advice: The IMF Since 2008

- Oct 2008: called for “timely” and “targeted” stimulus, always with a reminder to “safeguard medium-term consolidation objectives”
- July 2009: “Fiscal policy should continue to support economic activity until economic recovery has taken hold.”
- June 2011: “The pace of fiscal adjustment is uneven among advanced economies, with many making steady progress, others needing to redouble efforts, and some yet to begin.”
- Jan 2012: “Countries with enough fiscal space, including some in the Euro Area, should reconsider the pace of near-term adjustment.”
- Oct 2014: “Hesitant recovery and persistent risks of lowflation and reform fatigue call for fiscal policy that carefully balances support for growth and employment creation with fiscal sustainability.”
- April 2015: “Countries with fiscal space can use it to support growth.... Countries that are more constrained should pursue growth-friendly fiscal rebalancing....”
Waffling Policy Advice

- Less than a week after passage of fiscal stimulus of 5.6% of GDP, Obama pledged to cut deficit in half by end of his first term.
- IMF’s pattern is identical: do fiscal stimulus but promise to reverse it quickly.
- Economic theory tells us this is counterproductive:
  - either you stimulate or you don’t
  - unbacked fiscal expansions have large effects
  - expansions backed by future tax/spending adjustments can be ineffective
- Highlights the poorly understood tension between fiscal stabilization & sustainability.
- Faced with this tradeoff, most policymakers & advisors opt for sustainability.
- Need to reflect on existing social contracts to assess how to allocate costs of consolidation vs. default.
Demographics & Political Economy

Old-Age Dependency Ratios

- Japan
- Western Europe
- China
- USA

Voting Distance Between U.S. Political Parties

- House
- Senate
Political Economy

- Demographic dynamics differ across countries
  - Japan & Western Europe are old
  - China will soon be older than the USA
  - A truism: old people vote
- Democracies do not always operate smoothly
  - in Great Depression, parties pulled together
  - since 1980s, U.S. political parties have been moving increasingly apart
  - immigration causing political tensions everywhere
- Political economy needs to be more fully integrated into our analyses
  - impossible to understand Euro Area monetary-fiscal policies without political economy
  - “optimal policy” prescriptions that ignore political reality are of limited help
  - a more promising approach optimizes subject to economic & political constraints
A Research Agenda

I will describe—but not fully specify—elements that I think are essential for fiscal analysis.

My criteria are:

1. rigorous analytics
2. full integration of monetary & fiscal policies (maybe also financial policies)
3. to bring the sources of disparate confounding dynamics that I’ve highlighted into policy analysis

Because I’m fantasizing here, I’m not constrained by tractability.
Fiscal Analysis: Essential Ingredients

1. General equilibrium
2. Explicit modeling of fiscal limit
3. Heterogeneity
4. Demographic changes—not fully anticipated
5. Model roles that government debt plays
6. Multiple fiscal instruments: spending & taxes
7. Full integration with monetary policy
8. Model political economy dynamics
9. (Integration with financial stability)
Alternative to IMF’s Fiscal Space

- “Fiscal space” is the distance between current debt and the debt limit
- IMF’s analysis is reduced form
  - no explicit private optimizing behavior
  - no modeling of expectations formation
  - thinks about government debt backwards
  - backward view takes past fiscal behavior as given & expected to continue indefinitely
  - not useful to assess proposed fiscal reforms
  - cannot connect sovereign-debt risk premia—which are intrinsically forward looking—to economic fundamentals
- Develop alternative concept of a fiscal limit
Huixin Bi’s Fiscal Limit

Fiscal limit answers: “given the economic environment, what is the distribution of government debt that can be supported?”

- it is uncertain: a probability distribution
- it is forward-looking—about expected policies & their credibility
- it depends on
  1. private behavior
  2. policy behavior
  3. fundamental shocks to the economy
- Fiscal limit distribution emerges from the distribution of expected present value of maximum primary surpluses
Illustrative Fiscal Limit

- Bi’s setup
  - use formal non-monetary economic model
  - peak of Laffer curve for labor taxes
  - transfers regime varies between stable & growing
  - fiscal reform: move from growing to stable transfers
  - connect model’s parameters & policy specification to data
  - plenty of latitude to bring political economy to bear

- Use framework to ask:
  - How do changes in economic conditions & policies shift fiscal limit and alter risk premia?
Shocks & Policies

**Fiscal limit CDF computed using peak of labor Laffer curve, constant government purchases, current transfers regime, no seigniorage revenues. Vertical line at 170%.

- **Low (High) Productivity Can Reduce (Raise) Country’s Sustainable Debt Level**

- **Unstable (Stable) Growth in Transfers Can Reduce (Raise) Country’s Sustainable Debt Level**
Empirical Work & Fiscal Limits

- It is popular to claim that European risk premia are not rational

- DeGrauwe-Ji claim premia are “disconnected from fundamentals”

- Regress premia against debt-GDP, output growth, etc.
  - poor fit taken as evidence that fundamentals not driving asset prices

- This analysis is missing a critical state variable: the fiscal limit
  - it’s debt-GDP relative to the fiscal limit that matters
  - risk premia may be consistent with fundamentals, but need to get the fundamentals right
A Nice Application of the Fiscal Limit

- Council for Budget Responsibility study by Zuzana Múčka
- Modifies Bi’s work:
  - growth in transfers corresponds to aging in Slovakia
  - transfers & spending respond to business cycle
  - transfers’ switching process reflects political cycle in Slovakia
  - TFP drawn from Slovakia’s fat-tailed distribution
- Concludes: “safe” levels of debt may be unsafe for Slovakia in face of bad shocks
- Nicely illustrates that one-size-fits-all rules—like those in the Maastricht Treaty—end up fitting many countries poorly
Nominal Debt Changes Things

- In Euro Area, government debt is effectively *real*
  - backed by currency that issuing country doesn’t control
  - if don’t have euros, default is only option
- When government issues bonds denominated in the currency it controls
  - outright default is not most likely outcome
  - need to bring monetary policy into the analysis
- Debt denominated in home currency applies to most countries outside the Euro Area
  - Japan, U.K., U.S., and so forth
  - nominal debt is a claim to $, £, ¥ in future
- A nominal debt expansion *unbacked* by future $, £, ¥...
  - that is, primary surpluses
  - constitutes an increase in wealth
  - raises demand for goods
  - raises current & future price levels
  - equilibrates value of debt to present value of surpluses
Bringing in Monetary Policy

▶ Add monetary policy & nominal rigidities to fiscal limit setup
▶ In many countries now, short-term real interest rates negative
  ▶ makes present value surpluses large, pushes out fiscal limit
▶ As interest rates “normalize”...
  ▶ with fixed surpluses, fiscal limit shifts in
  ▶ Euro Area countries have no choice but to raise surpluses (or default on debt)
  ▶ outside Euro Area, two options
    1. raise surpluses and reduce aggregate demand
    2. refuse to raise surpluses; increase inflation instead
▶ these issues are more pressing at current—and prospective—high levels of debt
▶ Few policymakers are thinking about this tradeoff
Modeling Government Debt

- We tend to punt on this: debt’s sole function is to permit tax smoothing
- In the conventional view, maturity structure irrelevant
  - if debt at different maturities perfectly substitutes...
  - then what were central banks doing with LSAPs?
- Financial crisis created a “flight to quality”
  - massive increase in demand for short-term U.S. treasuries
  - nonpecuniary service flows: liquidity & collateral
  - Fed’s swap of short for long debt increased liquidity & shifted risk onto Fed’s balance sheet
- Puts debt in consumption Euler equation
  - breaks down Ricardian equivalence
  - alters model’s implications for monetary & fiscal policy
  - impacts on fiscal limit distribution?
- Research on this in macro models: Eiben, Williamson, Yun
Embracing Heterogeneity

- Demographics are central to fiscal analysis
- Demographic changes—birth rates, longevity, dependency ratios—have implications for
  - saving rates & consumption patterns
  - labor market participation rates
  - relative prices
  - real interest rates
  - government revenues & expenditures
- Presents several modeling challenges
  - brings in heterogeneity over life cycle
  - need to track several distributions within model
  - slowly evolving, but not deterministic
  - “news” arrives periodically with new government surveys
  - Japanese case illustrates this
- Research by Carvalho-Ferrero, Kara-von Thadden, Katagiri-Konishi-Ueda
Examples of Demographic Effects

- Economies subject to changes in fertility rates, retirement ages & life expectancy imply
  1. marginal propensities to consume vary across age cohorts, so aggregate consumption functions exhibit drift
  2. consumption bundles vary over life cycle, so relative prices change persistently
  3. as population ages, labor supply declines, reducing marginal product of capital
  4. an aging population reduces aggregate saving & willingness to absorb government debt
  5. policy & nonpolicy shocks asymmetrically affect age cohorts to produce redistributive effects
  6. an aging population may lead to a negative trend in long-term real interest rates

- Each of these poses challenges to both analysts & policymakers
Taking Fiscal Instruments Seriously

- Canonical model: $G$ thrown into ocean; transfers lump sum; $T$ lump sum or a single proportional tax rate
  - these modeling assumptions strongly condition fiscal effects
- Alternative—more plausible—assumptions
  - $G$ comprised of different components: types of workers, types of goods, types of services
  - those components may complement or substitute for components of private consumption
  - infrastructure spending may raise marginal product of capital/labor
  - many kinds of distorting taxes with graduated scales
  - tax incidence & spending impacts affect age cohorts differently
- Accounting for these complications would importantly affect estimates & interpretations of fiscal limits
In the environment I’ve described, it’s not clear how to do *optimal policy*

- many types of agents
- relative sizes of age cohorts evolve over time
- societal preferences change over time

Before turning to this, let’s consider what policy authorities say their objectives are
In addition to financial stability…

**Federal Reserve:** …*maximum employment, stable prices, and moderate long-term interest rates.*

**Bank of England:** …*price stability—low inflation—and, subject to that, support the Government’s economic objectives.*

**European Central Bank:** *Without prejudice to the objective of price stability, to support the general economic policies of the Union.*

**Reserve Bank of New Zealand:** …*maintain a stable general level of prices.*

Close to model formulations of optimal monetary policy
Fiscal Policy Objectives

In addition to fiscal sustainability...

**United States:** Maintain a strong economy and create economic and job opportunities by promoting the conditions that enable economic growth and stability at home and abroad, strengthen national security by combating threats and protecting the integrity of the financial system.

**United Kingdom:** maintaining a stable macroeconomic framework with low inflation; improving the quality and cost effectiveness of public services; increasing the productivity of the economy and expanding economic and employment opportunities for all, through productive investment, competition, innovation, enterprise, better regulation and increased employability; promoting a fair and efficient tax and benefit system with incentives to work, save and invest; maintaining an effective accounting and budgetary framework and promoting high standards of regularity, propriety and accountability; securing an efficient market in financial services and banking with fair and effective supervision; arranging for cost effective management of the government’s debt and foreign currency reserves and the supply of notes and coins; promoting international financial stability and the UK’s economic interests and ideas through international cooperation as a way of increasing global prosperity including seeking to protect the most vulnerable groups.
Fiscal Policy Objectives

- In addition to fiscal sustainability...

  **Sweden:**  *to create as much welfare as possible by promoting high and sustainable economic growth and employment, welfare that extends to everyone, and stable resource utilisation.*

  **New Zealand:** *To promote fiscal sustainability, economic stability, and fiscal structure (efficiency and equity).*

  **Various Governments:** *improve living standards; promote a sound macroeconomic environment; reduce labor market exclusions; encourage global economic growth; predict and prevent economic and financial crises; deliver conditions for business success; combat climate change; reduce poverty at home and abroad; equalize income distribution; build infrastructure; reduce smoking; minimize deadweight losses*

- Unlike monetary policy, fiscal objectives vary over time with government in power
- Many objectives $\iff$ no objectives
- Not obviously connected to optimal fiscal policy exercises
Rethinking Optimal Policy

- A large fraction of optimal policy papers solve an uninteresting problem:
  - posit a representative-agent model
  - minimize fluctuations around an optimal steady state
  - subject to consumer optimization problems & budget constraints
- Lucas taught us that the welfare gains from this are tiny
- Many central banks continue to think that this is the problem they are solving
- As we’ve seen, fiscal authorities are solving a different problem
  - closer to Okun’s “Equality and Efficiency: The Big Tradeoff”
- Okun is all about the political economy of optimal policy
Rethinking Optimal Policy

- Aging populations affect societal preferences
- Optimal policy exercises that abstract from demographics will be sterile
  - demographics impose important constraints on the optimum problem
  - tradeoff between supporting aged & investing in young
- Demographics force us to grapple with modeling an economy’s social contract
  - what promises has society made to its people?
  - what are the consequences of reneging on those promises?
  - when the economic pie grows, how should it be divided?
  - when the pie shrinks, how should the pain be shared?
  - if sovereign default occurs, who bears costs?
  - how do international considerations tradeoff against social contract?
Wrapping Up

- This is a daunting research agenda
- Today, “sustainability” drives most fiscal frameworks
  - even in countries like Germany that are far from their fiscal limits
- But sustainability is mechanically applied
  - witness Maastricht fiscal criteria
- No one model or framework can apply across disparate countries
- We can do better
  - in coming decades, fiscal stress will be status quo
- Fiscal analysis is hard—darn hard
  - better analysis is possible & needed
  - better understanding might lead to changes in structure of policy institutions


4. Latvia real GDP at market prices, million euro, chain-linked volumes, reference year 2000 (at 2000 exchange rates), seasonally adjusted. Source: Central Statistical Bureau of Latvia. Latvia final consumption expenditure of general government, million euro, chain-linked volumes, reference year 2000 (at 2000 exchange rates), percentage change compared to same period in previous year; Latvia consolidated general government gross face value of debt as percentage of GDP, Maastricht Treaty definition, general government sector comprises the subsectors central government, state government, local government and social security funds. Source: Eurostat.


7. Swedish consumer price inflation, percentage change over 12 months. Source: Statistics Sweden. Swedish central government debt as percentage of GDP. Source: Swedish Nation Debt Office. Swiss consumer prices, total, percentage change from corresponding month of previous year; Swiss gross public sector debt as a percentage of GDP. Source: Swiss National Bank.


11. The report on Obama’s promise to reduce deficits appears in Macon Phillips (2009), “Owning Up to What We Owe,” https://www.whitehouse.gov/blog/2009/02/23/owning-what-we-owe, February 23, which is six days after the American Recovery and Reinvestment Act of 2009 was signed into law.


19. Monetary and fiscal policy objectives taken from the institutions’ respective web pages.