

Fiscal Sustainability: What Makes the Euro Area Different?

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What's Up With Government Debt?

- ▶ It's hard to be conscious during the past 8 years and not notice that government debt is much in the news
 - ▶ The U.S. & U.K. engaging in fiscal austerity now (but the serious problems loom in future)
 - ▶ Everyone claims Japanese fiscal policy is unsustainable now
 - ▶ But the Eurozone is the poster child
 - ▶ severe austerity even in face of recession
 - ▶ sovereign debt crisis triggered a second recession
- ▶ To get beyond the panic & politics, we need some understanding of government debt
 - ▶ what it does
 - ▶ how it gets valued
 - ▶ what the consequences of rapid debt growth might be

Government Debt: Some Background

- ▶ Some roles that debt plays
 1. It is (usually) a safe store of value
 - ▶ agents put saving into bonds to smooth their consumption in the face of volatile income
 2. It permits government to smooth taxes & spending
 - ▶ avoids introducing an additional source of instability
 - ▶ serves as a shock absorber
 3. It provides liquidity/collateral
 - ▶ can convert treasuries to cash at low cost
 - ▶ important source of backing for repurchase agreements & other credit transactions
 4. It is a form of foreign reserves
 - ▶ use treasuries to acquire foreign currency for exchange rate interventions (South Korea)
 - ▶ use treasuries to channel private saving (China)
- ▶ Roles 3 & 4 typically ignored in our models

Two Kinds of Government Debt

- ▶ Distinction between real & nominal debt is critical
- 1. Real debt: denominated in “goods”
 - ▶ arises whenever debt is in units whose quantity the government *cannot* control
 - ▶ indexed to inflation; foreign currency; gold; aubergines; asparagus
 - ▶ U.K. inflation-linked gilts about 25%(?) of gilt portfolio
 - ▶ indexed debt today is much like debt under the Gold Standard, where governments did not control the price level
 - ▶ a claim to goods in the future
 - ▶ government must acquire those goods to honor obligations
 - ▶ can acquire goods through taxes or money creation (seigniorage)
 - ▶ if it cannot acquire the goods, default only option

Two Kinds of Government Debt

2. Nominal debt: denominated in home currency (“pounds”)
 - ▶ arises whenever debt is in units whose supply the government *can* control
 - ▶ vast majority of government debt is of this kind
 - ▶ a claim to “pounds” in the future
 - ▶ government need not be able to acquire goods
 - ▶ it can print new “pounds” to reduce market value of debt (“pounds” can be new debt instruments—not necessarily currency)
 - ▶ default less likely
- ▶ This distinction carries important policy implications

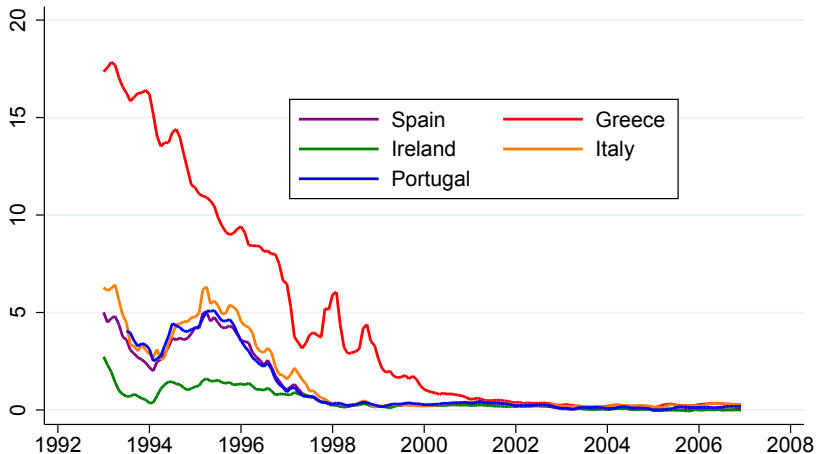
Two Kinds of Government Debt

- ▶ E.A. countries don't control their monetary policy
 - ▶ to each country, debt in euros is *real debt*
- ▶ Default on real debt more likely: euro rates embed default premium

| | Debt/GDP | 10-year yield |
|---------|----------|---------------|
| Real | | |
| Greece | 159 | 22.5 |
| Italy | 123 | 5.5 |
| Spain | 85 | 5.9 |
| Germany | 80 | 1.5 |
| Nominal | | |
| Japan | 237 | 0.8 |
| U.K. | 86 | 1.9 |
| U.S. | 102 | 1.8 |

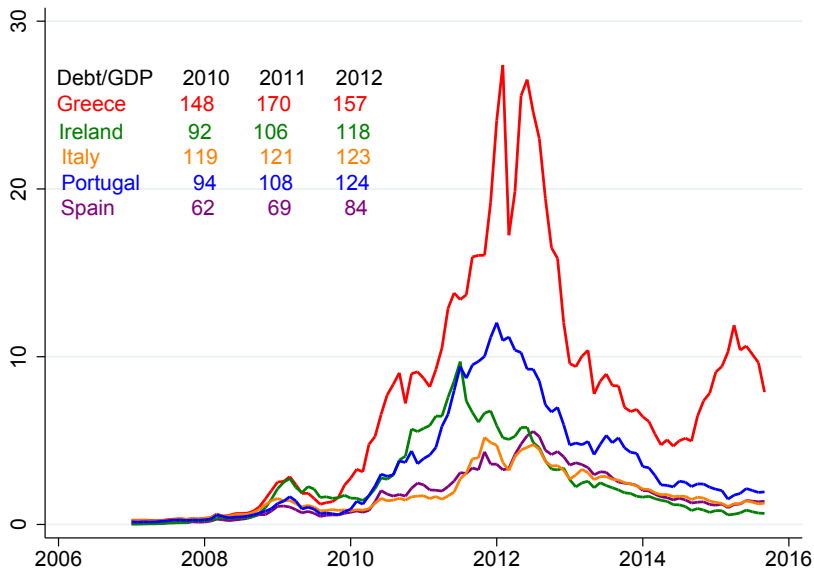
General government debt as percentage of GDP & 10-year government bond yield in 2012. Sources: ECB, Eurostat, IMF

European Yield Spreads: Great Convergence



10-year government bond yields over German bund. Source: European Central Bank

European Yield Spreads: Great Divergence



10-year government bond yields over German bund. Source: European Central Bank

Real Debt Valuation

- ▶ Government debt is like any asset
 - ▶ value depends on expected “cash flows”
 - ▶ future cash flows discounted back to present
- ▶ Primary surpluses are the cash flows
 - ▶ interest payments do not pay principal, so cannot support the value of debt
 - ▶ revenues in excess of non-interest spending are the “goods” that back debt

$$b_{t-1} = E_t \sum_{k=0}^{\infty} \frac{1}{r_{t,t+k}} S_{t+k}$$

b_{t-1} : real (indexed) debt held by private sector at t

$r_{t,t+k}$: real discount rate between periods t and $t+k$

S_{t+k} : real primary surplus in period $t+k$

E_t : expectations formed at time t

Real Debt Valuation: Some Observations

$$b_{t-1} = E_t \sum_{k=0}^{\infty} \frac{1}{r_{t,t+k}} S_{t+k}$$

1. Debt valuation is *forward looking*
2. Higher debt *requires* higher discounted surpluses
3. Higher surpluses—more backing—can support more real claims to goods & higher debt
4. Higher discount factors—lower real discount rates—permit given surpluses to support higher real claims
5. No nominal variables—like the price level—enter the valuation

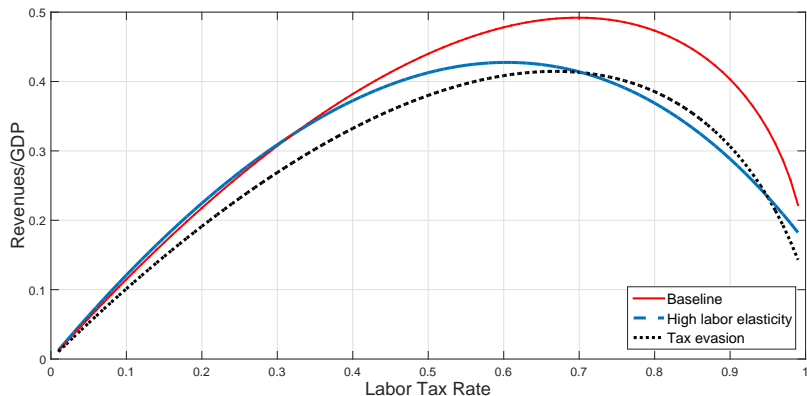
Real Debt & Default: Case of the Euro Area

- ▶ Every country faces a *fiscal limit*
 - ▶ point at which—for economic or political reasons—country can no longer raise surpluses to finance debt
 - ▶ to quantify fiscal limit need country-specific details
 - ▶ elasticities of private behavior
 - ▶ citizen's tolerance for taxes & demand for public goods
 - ▶ evolution of demographics
 - ▶ economy's growth potential
 - ▶ elected officials' discount rates
 - ▶ expected future policy choices
- ▶ As a country's debt approaches its fiscal limit, probability of default rises
- ▶ I'll illustrate how the fiscal limit can help us think about sovereign risk

A Simple Illustration of the Fiscal Limit

- ▶ Due to Huixin Bi
- ▶ A single type of household/worker
 - ▶ buys consumption goods & bonds
 - ▶ supplies labor which is transformed into goods using a technology with random productivity
 - ▶ seeks to smooth consumption
- ▶ The government
 - ▶ levies labor income taxes & purchases goods
 - ▶ provides transfers according to 2 transfer regimes
 - ▶ “stationary:” transfers/GDP does not grow
 - ▶ “explosive:” transfers/GDP grow (reflects aging population)
- ▶ Growing transfers are financed by new debt & higher taxes
- ▶ Maximum revenues occur at peak of Laffer curve

Model-Based Laffer Curves



Position of Laffer curve depends on private behavior

Author's calculations

Modeling the Fiscal Limit

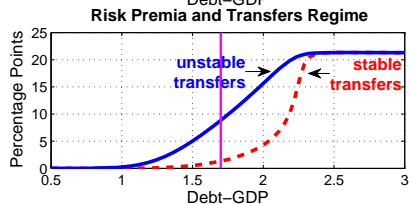
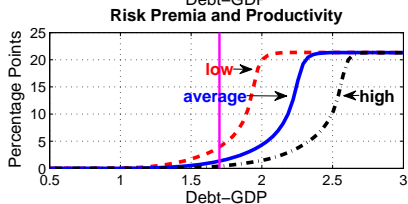
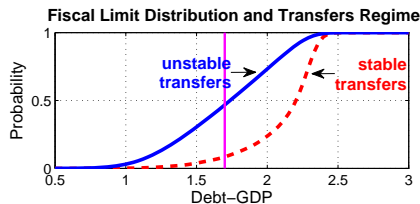
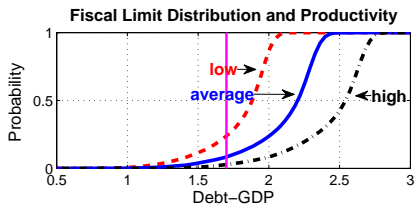
- ▶ Define the fiscal limit as present value of *maximum primary surpluses*
- ▶ Maximum surpluses arise when
 - ▶ revenues at their maximum level, given shocks
 - ▶ expenditures at their minimum level, given shocks
- ▶ Of course, other definitions are possible
- ▶ Fiscal limit can embody political economy dynamics
- ▶ Use the fiscal limit model to price risk
- ▶ Illustration that follows calibrates model to Greek data

Features of the Fiscal Limit

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

- ▶ uncertain: a probability distribution
- ▶ forward-looking—about expected policies & their credibility
- ▶ 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

Shocks & Policies



Fiscal limit CDF computed using peak of labor Laffer curve, constant government purchases, current transfers regime. Vertical line at 170%. Source: Bi & Leeper (2012)

- ▶ Low (High) Productivity Can Reduce (Raise) Country's Sustainable Debt Level
- ▶ Unstable (Stable) Growth in Transfers Can Reduce (Raise) Country's Sustainable Debt Level

Uses of the Fiscal Limit

- ▶ Focuses attention on distance between current debt & fiscal limit
 - ▶ current debt alone not a sufficient statistic
- ▶ To gauge a “safe” level of debt
 - ▶ Slovakia’s Council for Budget Responsibility decided on 40% debt-GDP, rather than Maastricht’s 60%
- ▶ To evaluate sovereign risk consequences of reforms
 - ▶ if people believe pension reforms permanent or government will crack down on tax evasion, limit shifts out to make debt less risky
- ▶ IMF & ECB now applying fiscal limit concept
 - ▶ to be used as a basis for policy advice

What If Debt is Nominal?

- ▶ Analysis of sovereign default treated debt as *real*

$$b_{t-1} = E_t \sum_{k=0}^{\infty} \frac{1}{r_{t,t+k}} S_{t+k}$$

- ▶ in period t , b_{t-1} is given
- ▶ all adjustments must occur through $E_t PV(S)$
- ▶ Nominal debt brings the price level, P_t , into the picture

$$\frac{Q_t B_{t-1}}{P_t} = E_t \sum_{k=0}^{\infty} \frac{1}{r_{t,t+k}} S_{t+k}$$

- ▶ Q_t is price of bond portfolio
- ▶ in period t , B_{t-1} is given
- ▶ **but P_t & Q_t are not:** can change with news about current & future surpluses
- ▶ P_t converts the pound-denominated debt into units of goods, as in $E_t PV(S)$

What If Debt is Nominal?

$$\frac{Q_t B_{t-1}}{P_t} = E_t \sum_{k=0}^{\infty} \frac{1}{r_{t,t+k}} S_{t+k}$$

- ▶ Suppose the economy is near its fiscal limit
- ▶ This means the value of debt is reaching its maximum
- ▶ If nominal debt continues to grow, but $E_t PV(S)$ is unchanged. . .
 - ▶ the pound value of debt rises
 - ▶ but the *real* value is fixed by $E_t PV(S)$
 - ▶ price level must rise or bond price must fall to keep real value of debt consistent with future surpluses
- ▶ Raises the possibility that P_t might be determined by fiscal requirements
 - ▶ this is heresy
 - ▶ especially for monetarists & new Keynesians

What If Debt is Nominal?

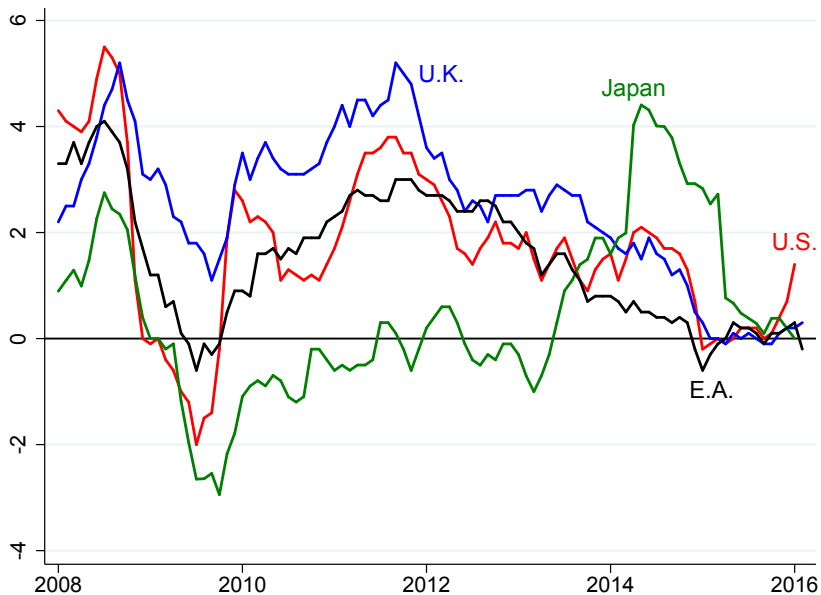
$$\frac{Q_t B_{t-1}}{P_t} = E_t \sum_{k=0}^{\infty} \frac{1}{r_{t,t+k}} S_{t+k}$$

- ▶ Suppose government cuts taxes next year & promises never to raise them
 - ▶ households feel wealthier & seek to raise consumption
 - ▶ they reduce current bond holdings & increase demand for goods
 - ▶ higher demand raises pound-price of goods
 - ▶ P_t rises/ Q_t falls until equilibrium re-established
 - ▶ split between current & future inflation determined by monetary policy
- ▶ Similar analysis applies to current tax cut financed by nominal bond sales
- ▶ These are **unbacked fiscal expansions**

A Fiscal Straightjacket

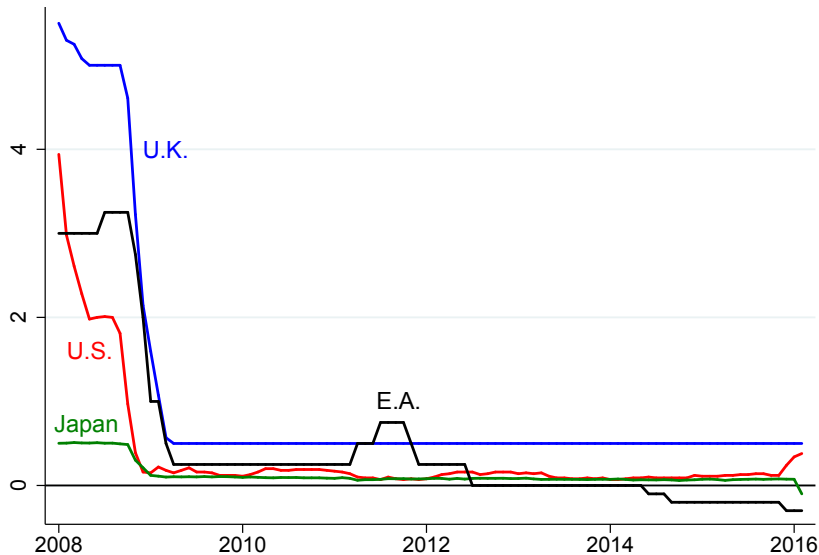
- ▶ In the Euro Area, when a government issues debt, it has no alternative but to raise surpluses or default
 - ▶ revaluation of debt through price-level adjustments is impossible
- ▶ This goes a long way toward explaining the prevalence of sovereign debt crisis in. . .
 - ▶ Europe today
 - ▶ countries that issue foreign-currency linked debt
 - ▶ countries on metallic standards
- ▶ One option available to real-debt issuers who control their monetary policy (not Eurozone members)
 - ▶ run the printing presses to generate seigniorage revenues
 - ▶ but seigniorage raises goods, so it is another form of “real backing” for debt

Major Economies Face Low Inflation



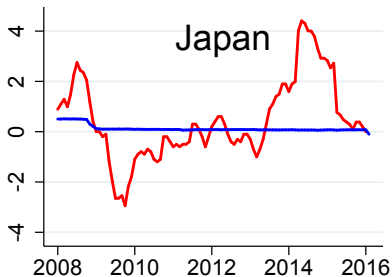
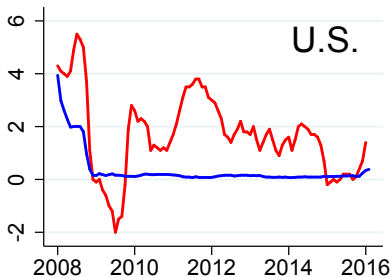
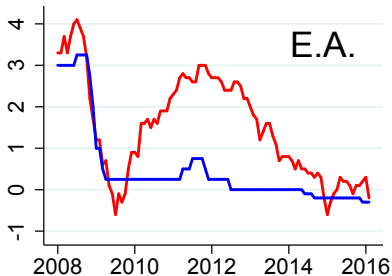
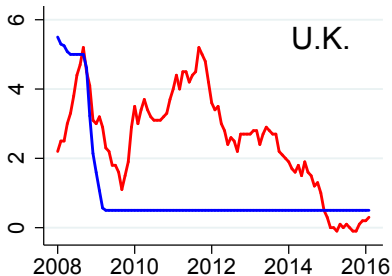
Inflation Rates (annualized). Source: BLS, Eurostat, Japanese Statistics Bureau

What Major Economies Are Doing



Policy Interest Rates (annualized). Source: Various Central Banks

Inflation & Policy Rates in Major Economies



Interest-rate policies not responding strongly to inflation

What Major Economies *Could* Do

- ▶ Continue along same path: do more of what hasn't worked
 - ▶ a mix of super-low interest rates & fiscal austerity
- ▶ *Or* elevate fiscal policy to status of monetary policy
 - ▶ take fiscal actions to address below-target inflation & weak growth
 - ▶ announce an **unbacked fiscal expansion** coupled with pegged interest rates
- ▶ With recent history of fiscal expansion followed closely by austerity. . .
 - ▶ it will be hard to convince people you're really going to do something new
 - ▶ if they aren't convinced, could get higher debt with no economic stimulus

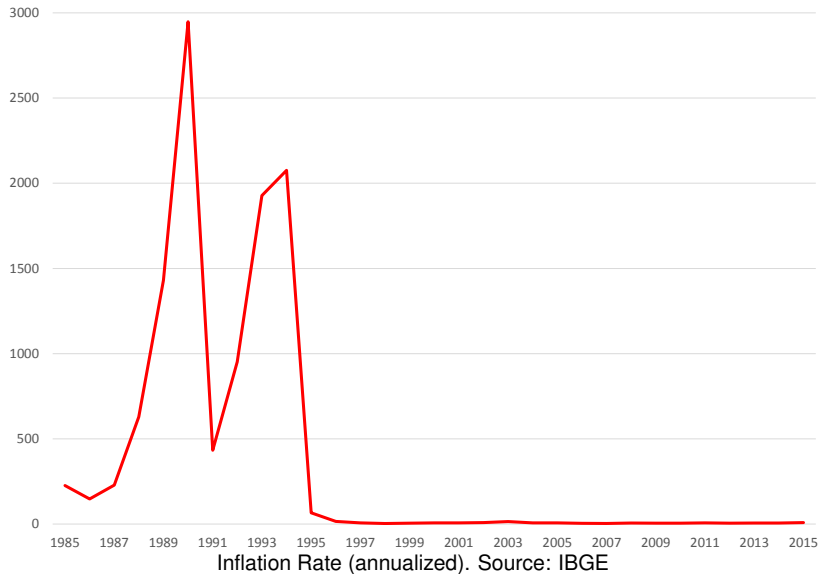
What Major Economies *Could* Do

- ▶ Employ fiscal forward guidance
- ▶ Announce a plan to run primary deficits until inflation picks up
 - ▶ if government stuck to this plan, people will realize their nominal assets will lose value
 - ▶ this will induce them to spend those assets, increasing aggregate demand
 - ▶ if prices do not immediately adjust fully, real activity will rise
 - ▶ inflation will gradually increase
- ▶ Critical element: growth in *nominal* debt need not threaten sustainability
 - ▶ its real value will adjust to expected surpluses
 - ▶ both the public & the policymakers need to understand this

What Major Economies *Could* Do

- ▶ I can already hear the cries of “hyperinflation”
- ▶ But there are only two ways that can arise
 1. Central banks print money to buy debt
 2. Central banks try to fight the inflation with higher interest rates
- ▶ Given history, I believe we can trust that (1) won't happen
- ▶ Given history, we cannot be assured (2) won't happen
 - ▶ Brazil did this in the late '80s/early '90s
 - ▶ Brazil now seems headed for just such an outcome

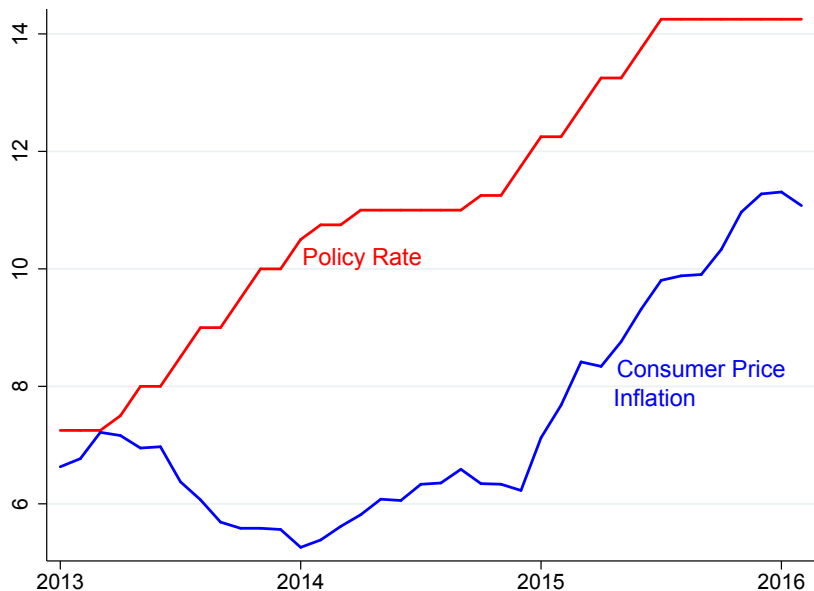
Brazil Fought Inflation With Higher Interest Rates



Brazil Now

- ▶ Brazil is pursuing doubly-dominant policies
- ▶ Fiscal policy
 - ▶ 1988 Constitution indexes government benefits to inflation
 - ▶ 90% of spending cannot be touched by legislature
 - ▶ tax increases seem to be politically infeasible
 - ▶ primary deficit growing with no prospect of reversal
- ▶ Monetary policy
 - ▶ failure to understand that fiscal dominance wrests control of inflation from central bank
 - ▶ higher interest rates mean higher debt service, which raise wealth, aggregate demand, & inflation
 - ▶ aggressive interest-rate policy amplifies & prolongs fiscal inflation
- ▶ December 2015: primary deficit = 1.88%, gross deficit = 10.34%—lots of debt service

Brazil Now



Policy Rate & Inflation Rate (annualized). Source: IBGE & Banco Central do Brasil

Making Unbacked Fiscal Expansion Work

- ▶ Bad outcomes—excessive growth in value of debt and/or too much inflation—stem from monetary policy reacting inappropriately
 - ▶ central bank can neither aggressively fight the fiscal inflation nor finance the debt by creating seigniorage
- ▶ All monetary policy need do is to continue what it has been doing
 - ▶ relinquish inflation control to fiscal policy (at least temporarily)
- ▶ And fiscal authorities cannot backtrack when they see *nominal* debt growing
 - ▶ this is exactly what needs to happen to raise real activity & inflation

Going Beyond the Clichés

- ▶ Fiscal policy discourse is peppered with clichés, misinformation, & mixed messages
1. IMF: Fiscal actions should be “timely, targeted, and temporary.”
 2. Trichet: “It is an error to think that fiscal austerity is a threat to growth and job creation.”
 3. Obama: “I will cut the deficit in half by the end of my first term.”
 4. Dombrovskis: Fiscal policy cannot commit to future actions.
 5. IMF: “Countries. . . should pursue growth-friendly fiscal rebalancing.”
- ▶ These amount to *choosing* to wear a fiscal straightjacket

Keynes Would Approve

- ▶ My proposal simply integrates Keynes's reasoning with intertemporal equilibrium
- ▶ An **unbacked fiscal expansions** is pure Keynesian logic:
 - ▶ you can stimulate aggregate demand by encouraging people to shed nominal assets in favor of goods
- ▶ Today we have the “divine coincidence” of seeking both higher inflation & debt stabilization
- ▶ Just as countries were free to leave the gold standard in Keynes's day. . .
 - ▶ they are free today to exploit the latitude that nominal debt offers
 - ▶ to paraphrase JMK: “we must not allow policymakers to put us back in the real debt cage where we have been pining our hearts out all these years.”