

FISCAL RULES VS. MARKET DISCIPLINE

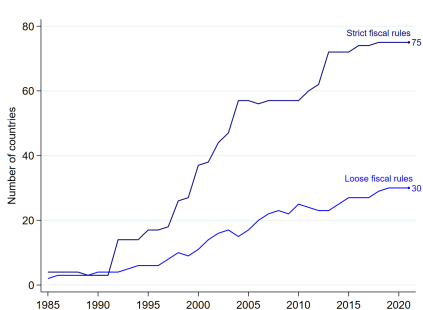
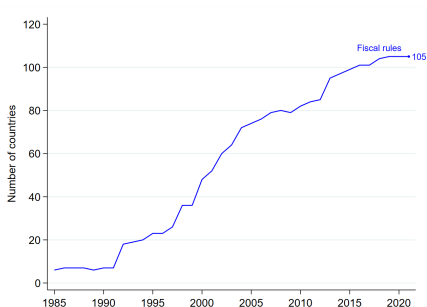
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Fiscal Rules Have Proliferated



Overview

Theory of FISCAL RULES vs. MARKET DISCIPLINE or reputation

CORE IDEA: governments attempt to build a reputation for fiscal responsibility. A rule (particularly external) may make it more difficult.

FRAMEWORK: Signalling model of fiscal discipline

MAIN TAKE-AWAY: Fiscal rules may “jam” signals, making it more difficult for “good” governments to signal their fiscal rectitude.

Inspirations: Ken Rogoff's Contributions

1. Rogoff (1985): Optimal commitment to an inflation target.
2. Rogoff & Siebert (1988), Rogoff (1990): Political budget cycles.
3. Bulow & Rogoff, 1988, 1989 (x2), 1990, 1991; Bulow, Rogoff & Dornbusch 1988, Reinhart & Rogoff, 2009: Sovereign default
4. Reinhart, Rogoff & Savastano (2003): Debt intolerance

Literature on Fiscal Rules

Typical concern : present-biased government.

Focus on flexibility of rules.

- Tight rules ensure fiscal discipline.
- Flexible rules allow for more countercyclical policies, but may be ineffective as governments exploit the flexibility.
- Halac and Yared (2014,2018,2020,2022); DAVIS & Kirpalani (2020); Blanchard, Leandro & Zettelmeyer (2021); Piguillem & Riboni (2021); Barnichon and Mesters (2022)

Large policy literature, particularly for the EU.

Setup

Government

TWO TYPES (θ) OF GOVERNMENT: **P**rudent and **E**xtravagant

LIVE FOR TWO PERIODS $t = 1, 2$

INCOME (revenues) in period t : y_t

Wish to ALLOCATE PUBLIC GOODS g_t according to objective

$$u(g_1^\theta) + \beta^\theta u(g_2^\theta)$$

	Prudent		Extravagant
Discount Factor	$\beta^{\text{Citizens}} = \beta^P$	$>$	β^E
Frequency	π		$1 - \pi$
Prob. default in period 2	δ^P	$<$	δ^E

Borrowing and Markets

Government can BORROW from (issue bonds in) markets b at price q

Assume a minimal amount of public spending $g_1 > \underline{g}$

implying minimal borrowing of $\underline{b}(y_1, q) = \frac{g - y_1}{q}$

RISK-NEUTRAL LENDER has gross funding cost R

BOND PRICES

	Prudent		Extravagant
Full info interest rate	$q^P = \frac{1 - \delta^P}{R}$	$<$	$q^E = \frac{1 - \delta^E}{R}$
Pooling interest rate	$q(\pi) = \frac{1 - \pi \delta^P - (1 - \pi) \delta^E}{R}$		

Full Information

No Fiscal Rule

TYPES OBSERVABLE \rightarrow Full info bond prices

$$\max_{b^\theta} U^\theta (b^\theta, q^\theta) = \max_{b^\theta} \left\{ u(y_1 + q^\theta b^\theta) + \beta^\theta \left[\begin{array}{l} (1 - \delta^\theta)u(y_2 - b^\theta) \\ + \delta^\theta u(y_2) \end{array} \right] \right\}$$

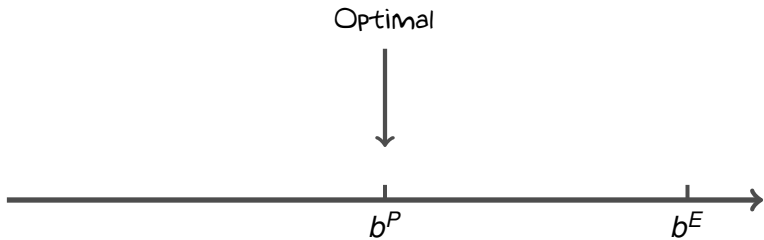
NOTATION: $b^\theta(\mu, \text{Inf, Rule})$ is borrowing

- of policymaker with discount factor β^θ
- when the market assigns probability μ that it is prudent
- under informational structure $inf \in \{\text{FI, AI}\}$
- with fiscal rule $rule \in \{\text{DL, NR}\}$

Assume β s, y_t s such that $b > 0$ in all cases. Then:

$$b^E(0, \text{FI, NR}) > b^P(1, \text{FI, NR}) > 0$$

Full Information, No Fiscal Rule



Fiscal Rule

FISCAL RULE takes the form of a borrowing limit $b \leq \bar{b}$

Reasonable fiscal rule would be binding for extravagant type, but not prudent:

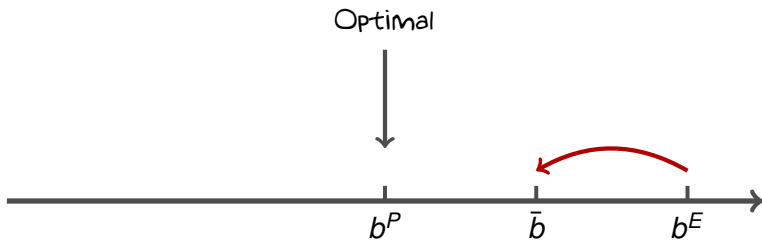
$$b^E(0, FI, NR) > \bar{b} > b^P(1, FI, NR)$$

Then full info equilibrium with fiscal rule is

$$\begin{aligned} b^E(0, FI, DL) &= \bar{b} \\ b^P(1, FI, DL) &= b^P(1, FI, NR) \end{aligned}$$

With full info, fiscal rule unambiguously increases welfare

Full Information, Fiscal Rule



Optimal Fiscal Rule

The OPTIMAL FISCAL RULE attempts to replicate what a prudent government would do

- But takes into account the higher borrowing rate faced by the extravagant PM

$$\bar{b}^* = b^P(0, FI, NR)$$

Asymmetric Information

Equilibrium Types

The model has the form of a SIGNALLING game.

Borrowing government moves (chooses debt) first.

Two types of equilibria: SEPARATING and POOLING.

Restrict attention to pure strategies.

Refine equilibria using the Cho-Kreps intuitive criterion.

SEPARATING: Extravagant governments borrow extravagantly. Prudent governments cut spending sufficiently to signal that they are prudent.

Bonds priced at q^E or q^P , according to the revealed type.

POOLING: Extravagant governments mimic prudent governments' choices. Prudent government don't (can't) separate.

Both types charged $q(\pi)$.

Separating Equilibrium (No Rule)

NOTATION: $\hat{b}^\theta(\mu, b^{\theta'}(\mu', \text{Inf, Rule}))$ s.t.

$$U^\theta(\hat{b}, q(\mu)) = U^{\theta'}(b^{\theta'}(\mu', \text{Inf, Rule}), q(\mu'))$$

\hat{b} : the lowest debt level that β^θ PM would be willing to accept in order to receive a higher bond price $q(\mu)$, rather than choosing debt freely at the bond price $q(\mu)$.

PRUDENT government reduces borrowing to

$$b^P(1, \text{FI, NR}) = \hat{b}^E(1, b^E(0, \text{FI, NR}))$$

and obtains high (risk-free) bond price q^P

Under-borrows vs. citizens' preferences: **Austerity**

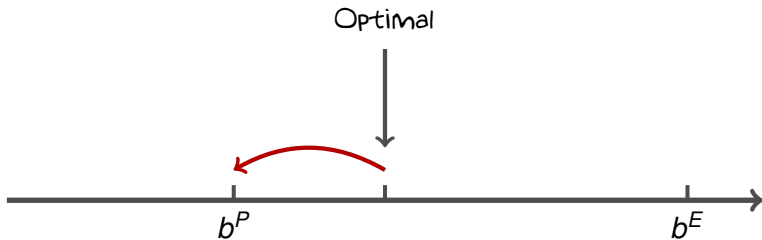
EXTRAVAGANT government:

$$b^E(0, \text{FI, NR}) = b^E(0, \text{FI, NR})$$

Unwilling to mimic prudent: obtains low (full info) bond price q^E

Over-borrows vs. citizens' preferences

Separating Equilibrium, No Rule



Pooling Equilibrium (No Rule)

EXTRAVAGANT government mimics prudent:

$$b^E(\pi, AI, NR) = b^P(\pi, AI, NR)$$

Both types obtain bond price $q(\pi)$

- Prudent government over-pays risk premium
- Extravagant government under-pays

Examples of Deficit Reduction as a Signal (1)

Lula/Palocci 2004: Deficit from 4.2% of GDP in 2002 to 2.4% of GDP by 2004.

*To shed **concerns regarding debt sustainability**, Brazil announced a half a percentage point of GDP increase in the primary surplus for 2003... Markets have responded positively ... **Spreads on Brazilian bonds** have been cut from 2,400 to around 900 basis points (Palocci, April 2003)*

Examples of Deficit Reduction as a Signal (2)

Cameron/Osborne 2011:

*There is a broad international consensus that advanced economies should put in place and begin implementing credible **medium-term fiscal consolidation plans** this year, in order to **underpin market confidence**.
(Budget 2011)*

Examples of Deficit Reduction as a Signal (3)

Rubin, Orszag, Sinai 2004:

*Substantial **deficits** projected far into the future can cause a fundamental shift in market expectations and a related **loss of confidence** both at home and abroad (Rubin et al 2004).*

Bernanke:

*Maintaining the **confidence** of the public and financial markets requires that policy makers begin planning now for the **restoration of fiscal balance**. (Testimony to Congress, July 2009).*

Examples of Deficit Reduction as a Signal (4)

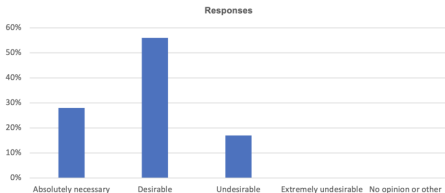
Schäuble:

*Governments in and beyond the eurozone need not just to commit to **fiscal consolidation**... countries faced with high levels of debt and deficits need to cut expenditures, increase revenues and remove the structural hindrances in their economies, however politically painful... The truth is that governments need the **disciplining forces of markets**. (Financial Times, September 5, 2011)*

Examples of Deficit Reduction as a Signal (5)

Minibudget Crisis, UK, 2022: Responses to CfM Survey, November 2022:

Question 1: How necessary was it for the UK government to lower its deficit through tax increases or spending cuts in November 2022?



A show of fiscal responsibility was necessary to start the slow and painful process of rebuilding the government's reputation (Martin Ellison)

Equilibrium Existence (Separating)

SEPARATING EQUILIBRIUM exists if prudent government is better off cutting deficit than choosing debt freely but being perceived as extravagant:

$$U^P \left(\hat{b}^E(1, b^E(0, FI, NR)), q^P \right) \geq U^P \left(b^P(0, ., NR), q^E \right)$$

Lemma 1: Separating equilibrium always exists without spending floor \underline{g} .

INTUITION:

1. Extravagant type indifferent between \hat{b}^E with bond price q^P or borrowing freely at q^E .
2. Prudent type more patient so strictly better off borrowing less at q^P .

Equilibrium Existence (With Spending Floor)

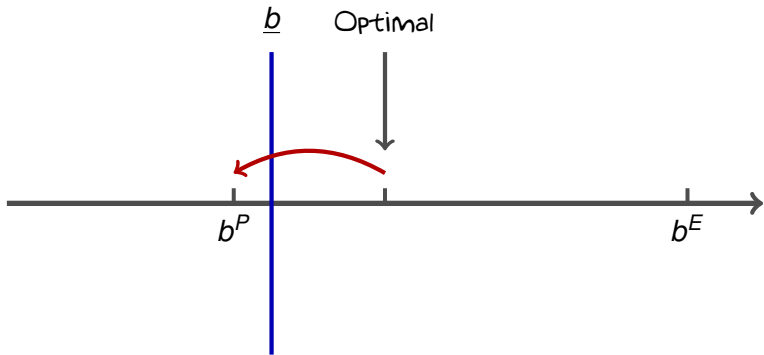
Separating equilibrium may fail to exist because spending floor is binding.

Occurs if spending floor constrains prudent government from signalling its type:

$$\hat{b}^E(1, b^E(0, FI, NR)) < \underline{b}(y_1, q^P)$$

Signalling more likely to fall apart in recession: when y_1 is low.

Signal Jamming with Spending Floor



Equilibrium Existence (Pooling)

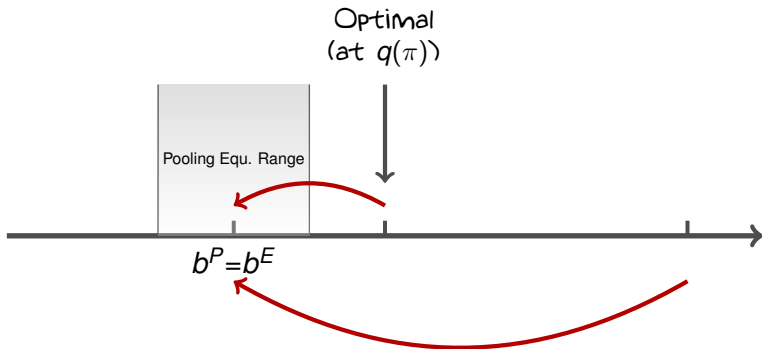
Intuitive POOLING EQUILIBRIUM exists if there is no level of borrowing that would signal P's type and P prefers to candidate pooling equilibrium.

Lemma 2: Pooling equilibrium exists whenever separating equilibrium fails

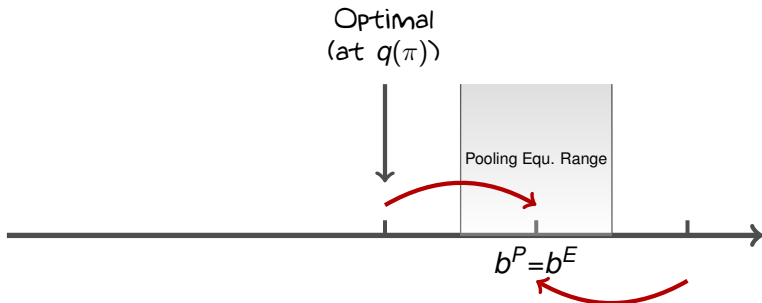
Large range of possible pooling equilibria, including

- The social optimum, but at the “wrong” interest rate $q(\pi)$
- Very bad equilibria, where both borrow as much as the extravagant type's ideal choice

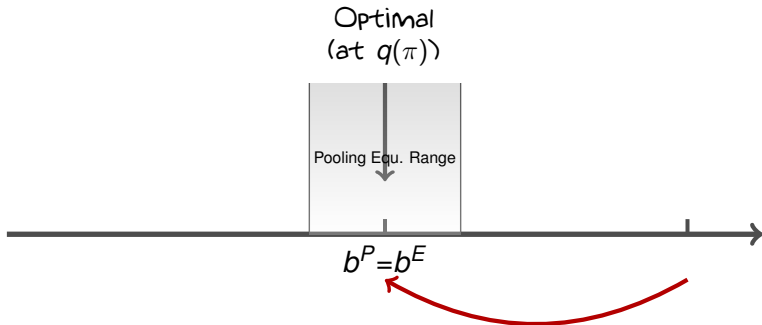
Pooling Equilibrium, No Rule (Under-borrowing)



Pooling Equilibrium, No Rule (Overborrowing)



Pooling Equilibrium, No Rule (Best Case Scenario)



Separating Equilibrium with Fiscal Rule

FISCAL RULE takes the form of a borrowing limit $b \leq \bar{b}$

Now extravagant type constrained:

$$b^E(0, AI, \text{Rule}) = \bar{b}$$

GOOD NEWS: Decreases borrowing by extravagant type

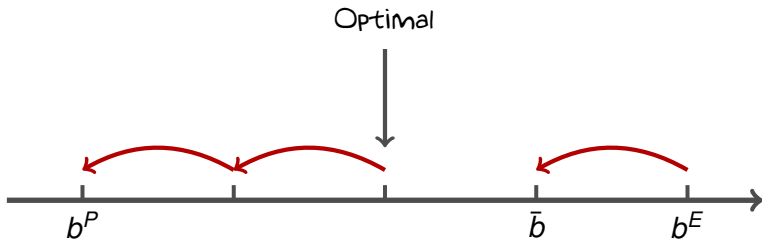
BAD NEWS: Decreases borrowing by *prudent* type

PROOF:

1. Extravagant type used to be indifferent between extravagant policy and mimicking prudent.
2. Fiscal rule makes extravagant government worse off \rightarrow strictly prefers mimicking prudent.
3. Prudent type needs to borrow *even less* to prevent extravagant from mimicking.

No longer clear that fiscal rule is welfare increasing

Separating Equilibrium with Fiscal Rule



Welfare Implications of Fiscal Rules

Proposition

OPTIMAL FISCAL RULE ALWAYS INTERIOR between one that

- ...isn't binding for extravagant government
- ...forces the extravagant government to be prudent

INTUITION: Envelope theorem.

- Constraining E type on the margin doesn't harm them, doesn't make signalling harder for P gov.
- Relaxing on the margin a constraint that forces E type to accord to citizens' preferences doesn't harm citizens when E is in power, but allows P to borrow a little more.

Pooling Equilibrium with Fiscal Rule

FISCAL RULE takes the form of a borrowing limit $b \leq \bar{b}$

Expands range of pooling equilibria downwards.

- May or may not reduce borrowing

- Helpful only if pooling has under-borrowing

Reduces the state space where separating equilibrium exists.

- More likely that prudent gov bound by spending floor.

Fiscal rule makes signalling harder.

Conclusion

“Credibility” is a common argument for deficit reduction.

Markets impose fiscal discipline and may cause (optimal) under-borrowing to restore credibility.

Fiscal rules constrain over-borrowing...
... but have an externality on prudent governments...
and lead to further under-borrowing.

Fiscal rules need to trade off these two effects and shouldn't naïvely attempt to make governments “do the right thing”.