

Fiscal-monetary interaction and ambiguity in the wake of the crisis

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Outline

Fundamentals

The current situation

Political economy of central bank independence

Things have changed

- ▶ The Fed's balance sheet has ballooned and changed composition.
- ▶ The Fed now pays interest on reserves.
- ▶ “Excess reserves” now constitute most of reserves, indeed most of what we used to call “high-powered money”.
- ▶ Marketable debt is high and rising
- ▶ Implicit future fiscal obligations are large and not being addressed.

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- ▶ Not $MV = PT$.
- ▶ The Phillips curve is a theory of frictions in the path from fiscal and monetary policy to the price level, not a theory of the price level.
- ▶ So back to basics: general equilibrium with fiscal and monetary policy.

A mental furniture upgrade, since $MV = PT$ has worn out.

Ignore price stickiness, distorting taxes, capital (in the spirit of $MV = PT$).

$$\text{GBC :} \quad B_t = R_{t-1}B_{t-1} - \tau_t P_t$$

$$\text{Fisher :} \quad 1 = R_t \beta E_t \left[\frac{P_t}{P_{t+1}} \right]$$

$$\Rightarrow : \quad \frac{B_t}{P_t} = \sum_{s=1}^{\infty} \beta^s E_t \tau_{t+s}$$

This is an equilibrium relationship that need not have a causal interpretation — just as is $MV = PT$. And $MV = PT$ holds at the same time as $P \times DPV(\tau) = B$

A simple equilibrium model

$$\text{GBC : } B_t + M_t = R_{t-1}B_{t-1} + M_{t-1} - \tau_t P_t$$

$$\text{Fisher : } 1 = R_t \beta E_t \left[\frac{P_t}{P_{t+1}} \right]$$

$$\text{M policy : } R_t = A \left(\frac{P_t}{P_{t-1}} \right)^\theta \varepsilon_{Mt}$$

$$\text{F policy : } \tau_t = \phi_0 + \phi_1 \frac{B_t}{P_t} + \varepsilon_{Ft}$$

$$\text{Private BC : } C_t(1 + f(v_t)) + \frac{B_t + M_t}{P_t} = \frac{R_{t-1}B_{t-1} + M_{t-1}}{P_t} + Y_t - \tau_t$$

$$\text{velocity : } v_t = \frac{P_t C_t}{M_t}$$

Implications of the simple model: Fiscal dominance is possible

- ▶ An equilibrium in which monetary policy sets R_t to a constant ($\theta_t = 0$) and fiscal policy sets τ_t to a constant exists and guarantees a stable price level.
- ▶ This should be intuitive: The monetary authority commits, not to “monetizing the debt”, but to buying a fraction of newly issued debt, which may be very small, or even zero if transactions demand for money is weak enough, that is required to maintain the constant nominal interest rate. The total quantity of outstanding nominal government liabilities then drives the price level. Fiscal policy determines the inflation rate.
- ▶ Under these conditions, an increase in the interest rate *increases* inflation.

Implications of the simple model: Fiscal irrelevance is possible

- ▶ If $\theta > 1$, $\phi_0 < 0$, $\phi_1 > \beta^{-1} - 1$, then the equilibrium price level and the time path of prices do not depend on the precise values of ϕ_0 and ϕ_1 or on ε_{Ft} .
- ▶ Something like this is true even in much more complicated equilibrium models, and is the justification for the common practice of omitting the government budget constraint and fiscal policy behavioral equations from models.

Implications of the simple model: Fiscal backing is essential

- ▶ The single-equation FTPL relationship $B/P = DPV(\tau)$ holds in any equilibrium in these models.
- ▶ Depending on the details of the monetary policy and of the transactions cost technology $f()$, equilibrium is likely not to be unique under the conditions for “fiscal irrelevance”.
- ▶ The monetary policy in these conditions is a threat to drive interest rates arbitrarily high as inflation rises. This can fail to violate any feasibility constraint or transversality condition. To rule out such “flight from money” equilibria, one can invoke the notion that at some price level the fiscal authority would step in and support the value of money by taxing to provide goods in exchange for money at that level.

Bringing the abstract framework down to earth

- ▶ Under monetary dominance, even though the details of fiscal policy don't matter, it must nonetheless be true that when the central bank increases interest rates, and this increases the interest expense item in the government budget, the legislature must be seen *without any doubt* to be committed to covering this increased interest expense with reduced non-interest expense or increased taxes — if not now, then later.
- ▶ Note that if the response is “later”, its required size grows exponentially.

Down to earth, cont.

- ▶ If the fiscal response is doubtful, monetary policy no longer uniquely determines the price level.
- ▶ There have been times and places where these considerations are central to monetary policy deliberations: Interest rates and debt are high, so interest expense is a large fraction of the budget, and fiscal effort is seen as unresponsive to increased interest expense.
- ▶ Everyone understands that interest rate increases will only increase the rate of issue of nominal debt, and thus will be inflationary, not contractionary.

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- ▶ Central bank independence is a set of conventions about the inevitable fiscal consequences of monetary policy actions.
 - ▶ The legislature will respond appropriately to fluctuations in interest expense.
 - ▶ It will not complain about fluctuations in seignorage flows to the treasury.
 - ▶ If the central bank balance sheet goes into the red, the treasury will recapitalize it.

Aside: Why does the central bank balance sheet matter?

- ▶ If the bank has unquestioned fiscal backing, its balance sheet does not matter (Chile).
- ▶ The bank's only directly controlled revenue source is seignorage.
- ▶ Therefore if it has no fiscal backing, it cannot control the price level.
- ▶ Paying interest on central bank liabilities by “printing money” is not contractionary, unless it is clear that a revenue source other than seignorage will eventually back the central bank liabilities.

Threats to central bank independence from its own quasi-fiscal actions

- ▶ Monetary policy actions with big fiscal effects are likely to make the legislature question the conventions of central bank independence.
 - ▶ Large fluctuations in seignorage, especially if seignorage is negative for a while so a “bailout” is required.
 - ▶ Large increases in the interest rate when interest expense is already at levels bothersome to the legislature.

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Long run fiscal issues and price stability

- ▶ We currently have good management at the Fed, committed to price stability.
- ▶ The fiscal situation is a bit scary, but it seems that if only people could sit down and start cutting deals, it would be manageable.
- ▶ So maybe monetary dominance is still the way to think about determination of the price level?

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- ▶ Suppose there is what these authors call a “fiscal limit” — a maximal primary surplus.
- ▶ Then what happens today depends on what people believe about how close we are to the fiscal limit and how policy will shift when we hit it.

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- ▶ Furthermore current fiscal policy — ϕ_0 , ϕ_1 , and ε_{Ft} — has impacts today, despite the apparent monetary dominant configuration.
- ▶ In other words, the central bank cannot by itself control the price level.

Implications for monetary policy today

- ▶ We are not at any fiscal limit determined by a Laffer curve.
- ▶ There are legitimate worries that we could be approaching a fiscal limit set by dysfunctional political economy.
- ▶ The Fed cannot do anything about this directly, but it is uniquely positioned to make it clear how fiscal policy could limit its ability to achieve its price stability objectives.
- ▶ The Fed should talk about fiscal policy — not about whether to cut expenditures or instead to increase taxes, not about which programs to cut, but about the long run trajectory of the primary surplus. It is already doing a little of this, but should do more.
- ▶ If we are stuck at the ZLB, we are in a fiscal dominant equilibrium. Beliefs about fiscal policy are therefore important determinants of the effectiveness of monetary policy.

Aside: Paying for the debt by “monetizing” it?

- ▶ As the CDLW scenarios make clear, *planning* to pay off the debt by “inflating it away” will not work.
- ▶ Anticipated inflation increases the interest rate. It cannot reduce the need for future primary surpluses.
- ▶ Anticipated inflation does generate seignorage from the issue of non-interest-bearing currency, but this is not large enough to make a big dent in needed future primary surpluses.

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- ▶ Anticipated inflation does generate seignorage from the issue of non-interest-bearing currency, but this is not large enough to make a big dent in needed future primary surpluses.
- ▶ *Surprise* inflation can have a large effect on the real value of the debt. Inflating away the debt is closer to feasibility the more likely it seemed to the public beforehand that you would *not* inflate away the debt.

Application of these ideas to EMU

- ▶ Short term nominal debt, issued by an authority that can run primary surpluses and can print the paper that is the promised return on the debt, is extremely liquid. The risk of it becoming temporarily unsaleable, or of undergoing overnight jumps downward in value, is essentially zero.
- ▶ Inflation is not default. Default occurs security by security, usually involving negotiation over “restructuring”. Its effects on debt-holders are non-uniform and unpredictable. The risk of it drastically limits liquidity of the defaultible asset.
- ▶ On treaty paper, Euro debt did not have this guaranteed liquid character. Countries could not print money to pay their Euro obligations and default and default risk premia were clearly contemplated.
- ▶ But in practice, spreads on Euro debt across countries were very small, and the notion that Euro country debt could serve as international reserve assets took hold.

EMU at a fork in the road

- ▶ Euro debt could be henceforth perceived as having clear default risk varying across countries.
- ▶ This would probably lead to some drop in the value of the Euro as it shed its role as a reserve currency, thereby helping to make still more remote the possibility of balance sheet problems for the ECB. The FTPL models that apply to the US and Japan, e.g., would not apply directly to the Euro.

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- ▶ Or, it could become clear that the ECB is implicitly committed to using its power to print Euros to make country defaults impossible. Then FTPL models apply, but the nature of the fiscal policy rules to invoke in them is more mysterious.

FTPL for a stand-alone central bank

- ▶ Suppose it becomes accepted that countries default and the ECB stands by while it happens.
- ▶ In the short run, this devalues the Euro and thereby ECB liabilities relative to its assets.
- ▶ But in the long run, central banks need fiscal backing. Their only “independent” source of financing is seignorage, which shrinks when inflation is kept low, and they can develop balance sheet problems, particularly if, as with the ECB, their assets are not currency-matched to their liabilities.
- ▶ A stern policy of not bailing out countries with fiscal problems could end up undermining support for the ECB in a potential future crisis of a different kind, in which the ECB itself needs some “bailing out”.

FTPL for a central bank with many fiscal counterparts

- ▶ All it takes is one country that is “committed” (perhaps via political gridlock or a culture of tax evasion) to not adjusting its primary surplus in response to the level of its real debt to make the aggregate fiscal rule “active”.
- ▶ At early stages, when the active-fiscal country’s debt is a still a small part of the total, the country’s own fiscal deficits have a much smaller proportional effect on total outstanding debt, and hence on inflation, than in a single-country fiscal-dominant equilibrium.
- ▶ As the active-fiscal country’s debt grows relative to that of the other EMU members, citizens of other countries in effect finance spending in the active-fiscal country.
- ▶ Thus *whether or not* there is a fiscal-dominant equilibrium, there is a need for fiscal co-ordination across countries if the ECB is to rule out country default. If the political will to create such a mechanism is available, it is not clear what additional purpose it serves to make the possibility of default part of the co-ordination mechanism.

Implications for policy modeling

- ▶ If people think that there is some small possibility, in the distant but not too distant future, that fiscal considerations could force a shift to a higher inflation rate, this makes their inflation expectations fail to match the “rational” expectations generated by a model that assumes the current policy configuration will last forever.
- ▶ A modeling strategy: Allow for expectations that deviate from “rationality” by an amount that varies persistently and is sensitive to fiscal developments.
- ▶ This is not as clean as the Davig-Leeper approach in which the policy regimes are all explicit, but that approach is not practical for a large-scale policy model.

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Dangers in the current policy configuration

- ▶ Buying private sector assets gets the Fed involved in picking winners and losers, and has already generated political blowback. It should be an emergency measure, not a steady state.
- ▶ The large balance sheet, with some unhedged risk, poses some small risk of negative seignorage, and in any case is likely to generate large fluctuations in seignorage.
- ▶ Interest expense is now a small fraction of the budget, around 8%. It has been at or below this level most years since the 60's, except for a few years in the early 80's when it reached 15%.
- ▶ With debt around 80% of GDP and the Federal budget around 20% of GDP, an increase in interest rates of 4% would bring interest expense (after rollover) to 26% of the budget.

Implications of the political economy

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- ▶ But possibly now they are too big.
- ▶ There are historical examples of legislatures “waking up” to the fact that the central bank or the executive has created future fiscal obligations, through selling securities, without a legislative vote.

Stepping-on-a-rake model

$$M \text{ policy : } \dot{r} = -\gamma(r - \bar{r}) + \theta \dot{p} + \phi \dot{c} + \varepsilon_m$$

$$\text{Fisher}^* : r = \rho + \dot{p}$$

$$\text{IS}^* : \rho = -\frac{\dot{\lambda}}{\lambda} + \bar{\rho} + \varepsilon_r$$

$$\text{Govt. Budg. Cnstr. : } \dot{b} = -b\dot{p} - b\frac{\dot{a}}{a} + ab - \bar{\tau} - \tau$$

$$\text{term struct.}^* : r = a - \dot{a}/a$$

$$\text{Phillips curve}^* : \ddot{p} = \beta \dot{p} - \delta c - \varepsilon_{pc}$$

$$\text{Fiscal policy : } \dot{\tau} = \omega \dot{c} + \varepsilon_\tau$$

$$\text{habit}^* : \lambda = e^{-\sigma c} + \psi(\ddot{c} - \dot{c}^2)e^{-c}$$

*: forward-looking equation; a : consol rate; b : $B/(aP)$; P : the price level; B : the number of outstanding consols; λ : Lagrange multiplier on the consumer's budget constraint

Parameter values for impulse responses:

γ	θ	ϕ	σ	$\bar{\rho}$	$\bar{\tau}$	β	δ
0.20	0.208	0.10	2.00	0.05	0.10	0.50	1.00

Responses to Monetary Shock

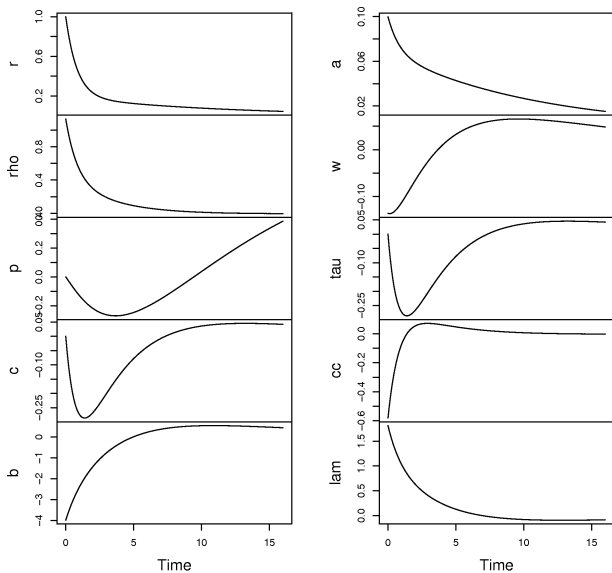


Figure: Stepping on a rake model

Responses to Fiscal Shock

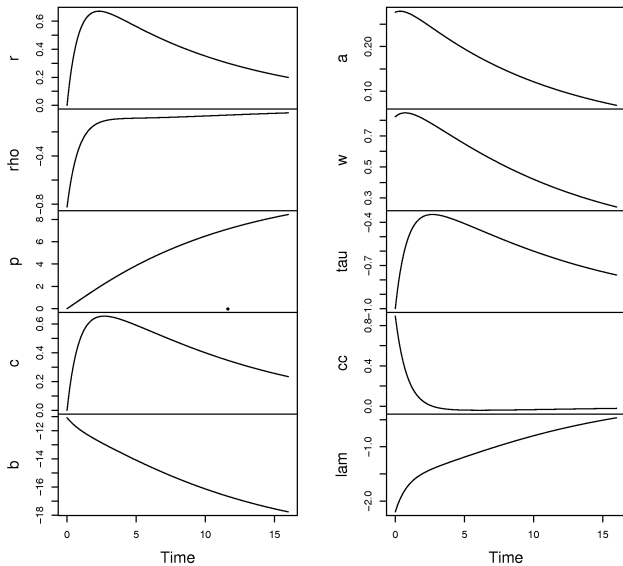


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