Fiscal theory of the price level (update)

Also

- “Fiscal Histories” (mostly)
- “Expectations and the neutrality of interest rates”
- “Debt and the euro” (With Luis Garicano and Klaus Masuch)

Point: Make fiscal theory useful.

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Fiscal theory of the price level

Nominal government debt = Present value of primary government surpluses

- Mechanism: Debt vs. long run ability/will to repay. Soak up money. Like stocks.
- Inflation is not linked to today’s deficits or debt. “Stock” vs. Keynesian “flow.”
- Lots of debt/deficit possible with no inflation. Inflation can come as a surprise.
- Expectations? Institutions. Like stocks/financial crises. Hard to predict. (It is!)
- Discount rates / interest costs on the debt matter. Higher real interest = higher costs = more inflation & vice versa.
What about money?

• “Inflation results from too much money chasing too few goods”

• We agree: Money (or debt) from helicopters causes inflation. Printing money to finance deficits causes inflation.

• We disagree: More money but less bonds? Inside money? Wealth vs. composition, total vs. liquidity of assets.

• Central banks set interest rates, pay interest on huge reserves, do not control money supply. MV=PY is a correct theory, but does not apply to our economy.

• We need a theory of inflation under interest rate targets, with ample liquidity (huge interest-paying reserves).
FTPL with interest rate target, sticky prices. Fiscal shock.

- Slowly inflate away debt to pay for fiscal shock. ($\pi > \dot{i}$.) 2021-2022!
- Inflation eventually goes away even with no central bank response.
- Inflation is stable.
FTPL with sticky prices & long debt. Monetary policy shock.

- Higher interest rates raise long run inflation; long run stable & neutral.
- Short run negative sign from long-term bond effect.
- Unpleasant interest rate arithmetic. Lower inflation now, by raising later.
- Not standard Keynesian intuition (higher rates lower demand, Phillips curve).

1 % permanent interest rate rise, no change in fiscal surpluses..
FTMP with sticky prices & long debt. Monetary policy shock.

- Permanent inflation is not necessary. CB sets long run inflation $i_t = E_t \pi_{t+1}$.
- Weird? Remember, effect of interest rate rise without fiscal policy.
- Actual rate hikes: Fiscal changes at same time, and in response.
- For data, history, policy, we want fiscal responses. But we want to know if it’s monetary policy or just induced fiscal responses that lower inflation.
Taylor rule

1% fiscal shock, No interest rate movement.

Add higher rates to offset inflation?

1% fiscal shock,
Policy rule $i_t = \theta \pi_t$, $\theta = 1$ adds higher rates automatically

Exploits unpleasant arithmetic to smooth inflation, output.
1. Effect of a deficit, that won’t be repaid (or printing money)

2. Effect of a rate hike, no change in fiscal policy.
The zero bound era

Inflation
Interest rate stuck at zero

Sources: BLS; Board of Governors
fred.stlouisfed.org

Shaded areas indicate U.S. recessions.
A test of theories: expectations and stability

Adaptive expectations

- (Standard view) Inflation is **unstable**, **spirals**.
- Higher interest rates lower inflation.
- Higher interest rates lower output. Inflation = past inflation + output, so inflation < past inflation.
- Unless central bank moves interest rates >1-1.
- ZLB? Clear prediction: Spiral.

Rational (forward looking, consistent)

- Inflation is **stable**. Goes away.
- →Higher rates **eventually** raise inflation.
- Lower output, inflation = future inflation + output, inflation **declines**.
- Temporary opposite sign is ok.
- New-Keynesian: “Multiple equilibria” offset by CB threats. CB don’t do it. Predicts **volatile** inflation at ZLB.
- FTPL: One equilibrium. Stable and quiet at ZLB (without more fiscal shocks!)
Inflation is stable and determinate under an interest rate peg. Neither instability (deflation spirals) nor volatility (multiple equilibrium sunspots). About as good an experiment as you can ask for in economics!

If a peg is stable, then raising the peg must raise inflation. Eventually.

History: ZLB era

FRED

- Consumer Price Index for All Urban Consumers: All Items in U.S. City Average
- Federal Funds Effective Rate

Spirals, multiple equilibria?
Quieter than before!

Inflation

Interest rate stuck at zero

Deflation spiral?
Would require austerity to pay bondholder windfall.

Negative interest costs
And no terrible fiscal news

Sources: BLS; Board of Governors of the Federal Reserve System; Federal Reserve Bank of St. Louis.
Stable, quiet inflation at a long zero bound — US, Europe, Japan

No spirals, no multiple equilibrium volatility.

Failed pegs? Turkey? Fiscal problems. (Pegging because of fiscal problems!)
QE and M in the ZLB era?

- $4 trillion increase in base. 3,000% increase in reserves! MV=PY: Hyperinflation!
- FTPL: M=B, exchange has no first order effect. Up or down (QT too).
- Another clear experiment!
Covid inflation and current events

Shaded areas indicate U.S. recessions.

Sources: Board of Governors; BLS

fred.stlouisfed.org
Inflation? A textbook fiscal (helicopter) shock

$5$ trillion, $+30\% = $3$ trillion reserves + $2$ trillion debt.
Sent as checks!

Why don’t people trust repayment?
Why this time not 2008?
• Statements?
• Lower rates?
• Heterogeneity?
• Cash is “not repaid”!

Money or fiscal?
ISLM flow vs. FTPL present value?

Debt\[\frac{EPV(\text{surplus})}{\text{Price Level}}\]

$5$ trillion, $+30\% = $3$ trillion reserves + $2$ trillion debt.
Sent as checks!

• What about supply shocks, energy shocks, greed, monopoly, etc?
• Relative prices vs. inflation!

Response to fiscal shock
Current events

Fiscal shock

Monetary shock

$5 trillion borrowed, printed, sent as checks

Spiral with interest < inflation?
The 1970s and 1980s
Triumph of traditional view?

Tough central bankers, persistently high rates lower inflation?
The 1970s and 1980s

CPI declines without interest >> inflation

Interest costs on debt! Windfall to 1980 bondholders>

2024?
1970: War, great society, gold, Bretton Woods.
1975: Slowdown, biggest deficit since WWII, long run? Malaise?
1980: “Reagan deficits” were mostly interest on debt, not primary (defense).
1982-1986: Tax rate from 70% to 28%. Social security reform. Deregulation. Growth!
1990s: Huge surpluses. PV of surpluses did repay debt, pay higher interest costs and windfall (2000s?: Seduction of low rates?)
2024? Higher rates → recession, bailout, stimulus. Debt/GDP 100% not 25%, 4x higher interest costs. (Italy?)
Models: Higher rates without fiscal policy, at least to pay interest costs, do not lower inflation.
Painless disinflation is possible with joint fiscal-monetary and usually micro reform
Inflation targets as a joint fiscal, monetary, micro reform. And painless disinflation.
And even inflation will not help!
FTPL and the Euro

Fiscal monetary interactions:
- ECB raises rates
  - Higher interest costs on debt?
  - Recession → deficits, stimulus, bailouts.
  - Unless repaid by subsequent surpluses, inflation!
- Sovereign debt trouble → temptation to monetize
  - Well recognized in ECB setup. Maastricht rules.
  - “Whatever it takes” with conditionality (new lending = PV(s)). Effective?
  - Large sovereign assets and renewed sustainability questions.

Yes, FTPL applies to euro:
- A separate balance sheet walled off from government finances is useful.
- In the end, FTPL inflation comes from creating money to pay off debt, money not soaked up by PV(s). Credibly commit against that, force PV(s) or default; no inflation.
- Balance sheet: always enough to soak up money if people don’t want it.
- Separate classes of debt? Real debt? Fiscal commitment to top up CB assets (only).
- Allow sovereign default! Remove the hostage (banks). If default is unthinkable ex post, no commitment works ex ante.
- “Currency union without fiscal union” is easy — if sovereigns default like companies. (And let companies default too!)
Chart 3. Borrowing from the Eurosystem

Liabilities (reserves)

Assets

Sources: ECB and ECB calculations.
Central bank holdings of government bonds, in % GDP (last data point: Q1 2022)
General government debt, 2020 and 2021 (*)
(General government consolidated gross debt, % of GDP)

(1) Data extracted on 20.10.2022
Source: Eurostat (gov_10dd_edpt1)
Summary and directions

• Fiscal theory with interest rate targets
  • Fiscal shock
  • Monetary shock
• Other shocks?
• Easy extension to NK/DSGE models
• Better model of a negative effect?
• Empirical: Effect of interest rates without fiscal changes?
• Understand history/episodes?
• Better design of fiscal/monetary institutions?
• Lots to do!
• Humility: we don’t really have a consensus theory of inflation under interest rate targets, and this one needs much elaboration. Do interest rates (without fiscal help) raise or lower inflation? How? When?
A little humility.

Do higher nominal interest rates \textit{without fiscal policy change}, raise or lower inflation? Long run? Short run? We don’t really know! Not this:

The chart below provides a schematic illustration of the main transmission channels of monetary policy decisions.

The End

Extra slides follow
Fiscal theory of monetary policy with sticky prices, long term debt.

\[ x_t = E_t x_{t+1} - \sigma(i_t - E_t \pi_{t+1}) \]

\[ \pi_t = \beta E_t \pi_{t+1} + \kappa x_t \]

\[ i_t = \theta_i \pi_t + \theta_i x_t + u_{i,t} \]

\[ \rho v_{t+1} = v_t + r^n_{t+1} - \pi_{t+1} - \tilde{s}_{t+1} \]

\[ E_t r^n_{t+1} = i_t \]

\[ r^n_{t+1} = \omega q_{t+1} - q_t \]

\[ B^{(j)} = \omega^j B \]

- Solve: standard matrix / Dynare method.
- Recipe: It’s really easy to turn any NK/DSGE model into FTPL!
FTMP with sticky prices, short debt. Monetary shock.

- The completely false appearance of a negative effect is possible.
- Future negative interest rates drag down today’s inflation
- Inflation declines *despite*, not *because of* high rates
- Are we so sure higher rates with no fiscal change lowers inflation?
Unstable (adaptive expectations)

Stable (rational expectations)

Interest rate

Inflation

Time

Unstable

Stable