

The Fiscal Theory of the Price Level and its Implications for Current Policy in the United States and Europe

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I'm honored for the chance to present some thoughts at this conference. I'm especially honored to join in celebrating Chris Sims and Tom Sargent. They have been heroes of mine for 30 years, since I discovered their work in graduate school. And obviously they are the two central pioneers of fiscal foundations of inflation.

The fiscal theory is often regarded as some wacko sideshow, the Ron Paul moment of a fiscal policy debate. Ideologically pure, but no chance of being adopted.

I want to start by dispelling that view. There really isn't a "fiscal theory." There really is only one, very conventional theory, monetary–fiscal policy coordination. You do not have to believe in exogenous surpluses, weird off-equilibrium threats and so forth. Every model includes some equation describing monetary affairs, such as a money demand function or an interest rate rule, and the valuation equation for government debt,

$$\frac{\text{Nominal Debt}_t}{\text{Price level}_t} = E_t \sum_{j=0}^{\infty} \frac{\text{Real primary surplus}_{t+j}}{\text{Discount rate}_{t,t+j}}$$

(Nominal debt is the market value of debt. This is a valuation equation, an equilibrium condition, not a budget constraint.) The "fiscal theory" just consists of thinking a bit harder how this equation works.

Eric Leeper's fiscal and monetary "regimes" were brilliant thought experiments, and they helped many including myself to think through the issues clearly. But the "regimes" are observationally equivalent for equilibrium macroeconomic time series. That's a theorem². There is no point at all in testing for monetary vs. fiscal regimes. And any distinction that is observationally equivalent must be meaningless. So there is no separate fiscal theory. There is only one theory, the theory of monetary-fiscal policy coordination.

(At best, the "regimes" give different descriptions of the policy formation process, as in Tom Sargent's "game of chicken" between monetary and fiscal authorities. If one is to distinguish them, that is the data one must use. Even here, however, we have to recognize that "active money, passive fiscal" or "active fiscal passive money" are very stylized representation of the policy-coordination process.)

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² Both fiscal and monetary equations hold in equilibrium in both regimes. In particular, Granger-causality tests do not distinguish regimes. There's a longer discussion in ["A Frictionless model of U.S. Inflation"](#), in Ben S. Bernanke and Julio J. Rotemberg, eds., *NBER Macroeconomics Annual 1998* Cambridge MA: MIT press, p. 323-384, but I don't claim that the rather obvious, though often-ignored point is original.

“Fiscal theory” then, just amounts to paying a bit more attention to where the fiscal part of coordination comes from, and whether it is in place. If you’re examining a gold standard, you want to know if the country has taxing power to obtain or borrow gold, or to avoid raiding its reserves. “Fiscal theory” means making a similar examination of today’s monetary-fiscal coordination.

All monetary models contain a (sometimes implicit) Ricardian footnote, “the Treasury passively adjusts lump-sum taxes to pay off changes in the real value of government debt.” Call up the super-committee if you think that’s so easy.

Furthermore, as far as I can tell, there is just no way to obtain global price-level determinacy in a passive-fiscal regime, with a monetary policy that looks anything at all like that practiced on our planet³. Sargent and Wallace were right, and the Taylor rule does not overturn their classic result.

So, both by theoretical necessity and the glaring issue of our time, perhaps the right summary is that there is no theory other than the fiscal theory.

And paying attention to the fiscal part of coordination, being just a bit more sophisticated than a footnote about passive lump sum taxes, can radically change even simple monetary doctrines, and our analysis of current events and policy. I’ll give you a few examples.

1) “Deflationary spirals.”

Many economists worry that zero bound on interest rates put us in danger of a “deflationary spiral.” A crop of new-Keynesian models formalize this worry.

But suppose a “spiral” brings us a 50% cumulative deflation. Then the \$15 trillion of current US debt is worth \$30 trillion. Debby Lucas reminded us that another \$10 trillion of credit guarantees would likely kick in as well. No problem, the Treasury just doubles those lump-sum taxes, right? Obviously, it’s not happening, so neither can the deflation spiral.

2) Inflation can come before deficits and monetization.

Many economists think that deficits at worst influence inflation in the far off future. Ben Bernanke has courageously spoken about fiscal issues. But he only worries that deficits will someday crowd out investment; that will raise interest rates which lowers “demand,” shift the Phillips curve adversely, and may force him to choose inflation to avoid stagnation. Even the fed Hawks worry at most that debt will someday be irreversibly monetized, which will *then* lead to inflation. And everyone seems to think inflation will break out slowly, with warning. “Inflation is only 2%, so why worry about it now?” If that’s the worry, we can understand that the doves feel current unemployment is a more salient danger.

The fiscal theory warns that future deficits can cause inflation today, without warning. Tom Sargent’s unpleasant arithmetic brought future seignorage inflation back to the present through an interest-elastic money demand. With nominal debt, as the government debt valuation equation shows,

³ This is the point of “[Determinacy and Identification with Taylor Rules](#)” June 2011. [Journal of Political Economy](#) 119, (June 2011), 565-615.

changing expectations of future deficits can directly move the price level today, just as changing expectations of far-off earnings streams can move stock prices today. And we need neither money, nor seignorage, nor central banks action or inaction for this inflation to break out.

3) The maturity structure of the debt matters.

Short-term debt is a central ingredient to this story. With short-term debt, the numerator on the left side cannot fall, so bad news of future surpluses must cause the denominator must rise.

And our maturity structure is remarkably short. The average maturity is a misleading statistic: one dollar perpetuity would send that statistic to infinity. The median maturity, including coupons and reserves, is a better number, and that's about two years. The US government must roll over \$7 trillion of debt about every two years, as well as borrowing another \$1-1.5 trillion.

Short term debt is always the crucial ingredient by which long-run worries translate into default, crisis, or inflation today. Think of a firm, financing a single cashflow in 10 years. If it issues a 10 year zero coupon bond, that bond's value may rise or fall, but there is no crisis or default until year 10. If it rolls over overnight debt, then the minute there is bad news, new investors refuse to buy out the old investors and the firm fails. A country with nominal debt can inflate rather than default, but the mechanism is the same.

The mechanism is basically a run. Investors refuse to roll over debt when they think tomorrow's investors will not roll it over. Runs are unpredictable, and seldom triggered by obvious news. If such a run happens our policy-makers will surely be baffled. Interest rates rise, exchange rate fall, and inflation breaks out with no policy action nor important fundamental news. Like the Europeans, our policy-makers are sure to blame "speculation," see markets in need of "calming" by grand symbolic gestures, "market dislocations" "global imbalances," shifts in "expectations" and other chimera.

On the other hand, you can feel the European temptation. "Bailout" is a misnomer: they're not offering to pay PIGS debt, they are only offering to step in to roll over that debt while markets recover from their temporarily irrational run. Illiquidity and insolvency are in fact awfully hard to tell apart. Europe had better hope they have it right. (Applied to, say Greece, the price level is given and default is the only way to lower the market value of debt on the left hand side of the basic equation)

If our government had issued very long-term debt, then the nominal market value of the debt in the numerator of my equation could fall. The price level would only rise when – and if – the bad news about future surpluses actually comes true. But the government would plenty of time to make fiscal adjustments and avoid that outcome. Not so with short-term debt.

Long-term debt is a wonderful buffer. In corporate finance, it's almost as good as equity. It would be much better to have issued a lot of long-term debt, especially at these absurdly low rates. We would have bought a lot of run insurance by doing so. The Victorians had a good idea in funding their debt with perpetuities. Alas, our Federal Reserve is deliberately undoing even the Treasury's mild moves towards lengthening the maturity structure, making us more vulnerable to a run on the dollar.

4) Aggregate demand and interest rates

If expected surpluses decline, people will try to sell that debt and buy goods and services. In doing so, they push up the price level until people are willing to hold the debt again. If you got your PhD on the East coast, this feels like “aggregate demand,” and it is. There’s nothing unusual about fiscal inflation, but like all inflation its fundamental roots are not obvious to observers.

For me, this story solves a long standing puzzle: how can we demand more consumption, investment, and exports, and not less of something else? Answer: The something else is government debt. So if you understand demand for government debt, you finally understand “aggregate demand.”

But here’s an insight from asset pricing: discount rates matter. A decline in interest rates raises the value of future surpluses just as good news of future surpluses does so, and has the same deflationary effect.

In financial crisis and recessions, there is a “flight to quality”—people are willing to hold government debt at much lower prospective returns, and despite no, or even decidedly bad, surplus news. Trying to hold more government debt means trying to buy less goods and services, generating what central bankers like to call “deflationary pressures.” For example, as Europe blows up there may well be a further “flight to quality” raising the value of the dollar and lowering our interest rates, despite nothing but bad news about our surpluses.

This story helps a lot to understand events. But the story warns us that much of our fiscal-theory thinking is misguided – we should be thinking about discount rate changes, not changes expected surpluses.

5) Is the Fed Powerless?

We have become accustomed to thinking that the central bank is in charge of the price level. Yet the Federal Reserve is strikingly absent from my main equation.

A helicopter drop of nominal debt on the left side can change the price level. But that is a fiscal action – government spending, and the Fed can’t do it. The Fed must always exchange one kind of debt for another of equal value. Amazingly, the government agency nominally in charge of the price level is legally enjoined from the most important levers of price-level determination.

There is a good reason for this restriction, of course: an independent agency in a democracy cannot write checks to voters. But the price of independence is that the Fed, supposedly in charge of the price level, is relegated to second-order rearrangements of the maturity and liquidity structure of government debt. And now that interest rates are zero, the Fed really is reduced to trading green M&Ms for red M&Ms and hoping it helps your diet.

Now, conventional monetary analysis does allow a role for the Fed. But that role only operates with fiscal coordination. A conventional monetary theorist says “the Fed affects money or interest rates, that affects the price level, and oh, yeah, footnote 4 says the Treasury follows with lump sum tax adjustments so the new value of government debt is validated. “ But I can read the exact same equations differently: The Fed takes some action, and that action is understood by agents to imply a change in fiscal policy, which changes the value of debt. Agents then try to buy or sell debt until the price level changes.” The price level is driven only by fiscal policy. The Fed is powerful if and only if it can issue a signal of future fiscal policy.

(In the subsequent discussion Chris Sims expanded on this point. Suppose inflation breaks out, and our Fed has to substantially raise rates, say to 6 or 8 percent, to stem inflation. Raising interest rates this much would have a huge impact on measured deficits: 6 percent of \$15 trillion is \$1 trillion, nearly doubling the reported deficit. For this action to lower inflation, that \$1 trillion must come from additional tax revenue. If the government merely issues \$1 trillion more debt each year, debt grows exponentially, the fiscal backing of monetary policy is absent, and the Fed's action has no impact on inflation. The Fed can only affect inflation if it can influence fiscal policy, in this case if its interest rate policies lead to additional surpluses.)

Obviously, viewing monetary policy as merely a signal for fiscal policy leads one to think hard about better institutional arrangements, which communicate that signal more clearly, but that's a talk for another day.

So what about now? I'm not sure. I do not see how fiscal expectations are affected by the Fed's debt-maturity rearrangements or its pronouncements about what interest rates will be midway through the Jenna Bush/Malia Obama administrations. But speculating is dangerous. Tom Sargent got the mechanism right in "unpleasant monetarist arithmetic" but got the fiscal forecast wrong – he didn't foresee the return to growth and huge surpluses that in fact made the stabilization of 1982 work out after all. I think this mechanism is right, but I'm old enough to distrust any of my forecasts.

But the really important question is not, "does the Fed have no power?" The really important question is, "does the Fed have immense power?" "Can the Fed always control the price level?" Here the fiscal insight is a resounding "no." If a fiscal "run from the dollar" emerges, there is essentially nothing that the Fed can do about it. When investors change their mind about trillions in future deficits, no fiscal expectations that follow from monetary policy actions have a hope of overturning that judgement.

One thing is clear: The Fed, convinced it can always and everywhere control the price level, has no idea this inflation beyond its control could happen.

6) Europe and the US.

Let me turn to the fiscal perspective of the current situation. For once I have to agree with my colleague Austan Goolsbee. This is a quote (from his appearance on "Wait, wait, don't tell me"): "We're screwed. Europe's really screwed."

Seriously, now, there is a sea of bad ideas coming from Europe that I could spend all afternoon lampooning. But let me make just a few fiscal-theory related points.

The Euro once seemed to be the exception to the rule: A fiat currency divorced from sovereign debt and deficits. It never was, really, and now it threatens to be exhibit A for the fiscal theory instead.

The ECB is aggressively buying Greek, Spanish, Portuguese, Irish, and Italian debt. Belgian and French can't be far behind. The ECB is lending money to banks, who in turn go out and buy these sovereign debts, which the ECB takes as "collateral" against the loans. That's the same thing as buying the debt directly. The bright new idea is for the ECB to lend money to a special purpose vehicle that can buy more

sovereign debt or write sovereign CDSs. Hedge fund-finance has finally made it to Europe. Our administration is “helping” by opining that the ECB should “do more.”

In the conventional analysis, none of this threatens inflation, because of course the ECB can always raise interest rates, and then some sort of Phillips curve magic lowers inflation.

But once the debt defaults, or even if its market value falls further, the ECB will not have assets to sell in order to soak up money. Then the bill comes due: either German taxpayers pony up trillions of euros to recapitalize the central bank, or the Euros are left outstanding to inflate. Given the propensity of Europeans to blame the middleman for price increases, and the scandal of their banking system, I wouldn't bet on the former.

7) Dynamic Laffer curve and growth

The long string of future surpluses in our formula reminds us that there is only one way out that doesn't involve default or inflation: growth. A long period of sclerotic growth has led Europe to 50% GDP shortfalls. Their only hope to pay off this debt is the reverse action: micro deregulation that leads to robust growth.

Put another way, we should calculate *dynamic* Laffers curves: the change in *present value* of revenues with respect to a tax rate. This dynamic effect may be much stronger than the usual static curve. If distortionary taxes have even a small effect on growth, that compounds over 20 or 30 years to a very large decline in tax revenue and hence its present value.

For this reason, the “austerity” of high distorting taxes seems hopeless.

8) Europe vs. the US

Similarly, my big fear for the US is that we have entered a few decades of sclerotic growth. If the CBO's rosy forecast of 4% real growth materializes to 2% for the next few decades we're in real trouble. The day the bond market sees that coming, the run starts.

The US also faces a paradoxically more dangerous situation. Europe has a big stock of past debt that must be inflated, defaulted, or paid off, but then they can plod along as usual. The US has huge *prospective* deficits and a lower stock of debt.

In a sense, this makes us better off because we can address those deficits, and the outline of how to do it would take this room about 10 minutes. That's my answer to “why has the US not inflated already?” The surpluses on the right hand side are not the CBO's “forecasts” but market expectations. Markets know our problems are solveable, and trust that America will once again finally do the right thing after trying everything else.

But in a sense this makes us worse off, since a given inflation has a lower fiscal effect. Even if we inflate away our entire debt, we face unsustainable deficits. If we don't address those prospective deficits before the run on the debt happens, the trouble will be much larger. And runs always happen just before anyone confidently expects them to happen.