

Having your cake and eating it too: The maturity structure of US debt

John H. Cochrane¹

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The maturity structure of U.S. debt is a question usually relegated to the green-eyeshade backwaters of economic discussion. Now it matters, a lot. Getting it right could make a huge difference in the difficult times ahead.

Robin Greenwood, Sam Hanson, and Jeremy Stein² nicely exposit two important considerations: Long-term debt insulates government finances from interest-rate increases. Short-term debt is highly valued as a “liquid” asset, providing many “money-like” services. Long-term debt also provides some liquidity and collateral services, (Krishnamurthy and Vissing-Jorgensen³ (2012)) but not as effectively as short-term debt. How do we think about this tradeoff?

Go Long!

Thinking about these options, I feel like screaming⁴ “Go Long. Now!” Bond markets are offering the US an incredible deal. The 30 year Treasury rate as I write is 2.77%. The government can lock in a nominal rate of 2.77% for the next 30 years, and even that can be paid back in inflated dollars!

Our Government has taken the opposite tack. When you include the Fed (The Fed has bought up most of the recent long-term Treasury issues, in a deliberate move to shorten the maturity structure) the US rolls over about half its debt every two years.

Here’s the nightmare scenario: Suppose that four years from now, interest rates rise 5 percent, i.e. back to normal, and the US has \$20 trillion outstanding. Interest costs alone will rise \$1 trillion (5% of \$20 trillion) – doubling already unsustainable deficits! This is what happened to Italy, Spain, and Portugal. Don’t think it can’t happen to us. It’s even more likely, because fear of inflation – which did not hit them, since they are on the Euro – can hit us.

¹Professor of Finance, University of Chicago Booth School of Business, Research Associate, NBER, Senior Fellow, Hoover Institution, and Adjunct Scholar, Cato institution. John.cochrane@chicagobooth.edu, <http://faculty.chicagobooth.edu/john.cochrane>. These are comments prepared for the Second Annual Roundtable on Treasury Markets and Debt Management, Department of the Treasury, November 15, 2012.

² Robin Greenwood, Samuel Hanson, and Jeremy Stein, 2012, “[A Comparative-Advantage Approach to Government Debt Maturity](#)” Manuscript, Harvard University.

³ Krishnamurthy, Arvind and Annette Vissing-Jorgensen, 2012, “The Aggregate Demand for Treasury Debt. *Journal of Political Economy*. (April 2012)

⁴Actually, I’ve been screaming “go long” for a while now. In particular, see “[Inflation and Debt](#),” *National Affairs* 9 (Fall 2011), and “[Understanding fiscal and monetary policy in the great recession: Some unpleasant fiscal arithmetic](#),” *European Economic Review* 55 (2011), 2-30.

Moreover, the habit of rolling over debt every two years leaves us vulnerable to a crisis. Each year our Treasury does not have to just borrow \$1 trillion to fund that year's deficits. It has to borrow about \$4 trillion more to pay off maturing debt. If bond markets say no, we have a crisis on our hands.

Going long buys us insurance against all these events. And bond markets are begging us to do it!

Fix the accounting

Why not? I suspect the Treasury is reluctant to go long because, under current accounting, moving \$10 trillion of debt to long-term would add \$277 billion to interest costs, which makes the current deficit look much worse.

But this accounting makes no economic sense. Yield to maturity is not the same thing as the annual cost of borrowing, which includes capital gains and losses. Confusing yield and one-year return is a classic fallacy.

If this consideration is holding the Treasury back, *we should fix the accounting*. Politically difficult you say, we'll get accused of cooking the books, you say. OK, but is it worth running the into a fiscal crisis because we can't fix the accounting?

Simply marking to market capital gains and losses, and including that in the budget would be a good start. It would add noise to reported deficits, but at least with a year's lag we would measure the economically relevant cost of borrowing.

Then, we need to calculate and report expected capital gains and losses during the next year. According to the expectations hypothesis, which holds well at well at the relevant multiple-year horizons, and perfectly if we are willing to footnote "expectation" with "risk-neutral," the *expected cost is independent of the maturity structure*. An upward sloping yield curve means that the government expects to make capital gains on long-term bond issues that just offset their higher yields.

Now, accounting is not miraculous. Interest costs don't disappear. The expectations hypothesis says that the higher yields correspond to higher future interest rates, and thus higher interest costs in future years. But here, the calculation would correctly show that the US will pay these higher future expected interest costs independently of the maturity structure. Today's 2.77% 30 year yield is not "paid" today, in any meaningful sense. It is paid when interest rates actually do rise. And rolled-over short term debt would pay the same costs, at the same time.

I expect that the Treasury would use a more sophisticated term structure model, to isolate risk premia and liquidity premia as well as expectations effects. That would be all well and good, but the overwhelming effect would still be to remove the confusion of yield with return. You might see 20 or 30 basis point cost of going long, but not 2.77%.

Go even longer, and more liquid

Why stop at 30 years? The Treasury should issue perpetuities – bonds with no principal repayment date. When the government wants to pay down the debt, it simply buys them back at market value.

It would be best to pick one coupon rate, say 3%, and always issue perpetuities with exactly the same coupon. They will be issued, by auction, at a discount in times of high interest rates, and at a premium in times of low interest rates.

In this way, there will only be one long-term bond outstanding. There will be no more on-the-run / off-the-run spreads, no more liquidity premiums, no more arbitrages between economically-equivalent bonds because one can't be delivered when the other has been shorted. And there will be no need to roll over of maturing debt, ever. In this way, standardizing on a single perpetuity would sharply increase the liquidity of long-term debt. In turn, raising that liquidity should lower the overall rate the government pays. It's a win-win all around.

(While we're at it, the Treasury should also issue an inflation-protected perpetuity, with a fixed *real* coupon, and adjust that coupon downwards for deflation symmetrically with upwards adjustments for inflation. That would be a better and more liquid version of its current TIPS. Finally, the Treasury should issue variable-coupon debt. The coupon on this debt would act like corporate dividends, and variable-coupon debt would function like an equity source of government financing. By cutting the dividend in bad times, the government could reduce its debts without the calamities of default or inflation. By raising the coupon in good times, the government would establish a reputation that makes the bonds saleable, and convince investors to hold on through coupon reductions.)

Go modern

Just a little financial engineering could avoid the apparent tradeoff between long and short term debt, allow the Treasury to quickly go longer without having to dramatically reform the maturity structure of government securities, and it could help to get around faulty accounting.

In modern finance, *exposure* is no longer tied to *investment amounts*. With aggressive use of interest rate swaps, futures, interest-rate options, or CPI swaps, the Treasury could buy the interest rate protection the government urgently needs, supply as much short-term debt as liquidity demands, and satisfy the political demands of budget accounting. There need be no tradeoff at all. We can have our cake and eat it too.

For example, suppose the Treasury issued only one-month debt, but then swapped it all to fixed rate. The Treasury agrees to pay to swap counterparties the fixed (2.77%) rate and receive the floating one-year rate. Now, it has issued \$16 trillion of one-month debt, surely satisfying any liquidity demand to the utmost. But the Treasury is fully protected against interest rate rises just as if it had issued the entire amount in 30 year bonds. And, if the swaps are marketable, it introduces a new class of security which might be very useful.

(I don't know enough about deficit accounting to know where swap payments go, but I'll leave it as an article of faith that the sharpies at Goldman Sachs who made Greek debt disappear in 2006 can get around that one too.

And we need to make sure that swap counterparties are not too-big-to-fail banks, of course! But if Dodd-Frank is good for anything, it ought to be good for keeping plain-vanilla sovereign and interest rate risk off the balance sheets of "systemically important" banks. The ability of European regulators to recognize that sovereign debt might be risky doesn't give great confidence, but that's another issue.)

The bigger point: The Treasury should enlarge its "maturity" selection beyond the 18th century choice of maturity among coupon bonds, to include at least 20th century plain-vanilla modern fixed income instruments.

Go long, again

I don't know if I've pounded my fists on the table enough. Historically normal interest rate rises will send the US into a fiscal tailspin, with interest costs doubling our deficit. The markets are offering to take this risk from us for next to nothing. For a while. I don't exaggerate much when I say, the fate of the Republic is in your hands!

Go Short

On the other side, Greenwood, Hanson, and Stein remind us of the liquidity value of short-term US Treasury debt. For example, it is the most widely accepted form of collateral, even in crises. Owning a one-month treasury always allows you to borrow. Many accounting rules treat short-term treasury debt as equal to cash. More of that too seems a good idea. Again, though, we can do better, and we can avoid the tradeoff.

Why stop at traditional Treasury bills? These have awkward properties: They are only issued in large denominations, and they are rolled over periodically.

Since 2008, we have had something much better: *Reserves pay interest!* Interest-paying reserves are nothing more than floating-rate electronically-transferable US government debt. Why bother with one-month treasuries for money-like functions when you can have reserves instead!

I don't think most people realize the fundamental advantages of a financial system with interest-bearing reserves. There is simply no need for all the complicated "liquidity creation" that engulfed the financial system. Special purpose vehicles holding mortgage tranches funded by short-term debt, overnight repo, money market funds holding Lehman brothers debt, even bank deposits funding mortgages are all unnecessary for the purpose of creating liquid assets. Once reserves pay interest, and there is no need at all to economize on money holdings, the economy can simply be awash in money. Milton Friedman described this "optimum quantity of money," but he needed to envision steady deflation and zero nominal rates. Now money can pay interest. We can live the simplicity and stability of the Friedman rule.

Reserves have some disadvantages. Only banks can hold them. And I don't think the Fed understands how important interest-paying reserves are. The current "exit strategy" involves reestablishing a spread between reserves and market rates, and reducing the size of the Fed's balance sheet, which means reducing the quantity of reserves and sending the financial system off to other sources of "liquidity."

So, again, let's take Greenwood, Hanson, and Stein's argument as inspiration. *The Treasury should go beyond bills, and issue floating-rate debt*, held in electronic book-entry form. Either the Treasury can directly allow small denomination, or it can encourage money-market funds to intermediate for retail clients. The rate can be indexed to the Federal Funds rate, the Federal funds target, to Libor rates, or be set by auction. A monthly reset would probably work about as well. Making the debt floating-rate avoids the rollover risk of explicitly selling new debt to pay off old debt.

No theory of inflation says there is any problem with the creation of such "money-like" assets, any more than the liquidity value of one-month bonds pointed out by Greenwood, Hanson, and Stein causes a problem for price-level control. Keynesian and new-Keynesian models say that the level of interest rates, which the Fed still controls by announcing the rate on reserves and discount window lending, controls inflation. The size of the Fed's balance sheet –and an artificial interest spread between classes of its liabilities – doesn't matter. The Fiscal theory of the price level says that fiscal solvency gives price level control, not a scarcity of "liquid" vs. "illiquid" government debt. Monetarists thinks of reserves that pay full interest as bonds, not money, so arbitrary amounts are not inflationary.

The Fed?

The Treasury has traditionally been in charge of maturity, and the Fed in charge of liquidity. The Fed is currently actively offsetting the Treasury's mild efforts at maturity-lengthening, violating that first division. I have noticed a natural tendency of each institution to follow parochial concerns, and to forget that the consolidated operations matter. If the Treasury lengthens, but the Fed twists it all away, the Fed will lose money and stop remitting profits to the Treasury, just as if the Treasury had issued short debt to begin with. The Fed's losses *are* the Treasury's problem.

The observation that one-month treasuries provide liquidity services breaks down the second division, that the Fed is in charge of "liquidity." Though my suggestion to create floating-rate securities is only a small economic step away from one-month Treasuries, one can imagine the Fed would object that this innovation steps on the Fed's toes to manage "liquidity." I like liquidity, I do not think it alters the Fed's ability to control the price level, and I'm concerned that the Fed will stop paying interest on reserves, so I like the idea that the Treasury compete to provide liquidity.

But for the purposes here, it is enough simply to point out that the consolidated effect matters to the markets, and ideally that the Fed and Treasury should agree rather than fight a turf battle over the desirable maturity and liquidity structure of the debt.

Buying insurance against interest rate spikes at our current extremely low interest rates is priority one. Providing abundant liquidity with floating rate debt, which will discourage the reconstruction of a run-prone shadow banking system, is priority two. And there is no tradeoff between the two goals, with some simple financial engineering. Enjoy your cake.