

## **More Debt is Not the Answer** **Evan Schulman<sup>1</sup>**

### **Introduction:**

The problem with the current federal debt is not only its size but when it needs to be refinanced. A shade less than 70% of the \$18 trillion of outstanding federal debt matures in 5 years or less. Eleven members of the Federal Reserve's Open Market Committee currently predict that short rates will increase to 3% or more in 2017. If so, the interest payments on the federal debt will quickly rise from \$250 billion annually to more than \$600 billion: more than \$1 million per minute throughout the year and roughly equal to the total US defense budget in 2015.

Could the Treasury extend the maturity of this debt to lock in current low rates? Well, we have much the same problem. As of May, 2015, 10 year rates are 2%, some 10 times the 0.2% yield on short term paper: 30 year bonds yield 2.5%. Lengthening the debt to lock in rates might look very attractive in hindsight and as insurance. But every 1% increase in rates, whether due to lengthening the debt or due to market changes in rates, will cost the taxpayers \$10 billion annually per \$1 trillion of debt. Treasury officials are playing the current short term rates for every penny. So far they have been correct<sup>2</sup>.

Is it possible to design a better instrument than debt? Debt instruments saddle the issuer with fixed costs, offering no relief if the future does not live up to expectations; and the purchase of conventional debt exposes the investor to the ravages of unanticipated inflation.

The thought of offering some form of equity in America's future comes to mind<sup>3</sup>. Treasury could offer an instrument that paid investors a constant percent of nominal Gross Domestic Product ("GDP Certificates") each year for, say, 30 years. The investor would have protection from inflation and Treasury would get some relief when the economy was in recession. Since the security self-amortizes, there would be no need to refinance the issue: we would no longer burden our progeny with our profligate ways.

---

<sup>1</sup> Evan Schulman is the founder and president of Tykhe, LLC which holds US patents on Revenue Recognition Certificates e-mail [evan@tykhe.biz](mailto:evan@tykhe.biz)

He thanks Charles Cohen, Dan diBartolomeo, Peter Fisher, Robert Glauber, Caroline & David Johnson, Parker Llewellyn, Harrison Moar, Andre Perold, Paul Samuelson, Audrey & Eric Schulman, Jamie Treco and Jarrod Wilcox for helpful comments and suggestions. He claims the property rights in any remaining errors.

<sup>2</sup>Treasury has minimized interest cost over the last few years, but vastly increased the risk associated with rollover costs.

<sup>3</sup> Companies issue equity when issuing more debt would unacceptably impair their credit.

## **Previous Issues:**

As part of the Brady restructuring, Costa Rica, Bulgaria and Herzegovina issued bonds indexed to either GDP, or per capita GDP. But it mattered not: the bonds were either callable by the issuer (Bulgaria), or the indexation clause was badly specified or so far "out of the money" that it was irrelevant.

Argentina issued a GDP-linked instrument as part of restructuring in its 2001 default. It was a warrant attached to a bond: annual "dividends" on the detachable warrant were to be paid provided that Argentina's real GDP growth exceeded certain base rate over 30 years, but the GDP linked payments were capped at total of 48% of the warrant's notional amount. This roughly corresponds to the "haircut" investors took in the debt restructuring. Argentina's GDP did grow sufficiently that it made some payments according to the terms of these warrants.

Greece issued a GDP-linked instrument as part of its debt default in 2012. Under the terms of this security investors can receive up to 1% of the face value of their holdings in a given year provided that a number of conditions are met. Payments are based on a formula that considers Greece's real GDP growth rather than its level, but the payment required Greece's nominal GDP to attain certain levels. The Greek GDP warrants are not technically bonds since investors do not have any principal claim in the event of a default and the GDP linked payments are not cumulative.

## **GDP Certificates:**

Our instrument differs significantly from previous issues, and the work reported in the literature, in that the underlying contract is exceedingly simple:

Treasury will pay "x%" of nominal GDP for, say, 30 years. (1)

As with Treasury Inflation Protected Securities ("TIPS"), investors in Certificates have inflation protection because GDP rises with inflation. Indeed, GDP is driven, not just by inflation, but by increases in productivity and the workforce. Certificates are truly a way to "Buy America" and should yield 1 to 2% more than TIPS. Because Certificates pay principal, as well as interest, they will have significantly higher cash flows than TIPS or bonds and they do not need to be refinanced at maturity, so we no longer burden our children with our debt.

As for Treasury, it makes lower payments in times of recession, easing its financial burden: and it is required to make higher payments in boom times, reducing the government's incentives/ability to undertake expenditures that aggravate the business cycle. However, this only mitigates the problem: there is no substitute for prudent fiscal policies.

To be more technical; with GDP Certificates investors purchase a no-load, no-fee, marketable term annuity that grows over time, is 100% backed by the government and, unlike stocks and bonds, should maintain value during periods of significant inflation. This is an investment well suited to retirement accounts. Treasury, by selling Certificates, raises money, buys a financial hedge and sells a consumption hedge with a self-amortizing instrument.

Draft Spring 2015

There are other points of interest:

- Since there is no explicit interest rate in the contract as defined in (1), Certificates, as opposed to debt, appear to conform to Sharia law and should be attractive instruments for Islamic Sovereign Wealth funds<sup>4</sup>.
- According to the Supreme Court, debt involves “an unqualified obligation to pay a sum certain at a reasonably close fixed maturity date along with a fixed percentage in interest payable regardless of the debtor’s income or lack thereof.”<sup>5</sup> Certificates clearly fail this test and so, to the extent Treasury finances its needs with Certificates, Congress and the rating agencies will have to revisit their models.
- The latter bears somewhat on the 'debt capacity' argument set out in Barr et al (2014). In that case, both the principal and interest payments were subject to adjustment according to the growth of GDP. If all Treasury's debt was subject to these adjustments on a one-to-one basis, the debt to GDP ratio could be a constant, barring new issues. In the case of Certificates, the principal is being repaid over time, like a mortgage. As a result, the debt to GDP ratio in the case of Certificates, will be more volatile than in the Barr example, but less volatile than in the case of regular debt. To the extent that rating firms include 'debt capacity' and debt repayment in their calculations, introducing Certificates into Treasury's tool kit will improve the nation's credit rating.
- Research indicates that Certificates would be classified by the IRS as “Contingent Liability Debt Instruments.” In debt-like instruments where the payout is contingent on specified events, the IRS rules that the investor's costs can be amortized, but all income and capital gains are taxed as ordinary income.
- Finally, we note that the government revises its estimates of GDP for a number of years after the first report. As a result a small portion of each year's Certificate payment would need to be escrowed for several years. Claims on this escrow pool would be tradable with the prices of these claims reflecting the market's forecast of the measurement error imbedded in the current reported figure. Further, on this point, governments occasionally change the way they measure GDP. Since Certificates are envisioned as a contract, the measurement methodology should be described in that contract and would remain in force, for the purpose of servicing that instrument, until its maturity. This may mean that there is more than one measure of GDP at any point in time.

### **Example:**

What is the potential of Certificates? If Treasury offered Certificates that paid just 0.2% of the Gross Domestic Product for 30 years (somewhat in excess of \$30 billion this year, but rising

---

<sup>4</sup> and "the opportunities for risk-sharing among countries are massive." Borensztein (2004) Section 3.2.1

<sup>5</sup> - *Gilbert v. Comm’r*, 262 F.2d 512 (2d Cir. 1969). Footnote 3

over time), that offer, given today's interest rates and inflation expectations, would raise approximately \$1 trillion from investors. This could be used to repay debt, fund the social security program and/or meet government expenses.

The \$1 trillion figure is simply the percent of GDP offered, 0.2% in this case, multiplied by the present value of GDP over the term of the issue.

$$\text{Issue Value} = (\text{PV of nominal GDP}) * (\% \text{ of GDP offered}) \quad (2)$$

This is what could be called the 'certainty equivalent': if we knew the present value of GDP, this would be an identity. However, the present value of GDP is subject to estimation error: so we have two adjustments to make.

The first is to recognize that the investor is taking on some form of equity risk; s/he needs additional compensation. As mentioned in Kamstra and Shiller (2009), they use the CAPM to estimate that perpetual claims on GDP should pay something like 150 basis points more than short-term Treasuries. However, GDP is significantly less volatile than the equity market and, since Certificates have a maturity and are high cash-flow instruments, repaying capital as they age, we believe the market will use a lower discount rate than Kamstra/Shiller. We believe investors will add a risk premium of something in the order of 50 basis points to the discount rate appropriate for a bond of that duration<sup>6</sup>. This would be our estimate of the market's downward adjustment to reflect the value of Treasury's financial hedge. Using current market data this implies a discount of roughly 7.5% from the Issue Value above.

The second adjustment is to allow for the fact that the investor is buying insurance against unexpected inflation. Since we are talking about unexpected inflation - the expected inflation is included in the calculation of the present value of GDP - it is difficult to estimate this premium. However, the market participants who set this premium are those in the market who want/value such insurance. The longer the term of the Certificate and the more the uncertainty or difference in opinion as to the extent of future inflation (a reasonable description of our current situation) the higher the premium. It is not difficult to come up with premiums to the Issue Value in (2) of 5 to 10%, even after including the financial hedge discount discussed in the previous paragraph.

### **Barriers:**

Companies could issue Certificates based on their sales/gross revenues; see LeClair & Schulman (2006). However, there is a problem in that investors will pay a premium for inflation insurance to an individual issuer only if they can invest in a diversified package of such instruments. Since the sales of any one company are unlikely to be tightly correlated with inflation, investors without adequate diversification are unlikely to get the desired protection and, therefore, unlikely to pay the premium. As a result, Treasury is the obvious choice as an issuer.

---

<sup>6</sup> Using CAPM we assume a 5% equity risk premium and a beta of 0.1. Kamstra and Shiller estimate a beta of 0.25 for their perpetual Trill.

GDP Certificates address one of the country's most pressing financial problems; the political turmoil over its debt ceiling and protecting taxpayers from serious financial damage should interest rates rise as predicted. I have discussed this concept with former Treasury officials and notables in academia and finance. They helped shape the argument but felt that Treasury is not product-oriented and will not be the first to issue GDP Certificates. It may be time for Treasury to adopt the product and customer-driven culture of American business<sup>7</sup>.

Treasury is aware of, and rightfully concerned about the repercussions of failed experiments. As a result it has developed a very 'conservative' culture, finding reasons not to innovate. For instance, Treasury is concerned about paying a liquidity premium on unconventional financing. They note that TIPS traded at absurd levels for years, and still are not liquid versus conventional Treasury debt. Any new economically-linked instrument would presumably suffer similarly.

But Treasury could solve this by giving investors the option to convert, at any time, the unamortized value of their Certificates into one or more specified conventional and "liquid" Treasury issues with a similar maturity. That means the worst the investor could do is get the rate of return implied in the "certainty equivalent" calculation – less any premium s/he paid. Certificates would always trade at a premium to the unamortized value inherent in the "certainty equivalent", or they would be converted.

Such a practice might also solve any regulatory problems associated with a new security. The regulators could simply view the asset as if it were the conventional debt issue into which the Certificate could be converted. It also allows Treasury to be innovative. We know that not all innovations will be successful: this would be a way to 'bury the dead'. The procedure is standard and easily understood by investors and regulators. Use of the conversion option described above, implies that the liquidity premium problem should disappear along with any unsuccessful innovation.

### **Conclusion:**

Treasury has fully exploited the extraordinarily low short term interest rates we have been experiencing. The flip side of this arrangement is that taxpayers are now dangerously exposed to financial harm when rates rise. The potential damage from the coming rise in interest rates is sufficient that Treasury should take steps now to make itself far more product-oriented. Equity type issues like Certificates are promising solutions. Investors receive a stake in America's future and our children do not inherit a crushing load of debt.

---

<sup>7</sup> Treasury not only faces the cost problem outlined in the first paragraph of the Introduction, but it will still have to finance government deficits, possibly at a time when the Federal Reserve is liquidating some of its massive holdings of Treasuries. New financial products will broaden the field of potential investors.

## BIBLIOGRAPHY

**Barr, D, Bush, O, and Pienkowski, A (2014)**, ‘GDP-linked bonds and sovereign default’ Bank of England Working Paper 484

**Borensztein, E and Mauro, P (2004)**, ‘GDP-indexed bonds’, *Economic Policy*.

**Griffith-Jones, S and Hertova, D (2013)** Growth-Linked Bonds, CESifo DICE Report

**Kamstra, M and Shiller, R (2009)**, ‘The case for trills: giving the people and their pension funds a stake in the wealth of the nation’, *Cowles Foundation Discussion Paper No. 1717*.

**LeClair, R and Schulman, E (2006)** ‘Revenue Recognition Certificates: A New Security’ *Financial Analysts Journal, Volume 62 • Number 4, CFA Institute*