U.S. Treasury Debt: Virtuous Circles, Vicious Circles, and Mathematical Intersections

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By
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DISCIPLINED GROWTH INVESTORS

The Way Wealth Is Built

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According to Wikipedia: "A virtuous circle and a vicious circle (also referred to as virtuous cycle and vicious cycle) are economic terms. They refer to a complex chain of events that reinforces itself through a feedback loop. A virtuous circle has favorable results, while a vicious circle has detrimental results.

"Both circles are complexes of events with no tendency towards equilibrium (at least in the short run). Both systems of events have feedback loops in which each iteration of the cycle reinforces the previous one (positive feedback). These cycles will continue in the direction of their momentum until an external factor intervenes and breaks the cycle."

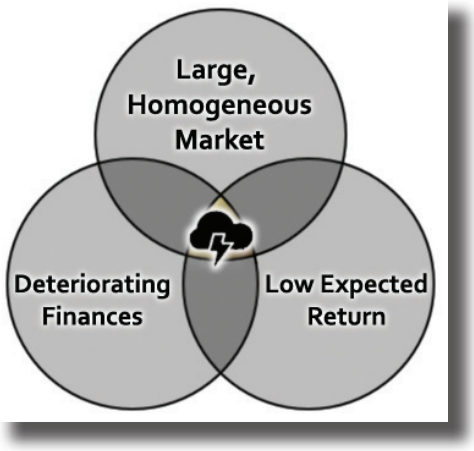
In this piece we are going to assert that in 1981 the debt markets entered a virtuous circle, with generally falling interest rates and rising bond prices. The virtuous circle favored lenders for over two decades. The star stocks during this period included Fannie Mae and Citigroup. In 2008 the virtuous circle for private debt abruptly turned into a vicious circle. The implosion was based on faulty credit analysis and lack of transparency. The near-simultaneous collapses of well-established financial companies such as Bear Stearns, Lehman Brothers, AIG, Fannie Mae, Freddie Mac and Washington Mutual almost brought the entire U.S. financial system to its knees.

The virtuous circle for sovereign debt ended in 2008 for many governments. The U.S. Treasury, fortuitously and virtually alone among borrowers, remained in a virtuous circle for the financing of public federal debt after the 2008 financial crisis. The U.S. Treasury arguably remains in a virtuous circle today. In this paper we are going to examine the combination of existing Treasury debt as well as the rate of deficit spending. We are going to assert that the honeymoon (virtuous circle) the U.S. Treasury has enjoyed must inevitably end. The U.S. Treasury debt market will enter a vicious circle.

Mathematical intersections

In mathematics, the concept of an intersection is important. Briefly, the concept has to do with delineating the common elements associated with two otherwise separate constructs. What this means is that two entities actually become three. The two original constructs each have their own properties, and the intersection of the two constructs also has its own properties.

We exploit two-factor intersections regularly. An opportunity in stock A requires the intersection of improving fundamentals plus an attractive stock price. The intersection of these two factors can yield a third entity, a superior investment. Intersections of two factors are common. It is far less common, even rare, when three important factors coincide to produce a fourth entity.



Today the U.S. Treasury debt market presents such a three-factor intersection. The combination of poor expected returns and the deteriorating financial condition of the federal government would be a major story in itself. The fact that the U.S. Treasury debt market is very large ($16.2 trillion total, $11.4 trillion in public hands) and homogeneous makes this an important three-factor intersection.

This three-factor intersection is likely to be the major macroeconomic and financial issue for the foreseeable future. Investors must understand that the only prudent course of action with this intersection is to either own Treasury bonds or avoid them completely. It will not be possible to find small pockets of Treasury securities in which to hide; the market is too homogeneous. Even investors who shun Treasury notes and bonds will have to analyze how far from the epicenter their holdings might be. Problems in the Treasury debt market may amplify problems in other sectors, such as corporate and municipal bonds. Adverse events within the Treasury debt markets are likely to be quickly known.

Let's look at each factor in turn

Factor #1—The balance between risk and expected return from Treasury notes

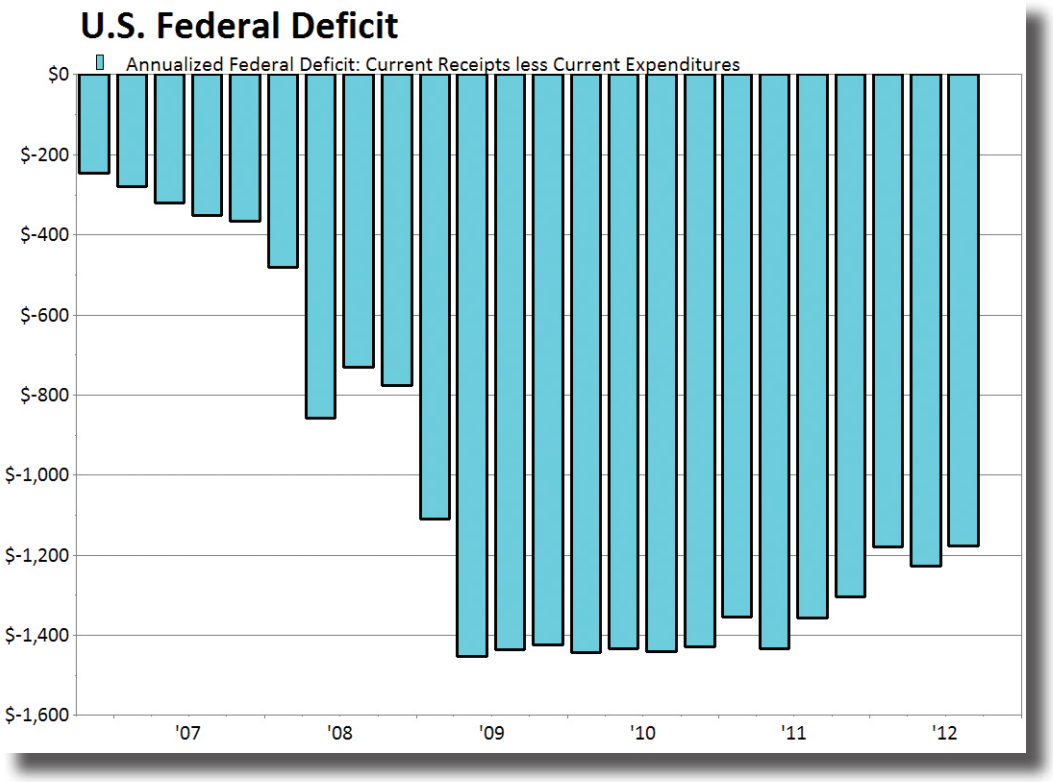
As of the date of this piece 10-year U. S. Treasury Notes offer a yield-to-maturity of 1.75%; that is, a buyer of 10-year Treasury notes could expect to earn 1.75% per year over the next 10 years. This return is before inflation and taxes. If inflation is 1.75% per year or higher over the next 10 years the investors will actually lose purchasing power. If the investor is subject to U.S. federal taxes, then the nominal return would decline to about 1% per year.

U.S. Treasury notes are extremely overvalued. Investors in U.S. Treasuries should expect to earn low nominal and perhaps negative real returns over the next 10 years

Factor #2—The U.S. government has deteriorating fundamentals

The federal government is a fiscal mess. During the current fiscal year which ends on Sept. 30th, 2013, the federal government is projected to collect about $2.8 trillion in taxes and spend about $3.8 trillion. In percentage terms, the U.S. government is only collecting about 75% of each dollar it spends.

The chart below shows the ugly pattern. Federal deficits since 2007 have averaged more than $1 trillion per year.



FactSet Research Systems Inc., DGI, 2013

Various quasi-independent entities within the federal government are doing poorly, too. The U.S. Postal Service lost more than $15 billion last year. Fannie Mae and Freddie Mac are on life support from the U.S. Treasury yet are still guaranteeing mortgages. The FHA looks like it is headed for a similar fate to Fannie Mae and Freddie Mac.

The federal government has stepped directly into the student loan business; there are now about $1 trillion of student loans outstanding. Default rates on student loans are beginning to approach the default rates on sub-prime mortgages, an ominous development.

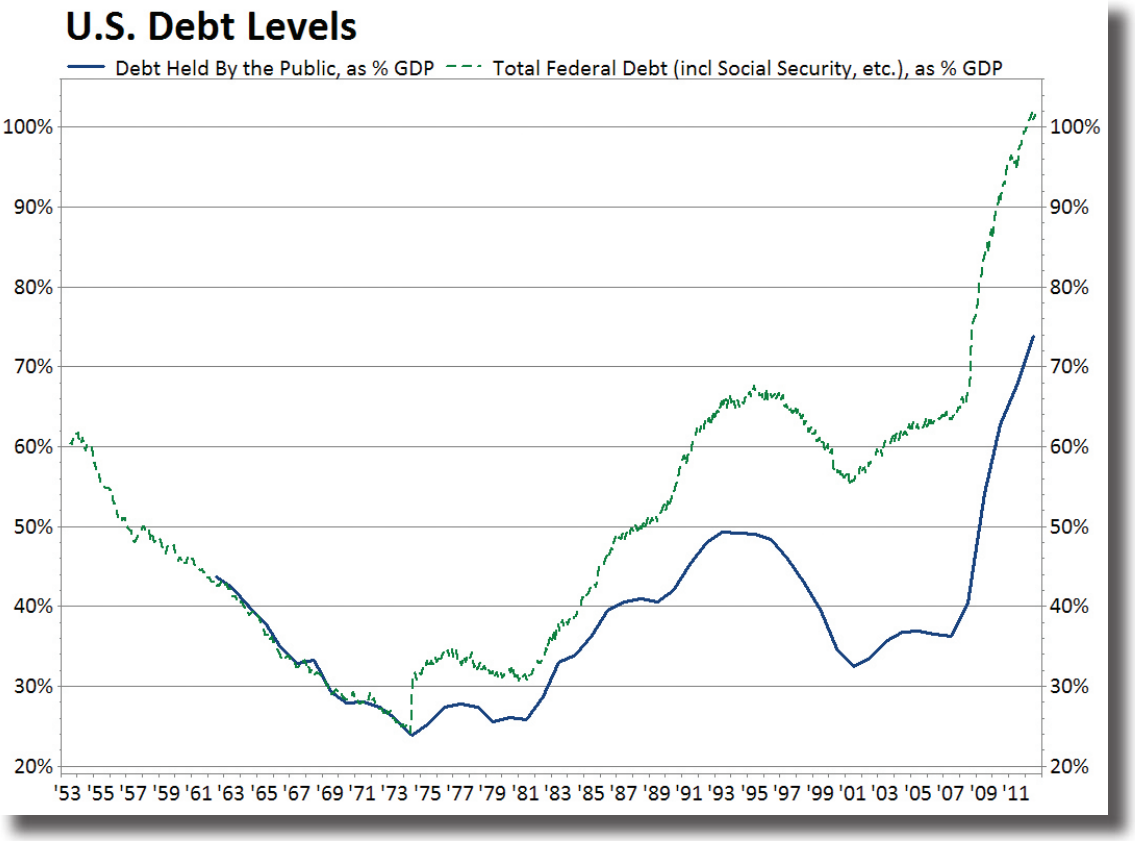
A quick look at the organization of the executive branch in the federal government shows why our government cannot manage its affairs properly. Originally, George Washington appointed four cabinet officers: State, War, Treasury, and the Attorney General. There are now 15 cabinet secretaries, six cabinet level officers, a chief of staff and the Vice President. The President has at least 23 direct reports, excluding his campaign staff. This is a prescription for duplicative efforts and excessive spending.

It should surprise no one that the federal government cannot control its spending. Most prudent estimates of the budget deficit assume the deficits will remain at $1 trillion per year or higher for the foreseeable future.

Factor #3—U.S. federal debt is large and homogeneous

There are two estimates widely associated with the amount of federal debt outstanding; some estimates are $11-12 trillion and some are $16-17 trillion; the difference is based on who owns the debt. As of the date of this piece, about $11.4 trillion of debt is in the hands of "public" buyers. Another $4.8 trillion is debt owed by one part of the government to another. Most of the $4.8 trillion is owed by the general fund to the Social Security Trust Fund. For years the Social Security Trust Fund ran a surplus; that surplus was loaned to the general fund to help pay for annual federal budget deficits.

We have also included a chart showing the amount of federal debt as a percent of U.S. GDP.



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The Treasury debt market is also homogeneous. Treasury debt is issued by one borrower and the debt instruments themselves are remarkably free of the kind of provisions typical of municipal and corporate debt, such as lack of call protection and sinking funds.

Factor #4—The intersection of factors 1, 2, and 3

Investors in today's environment can and must come to grips with a U.S. Treasury debt market that is very large, homogeneous, overvalued, with deteriorating fundamentals. Investors must decide whether to own Treasury notes and bonds or shun them completely.

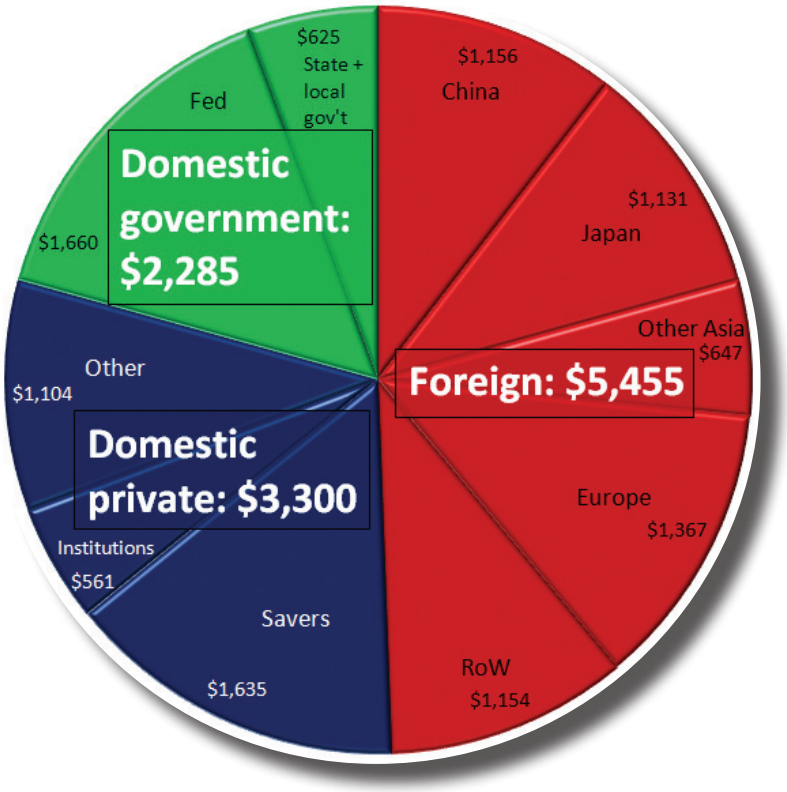
Before we delve further into the Treasury debt market, we wish to acknowledge that there is still much political unrest in the world. At any time a conflict overseas or a terrorist attack on our shores could temporarily affect the markets. We know the risk is there and have no way to handicap those risks.

The rest of this piece will attempt to analyze U.S. Treasury debt from an investment perspective.

For our purposes here we are going to focus on the $11.4 trillion owed to "public" lenders. This is not meant to imply that the $4.8 trillion owed to the Social Security Trust Fund is not important. We just do not know how the government is going to decide to handle this debt. We suspect this debt will become far more important in the future when the Social Security benefit payments begin to exceed FICA tax revenues. The Social Security Trust Fund will no longer be able to fund concurrent budget deficits and will become a cash drain on general revenues.

Who owns the debt?

The current holders of publicly held U.S. Treasury are depicted in the pie chart below: ***(note: all dollar amounts in billions)***



U.S. Department of the Treasury, DGI, 2012

What is the maturity of the Treasury debt?

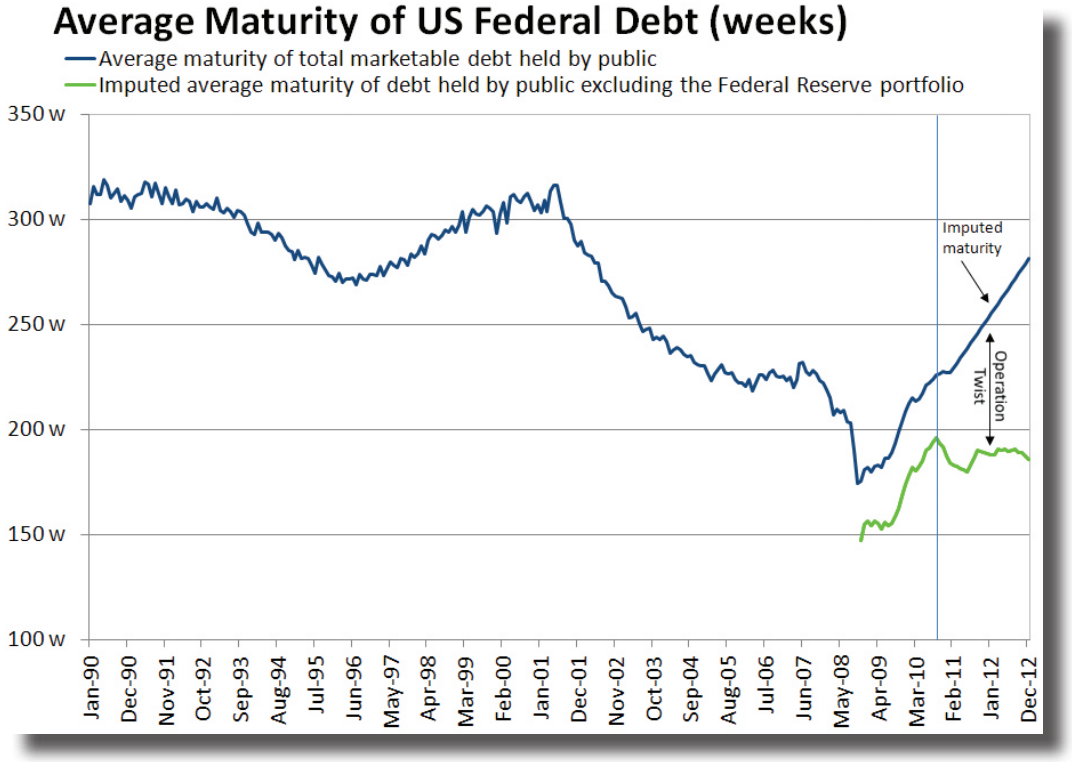
Debt maturity can be important. In general, longer maturities are better for the borrower. The borrower typically locks in a fixed rate, protecting the borrower from large changes in interest rates. Annual budgeting is far easier. With longer-term maturities, the borrower does not have to pay back the principal anytime soon.

The average maturity of the U.S. federal debt declined materially from 2001 through 2008. The average maturity of the debt has since lengthened as the Treasury has made a concerted effort to issue longer-dated debt, for reasons including those above. However, the Federal Reserve has simultaneously been purchasing large amounts of that long-dated U.S. federal debt. As a result, the average maturity of U.S. federal debt, excluding that held by the Federal Reserve, has remained at about four years, a near-historic low.

This maturity structure and the ongoing deficit spending of the federal government imply that the U.S. Treasury must finance, or refinance, more than $7 trillion of publicly held debt at future interest rate levels in the next four years.

What is the current level of interest expense on "public" Treasury debt?

During the last twelve months the interest expense on the publicly-held federal debt was about $230 billion. Given the average of $10.6 trillion in such federal debt outstanding during the year, interest rates on publicly-held federal debt were about 2.1%.



U.S. Department of the Treasury, DGI, 2012

What happens if interest rates rise?

Were one to assume that rates paid on the public debt outstanding were to rise to 5% (from ~2.1% now) on the publicly held debt over the next four years, this would imply that the U.S. Treasury would pay about $750 billion per year in interest, an increase of $520 billion per year in annual interest costs. These payments would consume about 20% of projected tax receipts.

Were rates to rise to 10% in four years, interest paid would increase by over $1 trillion per year to about $1.5 trillion, or about two fifths of projected tax receipts.

It is important to remember that future interest rates are largely out of the control of the U.S. Treasury. If interest rates were to rise, the federal budget deficits could incur significant increases.

Who is buying the debt?

To give you some context on who is buying the federal debt we have focused on three time periods:

- 2002-2008
- 2008-2011
- 2011-present.

Time Period #1: 2002–2008

From 2002-2008 China was the largest identifiable buyer of U.S. Treasury debt, purchasing $73 billion per year. Various other groups were also significant buyers. Perhaps more interesting is the fact that the Federal Reserve and investment institutions actually sold Treasury debt on net from 2002-2008.

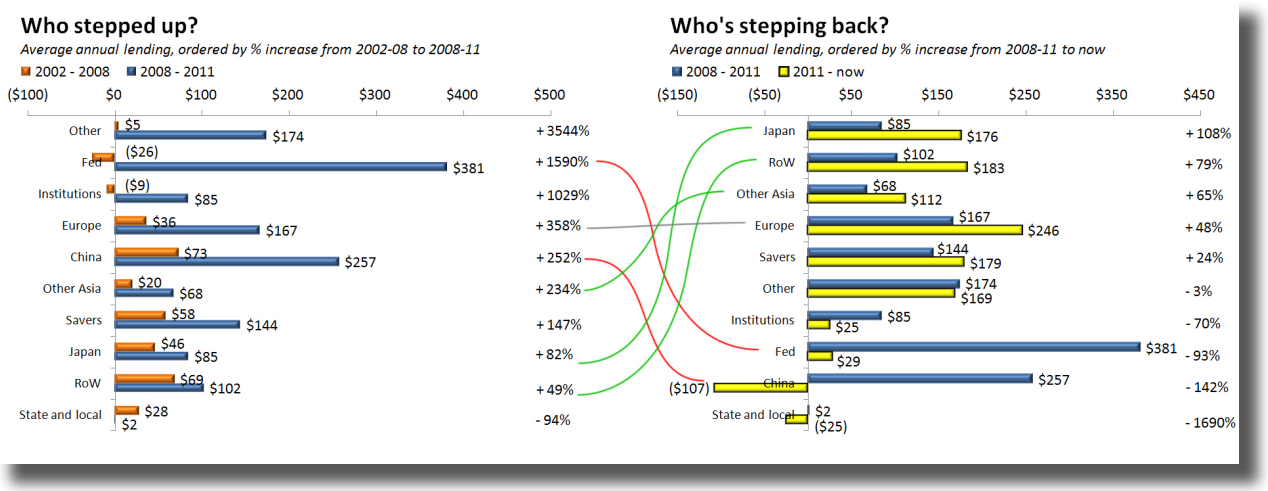
Time Period #2: 2008–2011

Beginning in 2008, the amount of U.S. Treasury debt outstanding was $5.2 trillion. The amount of debt outstanding has more than doubled since then, rising to $11.4 trillion. The buyers of Treasury debt since 2008 have changed places. The Federal Reserve System changed from a net seller of Treasury debt from 2002-2008 to the largest buyer after 2008, purchasing $381 billion per year of Treasury debt. Everyone else, with the exception of state and local governments, also stepped up.

Time Period #3: 2011–Present

In 2011 another shift in buyers occurred. The most striking change is that China went from a major buyer to a significant seller of Treasury debt. The Federal Reserve sharply reduced its purchases of Treasury debt. Institutional investors also sharply reduced their purchase activity. Japan, the rest of the World, and Europe have actually increased their purchases of Treasury debt.

Below are two charts showing the purchase activity of Treasury Debt. The charts are pretty busy. Please take the time to look at them carefully; there is much good data contained in them.



U.S. Department of the Treasury, DGI 2012

Since 1981, a virtuous circle for U.S. Treasury debt financing

Since 1981 the U.S. Treasury has fortuitously been in a virtuous circle for financing its debt. In 2008, the U.S. Treasury remained in the virtuous circle while nearly every other borrower entered a vicious circle. This circle has included low and declining interest rates on U.S. Treasury debt. This has allowed the U.S. government to finance historically very large deficits easily and without incurring major interest expense. Buyers of U.S. Treasury debt have experienced rising asset values during this period. (A decline in interest rates means that the price of the bond goes up.)

SOME INSIGHTS ON U.S. TREASURY DEBT

The Federal Reserve has quietly changed its charter. Instead of a twin objective of full employment and price stability, it is now a primary financing source for the U.S. Treasury. These are some key points about U.S. Treasury debt:

- **The present combination of debt and deficits is not sustainable. Consider that the U.S. government is borrowing nearly $100 billion per month of new debt, which is piled on the $16.4 trillion the U.S. Treasury already owes.**
- **The U.S. Treasury will not default on its debt obligations. Interest payments are about 10% of federal revenues.**
- **The amount of debt outstanding is very large. The resolution of the debt issue will have a large effect on the financial markets and may have collateral effects on the economy.**
- **The U.S. Treasury debt market is homogeneous. Developments in this market are likely to be uniform and quickly known.**
- **The U.S. Treasury debt market is relatively transparent. Investors can track the amount of debt outstanding and the current year deficits. This debt market is different from the sub-prime crisis, which had lots of different players and securitization. Investors can be fully informed about developments in the U.S. Treasury market.**
- **The Federal Reserve has been a large buyer of Treasury debt. Other central bankers have also been large buyers of Treasury debt.**
- **All investors are in uncharted waters. None of us have faced the expansion in federal debt on this scale. That means no one has a clear crystal ball on how events play out. We are committed to remaining open to a broad range of possibilities.**

The macroeconomic background has been highly favorable. In a sluggish recovery there has not been much demand for private debt, which competes with public debt. The U.S. private sector reacted to the events of 2008 by cleaning up its debts and selling stocks to buy bonds. The private sector also favored U.S. Treasury Bonds as a safe haven after the crisis in 2008.

These factors have combined to produce a highly favorable background for U.S. financing. This has allowed politicians to keep tax revenues low without affecting spending programs.

Inevitably, a vicious circle for U.S. Treasury debt financing

Based on our analysis of the U.S. Treasury debt and deficits, we believe it is inevitable that the U.S. Treasury debt financing will shift from a virtuous circle to a vicious circle. We cannot predict when this will happen. It may occur with a "bang" as in 2008, or may shift very gradually. But it will occur.

In the vicious circle, the U.S. Treasury faces a headwind in funding large budget deficits. Rising interest rates mean that the holders of U.S. Treasury debt will begin to experience low coupon income and falling bond prices. Price declines will be larger than expected. Low coupon income means bond prices are much more sensitive to changes in interest rates. Ouch! Appetite for new debt will dampen. Rising interest rates increase the cost of debt. Projected budget deficits will have to be increased. The recent "fiscal cliff" tax increases raised about $60 billion per year in taxes. If U.S. Treasury bond yields were to increase from 2% to 3%, in two years the added interest costs would be $130 billion per year, more than twice the new taxes. And in the vicious circle interest rates keep rising until something changes.

Once the U.S. Treasury enters the vicious circle, it will likely take years to reemerge. It is important to remember virtuous circles and vicious circles are characterized by a self-reinforcing mechanism that prolongs each cycle.

Clues to the vicious circle

We believe there are at least three clues which might provide some insight into when the U.S. Treasury debt financing might enter the vicious circle. The most obvious is interest rates on U.S. Treasury debt. If interest rates rise, we believe such an increase could signal that the vicious circle has begun.

Central bank activity might also provide a clue as to when the U.S. Treasury begins to enter the vicious circle. Since 2008 the Federal Reserve Bank has exploded its balance sheet, increasing its holdings of debt from about $475 billion to nearly $2.7 trillion. According to Roberto Perli of ISI, the Federal Reserve Bank might be able to buy up to $1 trillion to 2 trillion of new debt before its independence is severely compromised. We expect the Fed will begin to curtail its purchases well before it reaches $2 trillion more debt. This

calculation leaves the U.S. Treasury less than two years of significant help from the Fed on new debt issuance. Foreign central banks have also been major buyers of Treasury debt. They also face the same issue as the Federal Reserve Bank: a limit as to how much debt they can buy. For instance, the central bank of Switzerland is already overloaded with foreign debt, according to a recent article in the *Wall Street Journal*.

Central banks around the world are attempting to keep their currencies from appreciating versus the dollar. This is not easy, because there is so much new U.S. debt created every month. This "race to the bottom" is unsustainable. A significant decline in the exchange value of the dollar could tip the U.S. Treasury debt markets into the vicious circle.

Life in the vicious circle

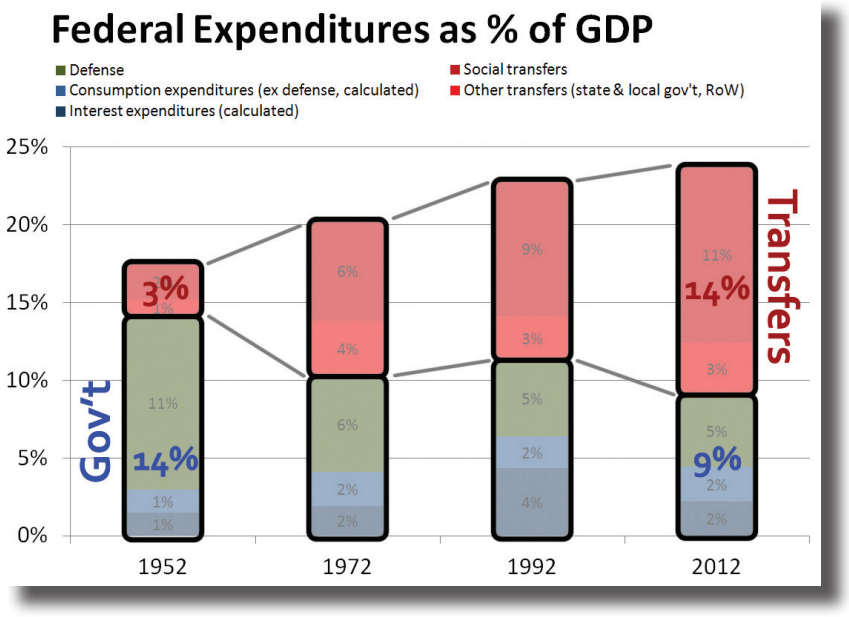
Once the U.S. Treasury enters the vicious circle, it will find itself increasingly constrained on its financing flexibility. It will no longer be possible to issue debt at low cost to fund historically large budget deficits. The "cost" of federal government deficits will rise dramatically. The Treasury will want to raise taxes as a percentage of GDP to reduce the deficits. There are two major problems with this approach. Tax increases dampen economic activity, which can cause overall tax collections to fall short of expectations. Second, the virtuous circle has allowed for major spending without tax increases; taxpayers have not been prepared by politicians to accept the need to raise taxes. They have gotten used to receiving $1 of government services for 75 cents in taxes.

The recent "fiscal cliff" deal hardly raised taxes much, even though the circumstances favored larger tax increases. At the state level, several governors are leading the way toward lower taxes. The Treasury will also be tempted to deflate the dollar to pay back the debt. Higher inflation would cause higher interest rates, which would mean a higher budget deficit. Inflation would also cause major economic distortions, with likely damage to economic growth. Neither higher taxes as a percentage of GDP nor inflation will allow the Treasury to escape the vicious circle.

There is one possible way to avoid the vicious cycle: higher economic growth accompanied by rising employment. Higher economic activity would increase tax receipts in absolute terms while rising employment would reduce unemployment benefits and food stamp payments. It must be noted that we have not seen deficits of this relative size, and it is speculative to believe that economic growth can cause the U.S. Treasury to avoid the vicious circle. We also note that present federal fiscal and regulatory policies are not conducive to faster economic growth or rising employment. We think it is imprudent to trust higher economic growth to solve the deficit issue.

Where is the federal government spending money?

The chart below shows that government transfers (primarily entitlement spending) has become the main driver of federal spending. As detailed in our earlier piece published at the end of 2011, *A Tale of Two Cities*, we estimated that the present value of entitlement spending is $60 trillion to $200+ trillion and dwarfs the amount of federal debt outstanding.



U.S. Department of the Treasury, FactSet Research Systems, Inc., DGI 2013

The coming political battle

We believe U.S. politicians will not meekly agree to reduce spending. For over thirty years and especially since 2008 they have been able to easily finance large budget deficits with ease. They are not going to want to be held hostage to debt markets.

The politicians are going to be caught between the debt markets and their constituencies. This will be the major conflict of the vicious circle. We expect the politicians will give ground on entitlements grudgingly and only as necessary to gain access to the debt markets at reasonable cost. The resolution of this conflict will be slow and keep the U.S. Treasury in the vicious circle for a long time.

There are systemic risks associated with the vicious circle. The Federal Reserve has less flexibility to manage the U.S. money supply. Central bankers around the world have fewer options to manage their currencies' exchange values. The U.S. Treasury will be more vulnerable to an outright funding crisis, which could cause an abrupt reduction in federal government spending.

The only prudent way out of the vicious circle will be to reduce spending, especially government transfers.

Economic implications

The metamorphosis of the virtuous circle of Treasury debt into a vicious circle may not necessarily harm private economic growth and actually could help. For example, significant changes in future eligibility for government transfers (i.e., raising the retirement age for Social Security) would reduce a major source of future costs and free up private sector capital for increased innovation and growth.

There are systemic risks associated with the vicious circle. The Federal Reserve has less flexibility to manage the U.S. money supply. Central bankers around the world have fewer options to manage their currencies' exchange values. The U.S. Treasury will be more vulnerable to an outright funding crisis, which could cause an abrupt reduction in federal government spending.

We suspect the financial crisis of 2008 was the defining calamity in the private sector for this generation of investors. Any new crises are likely to be centered in the public sector.

What should an investor do?

The turmoil over the U.S. Treasury debt will dominate the headlines and could cause investors to lose focus.

Since the U.S. Treasury market is a three-factor intersection, investors must take developments there very seriously. Investors must decide whether to own U.S. Treasury notes and bonds or to shun them completely. We believe investors should follow the most basic tactic when confronted with a large market that is both overvalued and has deteriorating fundamentals. Get out of the way. Do not own Treasury bonds and notes. They are likely to be in politicians' line of fire for years.

There is significant conflict coming between the federal debt markets and government transfers. If you expect to receive major entitlements from the U.S. government you should expect those benefits to be cut. If a charitable institution receives a bulk of its funding from the federal government it should diversify its funding sources.

Investors must consider the ripple effects of problems in the U.S. Treasury debt markets. Investors in corporate and municipal bonds must be conscious that the fallout from the U.S. Treasury market is likely to spill over to other bonds.

The stock market is priced to yield excellent results over the intermediate term, seven years. The conflict over the U.S. Treasury market may rattle the stock market, but we do not expect stocks to suffer a sustained loss of value.

About Disciplined Growth Investors

Disciplined Growth Investors is a Minneapolis-based investment management firm specializing in prudently exploiting investment opportunities in publicly held small cap and mid cap growth companies. Founded in 1997, the firm remains employee owned and completely independent.

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