

4-1-2009

Civil War Finance: Lessons for Today

JEFFREY ROGERS HUMMEL

San Jose State University, jeff@jrhummel.com

Follow this and additional works at: https://scholarworks.sjsu.edu/econ_pub



Part of the [Economic History Commons](#), and the [Macroeconomics Commons](#)

Recommended Citation

JEFFREY ROGERS HUMMEL. "Civil War Finance: Lessons for Today" *Chapman Law Review* (2009): 591-613.

This Article is brought to you for free and open access by the Economics at SJSU ScholarWorks. It has been accepted for inclusion in Faculty Publications by an authorized administrator of SJSU ScholarWorks. For more information, please contact scholarworks@sjsu.edu.

2 of 2 DOCUMENTS

Copyright (c) 2009 Chapman Law Review
Chapman Law Review

Spring, 2009

Chapman Law Review

12 Chap. L. Rev. 591

LENGTH: 10891 words

Article: Panel 2: What Would Lincoln Do? Constitutional Approaches to Wartime Finance and Economics: **Civil War Finance: Lessons for Today**

NAME: Jeffrey Rogers Hummel*

BIO: * Associate Professor, Department of Economics, San Jose State University.

LEXISNEXIS SUMMARY:

... The best guesses of how much state and local governments spent at this time are less than one and a half times as much as the national government, making total spending at all levels of government at most 5 percent of national income. ... The three primary ways of paying for government expenditures are (1) current taxes; (2) government borrowing, which is equivalent to future taxes, since even if the government's debt is never paid off, the present value of all future interest payments is roughly equal to the total value of the debt; and (3) the issuing of money, which generates inflation and an implicit tax on people's cash balances, as money's purchasing power declines. ... The Civil War's unprecedented expenditures struck at the very moment that the Union's anticipated revenues fell. ... The latter fact meant that he had a strong dislike for governmental control of the economy; he despised government debt, paper money, and internal taxes. ... The interest alone on this debt commanded about 40 percent of the central government's outlays into the mid-1870s (as compared with less than 10 percent today). ... Finance of the American Revolution stands as a precursor to Confederate finance, with a similar low level of formal taxation (6 percent), heavy reliance on seigniorage (75 percent), and resulting hyperinflation. ... Greenbacks were simple fiat money, printed by the Treasury and used directly to make government purchases. ... It peaked at \$ 2.3 trillion in December 2008, as the Treasury loaned over half a trillion of newly borrowed money to the Fed, which turned around and loaned it to foreign central banks through currency swaps. ... This seemingly technical change not only gives banks an incentive to just hold reserves rather than loan them out - thereby dampening increases in bank created money and in the price level - but it also essentially converts reserves into more government debt.

TEXT:

[*591]

Randolph Bourne was a young Progressive radical during World War I. ⁿ¹ Viewing the grotesque excesses of Woodrow Wilson's wartime administration, he wrote an essay in which he coined the maxim: "War is the health of the State." ⁿ² The essay was only published posthumously, because Bourne himself became a victim of the war-induced flu epidemic. ⁿ³

Economists and historians have confirmed the validity of Bourne's maxim in two major respects. First, during war itself, there is a surge in government power, as it increases in scope, size, and intrusiveness. ⁿ⁴ The war brings about higher taxes, wider conscription, more regulation of the economy, and suppression of civil liberties. ⁿ⁵ Governments

tend to spend more on war and preparing for war than on anything else.ⁿ⁶ Indeed, prior to the advent of the modern welfare State in the twentieth century, governments usually spent more on war and preparing for war than all other things combined.ⁿ⁷ The State was essentially a war making institution that did a few other things on the side.ⁿ⁸

[*592] The second respect in which "war is the health of the State" is what Robert Higgs and other economic historians have identified as the postwar ratchet effect.ⁿ⁹ After the war ends, there is demobilization with some cut back in taxes, conscription, regulation, and restrictions on civil liberties, but governments rarely return to their prewar size and power.ⁿ¹⁰ The State has assumed new functions and exercised new prerogatives that continue long after the fighting is over.ⁿ¹¹ In what follows we will survey how these two phenomena apply generally to government finance throughout the history of the United States, then look specifically and in detail at Civil War finance, make some comparisons with the financing of other major American wars, and finally consider the relevance of these observations for today's War on Terror and financial crisis.

I. War and U.S. Government Finance

Figure 1 shows total spending of the U.S. government as a percent of Gross Domestic Product (GDP) from 1792 to the present. By using the percentage of GDP, the graph adjusts spending for three factors: (a) any price inflation or deflation; (b) population growth; and (c) the growth of people's real incomes. If the percentage goes up, that means that real government spending per person is rising faster than the economy's output. In other words, more of people's incomes is going to the national government and less to the private sector (or in this case, to other levels of government).ⁿ¹²

[*593]

[SEE FIGURE 1 IN ORIGINAL]

Fig. 1

The graph shows both major peaks and minor peaks during wars. If one looks closely, one can discern the impact of the War of 1812, the Mexican War (1846-1848), and the Spanish-American War (1898). But the Civil War (1861-1865), World War I (1914-1918), and World War II (1939-1945) all induce major peaks in national outlays. Notice also the postwar ratchet effect.ⁿ¹³ Thus, after the Civil War peak of around 13 percent of GDP, the postwar ratchet leaves government spending 50 percent higher than its prewar level. Indeed, federal expenditures even decline slightly as a percent of GDP during the Progressive Era of government activism in the early twentieth century. The World War I ratchet nearly doubles national outlays, from about 2.5 percent of GDP prior to the war to 5 percent of GDP afterwards, despite the alleged Republican retrenchment of the nineteen twenties.ⁿ¹⁴

President Franklin Roosevelt's New Deal caused another doubling of federal expenditures during the thirties.ⁿ¹⁵ This peacetime increase is particularly anomalous because prior to the Great Depression, the general rule, not only in the U.S. but elsewhere in the industrial world, was for governments to rein in spending during depressions and recessions. The fiscal impact of the Great Depression, however, is entirely dwarfed by the **[*594]** expenditure hike during World War II. Even a brief post-World War II retrenchment never brings spending back to its New Deal level, and then the Korean (1950-1953) and Cold Wars stabilized national outlays at approximately twice that level.

Figure 1 admittedly omits any expenditures by state and local governments. Figure 2 adjusts for that omission beginning at the turn of the twentieth century.ⁿ¹⁶ Unfortunately, we have no precise figures on how much state and local governments within the U.S. spent during the nineteenth century. Nonetheless, once we can add this spending, the overall pattern does not change. We still observe wartime peaks and postwar ratchets. Moreover, the impact of the New Deal is dampened a bit. Prior to the thirties, state and local governments spent up to twice as much as the national

government. The New Deal made federal expenditures greater than those of state and local governments combined, and after World War II the pre-New Deal proportion is sometimes completely reversed, with federal expenditures fully twice as great.ⁿ¹⁷ In short, part of the increase in federal spending during the administrations of President Roosevelt really represented a change of the locus of spending away from the state and local level.

[SEE FIGURE 2 IN ORIGINAL]

Fig. 2

Prior to the American Civil War, the central government had miniscule peacetime budgets.ⁿ¹⁸ The highest annual outlays reached was \$ 74.2 million in 1858.ⁿ¹⁹ That translates into about [*595] \$ 1.5 billion in today's (2009) prices.ⁿ²⁰ Adjusting for population, the government in Washington was spending approximately \$ 2.50 per person in 1858, or the equivalent of \$ 50 per person per year today.ⁿ²¹ This was less than 2 percent of GDP. The best guesses of how much state and local governments spent at this time are less than one and a half times as much as the national government, making total spending at all levels of government at most 5 percent of national income.ⁿ²² Compare that with today when all government expenditures account for more than one-third of the economy's total output.ⁿ²³

The national debt, for all intents and purposes, had been briefly but completely paid off in 1835, under President Andrew Jackson.ⁿ²⁴ It had reemerged, mainly as a result of the Mexican War, but in 1860, it stood at a modest \$ 65 million - less than annual outlays in 1858.ⁿ²⁵ What makes this doubly amazing is that there were only two sources of federal revenue at the time: a tariff, with relatively low duties because this was an era of expanding free trade; and the sale of public lands, on which Congress had been steadily reducing the price because of the growing appeal of homesteading.ⁿ²⁶ In short, most Americans paid no taxes whatsoever directly to the central government.ⁿ²⁷ Their only regular contact with representatives of national authority would have been through the United States Post Office - if they had any contact at all.ⁿ²⁸

[*596] Even the monetary system was significantly deregulated as a result of the prior Jacksonian "divorce" of banking and government at the national level.ⁿ²⁹ There was no federally chartered central bank, and the Treasury, as much as feasible, avoided dealing with the many state-chartered banks. The only legally recognized money was specie, that is, gold and silver coins. Although banks were still regulated by the state governments, many states had instituted a de facto regime of quasi-free banking. The economy's currency consisted solely of state bank notes redeemable for specie on demand. Private competition thus regulated the circulation of paper money. Despite trumped-up charges of wildcat banking, it was by comparison a relatively stable and crisis-free monetary system, as attested to by the painless financing of the Mexican War from 1846 to 1848 and the unprecedented quiescence of monetary issues in national politics in the decade prior to the Civil War.ⁿ³⁰

II. The Impact of the Civil War

The cost of waging the Civil War for the Union would ultimately average \$ 1.75 million per day and reach a total of \$ 1.3 billion for 1865 alone.ⁿ³¹ Figure 1 shows federal spending climbing to 13 percent of GDP, but this may be an underestimate. Annual GDP figures during this early period must be interpolated between decennial census data, and so estimates vary. Moreover, the GDP figures used in the graph, from the work of Louis D. Johnston and Samuel H. Williamson, include Confederate output during the war, which understates the war burden unless Confederate government expenditures are included.ⁿ³² Earlier GDP estimates of Thomas Senior Berry would put national outlays in 1865 at just under 15 percent of northern GDP, beginning to approach what the central government spends nowadays during peacetime.ⁿ³³ It is hard to decide from which angle this statistic is more remarkable: that government spending rose from such infinitesimal lows almost to today's heights in only four years, or that today's federal authorities [*597]

regularly spend more than they did during the most expensive year of the country's bloodiest war. ⁿ³⁴

How did the administration of President Abraham Lincoln finance this enormous increase? No one needs to be reminded that government cannot create resources out of thin air. There are four potential ways of funding government expenditures, three of which are primary. ⁿ³⁵ The least important is government sale of goods and services; the same way private individuals and business raise funds. The Post Office, after all, sells stamps, the U.S. Department of Agriculture sells pamphlets, and the state of California sells lottery tickets (with a monopoly that suppresses market competition). ⁿ³⁶ Although we have already observed that the sale of public land was one of two sources of national revenue prior to the Civil War, selling goods and services is not normally a major source of government revenue. ⁿ³⁷

The three primary ways of paying for government expenditures are (1) current taxes; (2) government borrowing, which is equivalent to future taxes, since even if the government's debt is never paid off, the present value of all future interest payments is roughly equal to the total value of the debt; and (3) the issuing of money, which generates inflation and an implicit tax on people's cash balances, as money's purchasing power declines. ⁿ³⁸ The technical term that economists use for this last source of revenue is seigniorage, from the French word for feudal lord, because in medieval France it was the lord who had a monopoly on the mint and appropriated seigniorage. ⁿ³⁹

The Civil War's unprecedented expenditures struck at the very moment that the Union's anticipated revenues fell. ⁿ⁴⁰ Although the outgoing Congress had raised tariff rates even before Lincoln assumed the presidency, it was clear that the Treasury Department was not going to be able to collect any duties from the South in the foreseeable future. ⁿ⁴¹ Meanwhile, a [*598] Homestead Act finally passed Congress in 1862, implementing the Republican Party's promise that settlers get free title to 160 acres of government land after five years of settlement. ⁿ⁴²

Lincoln's Secretary of the Treasury, Salmon Portland Chase, had been an abolitionist and a former Democrat. ⁿ⁴³ The latter fact meant that he had a strong dislike for governmental control of the economy; he despised government debt, paper money, and internal taxes. ⁿ⁴⁴ A good government in Chase's eyes was a frugal government, yet he was forced to resort to a mixture of all the financial expedients that he disliked. ⁿ⁴⁵ In 1861, Congress implemented a direct tax of \$ 20 million on real estate; although this tax was to be administered by the individual state governments, ⁿ⁴⁶ it was the first internal tax Americans had paid to Washington City in forty-four years. ⁿ⁴⁷ However, the more extensive Internal Revenue Act passed by Congress one year later was not administered through the states but by the newly established Commission of Internal Revenues. ⁿ⁴⁸ Rather than recite all the myriad details of this and other Union revenue measures, it suffices to quote James G. Blaine, an up-and-coming Maine Republican, who called it "one of the most searching, thorough, comprehensive systems of taxation ever devised by any Government." ⁿ⁴⁹

In addition to all-encompassing excise, sales, and license taxes, the Internal Revenue Act of 1862 also introduced stamp taxes on most legal documents and an inheritance tax. ⁿ⁵⁰ Collection required the creation of an extensive Internal Revenue bureaucracy reaching into every hamlet and town. ⁿ⁵¹ Even more significant was a national income tax. Although the income tax authorized in August 1861 was never actually collected, more stringent legislation, passed in July 1862, provided the [*599] government its first ever revenues from that source. ⁿ⁵² The tax ultimately covered all annual incomes over \$ 600 (as low as \$ 6,000 in today's prices) at graduated rates from three to seven and a half percent. ⁿ⁵³ To ensure compliance, the government adopted a British practice and withheld money from people's income when it could. ⁿ⁵⁴ With all these measures, the United States achieved higher taxation per capita than any other nation by the end of the Civil War. ⁿ⁵⁵ But all the new and old taxes combined were just sufficient to cover about one-fifth of the Civil War's monetary cost, as indicated in Figure 3. ⁿ⁵⁶

[SEE FIGURE 3 IN ORIGINAL]

Fig. 3

Meanwhile, borrowing covered about two-thirds of the war's cost.ⁿ⁵⁷ Chase floated some loans directly to the general public, with the aid of an extravagant publicity campaign handled by private financier, Jay Cooke.ⁿ⁵⁸ For most of its borrowing, however, the Union had to rely on banks, and this required that Congress undermine the restraints built into the antebellum financial system.ⁿ⁵⁹ The Treasury's initial war loan of \$ 150 million had put a heavy strain on those northern banks that had subscribed.ⁿ⁶⁰ Once the financial community realized that the war would not be quick or easy, Treasury securities dropped in value.ⁿ⁶¹ As gold reserves drained from the bank vaults, state [*600] governments permitted the banks to suspend specie payments in December of 1861.ⁿ⁶²

In order to harness banking more tightly to the war effort and create a market for the Treasury's debt, the Republicans drafted the National Currency Acts of 1863 and 1864.ⁿ⁶³ These acts fashioned a network of nationally chartered banks, still with us today, regulated by a new federal Comptroller of the Currency, an official still with us today as well.ⁿ⁶⁴ National banks could issue bank notes supplied to them by the Comptroller, but only if they purchased a roughly equivalent value of war bonds.ⁿ⁶⁵ To ensure the national banks did not suffer competition from state-chartered banks, Congress imposed a 10 percent tax in 1865 on the face value of all state banknotes.ⁿ⁶⁶ State banks were henceforth confined to providing other financial services.ⁿ⁶⁷

Finally, roughly 15 percent of the war's financial outlay was covered through the first fiat money issued since the Constitution's ratification.ⁿ⁶⁸ In early 1862, Congress passed the Legal Tender Act, empowering Secretary Chase to issue a form of paper bills that became popularly known as Greenbacks.ⁿ⁶⁹ The final total of Greenbacks put into circulation reached \$ 431 million, supplemented by a small quantity of interest-bearing notes and other currency.ⁿ⁷⁰ All this government paper coupled with the private bank notes doubled the Union's money stock by 1863.ⁿ⁷¹ The consequent inflation put specie at a premium.ⁿ⁷² Greenback dollars had fallen in July of 1864 to a low of 35 cents' worth of gold.ⁿ⁷³ While gold circulated at a premium over Greenbacks in the northeast, Greenbacks were only accepted at a discount from gold on the west coast.ⁿ⁷⁴

Adjusting for inflation, workers' wages actually fell by one-third in the North, and economic historians are still debating [*601] how much of that was due to heavy taxes versus high seigniorage.ⁿ⁷⁵ Furthermore, the Greenbacks were made legal tender for all payments, public and private, except tariff duties and interest on the Treasury's debt.ⁿ⁷⁶ This led to one of the most astonishing cases of intellectual honesty on the part of a public official, when five years after the war had ended, Chief Justice Salmon P. Chase implicitly branded his prior actions as Secretary of the Treasury unconstitutional in the Hepburn decision.ⁿ⁷⁷ However, soon after, President Ulysses Grant packed the Court so that it effectively reversed itself the following year.ⁿ⁷⁸

Figure 3 also reveals that Confederate States of America - being smaller and poorer than the Union - had to rely much more heavily on seigniorage for war finance. The two percentages for Confederate taxation reflect the fact that formal taxes raised only 7 percent of the war's cost, whereas informal taxation through direct military seizures along with some donations raised another 17 percent.ⁿ⁷⁹ The combined total thus actually exceeded the proportion for Union taxation, but the ability of the Confederacy to borrow fell far short of the Union's.ⁿ⁸⁰ The Confederate Treasury ultimately issued over \$ 1 billion worth of currency, covering more than half the war's cost to the South.ⁿ⁸¹ The Union blockade and an additional \$ 45 million in paper currency issued by individual southern states contributed to the monetary depreciation.ⁿ⁸² Southerners therefore suffered from hyperinflation, with prices rising by 2,675 percent from 1860 to 1865, compared with 90.5 percent in the North.ⁿ⁸³

[*602]

III. Comparisons

Upon defeat of the Confederacy at the end of the war, the U.S. government's debt had climbed from just under \$ 65 million to nearly \$ 2.8 billion.ⁿ⁸⁴ The interest alone on this debt commanded about 40 percent of the central

government's outlays into the mid-1870s (as compared with less than 10 percent today).ⁿ⁸⁵ To their credit, the post Civil War administrations ran an unbroken string of twenty-eight annual budget surpluses from the war's end to the depression of 1893, despite also cutting taxes.ⁿ⁸⁶ This decline can be observed in Figure 4, which shows the national debt as a percent of GDP.ⁿ⁸⁷

[SEE FIGURE 4 IN ORIGINAL]

Fig. 4

The trajectory of the national debt in Figure 4 provides additional confirmation of Bourne's maxim, "War is the health of the State." All the major and minor spikes in the debt up through World War II, except for the rise during the Great Depression, are associated with wars.ⁿ⁸⁸ The national debt reaches its highest level during World War II, at about 110 [*603] percent of GDP.ⁿ⁸⁹ The graph also helps to illustrate two other important relationships. Prior to World War II, there were four significant periods of debt reduction: post-American Revolution, post-War of 1812, post-Civil War, and post-World War I.ⁿ⁹⁰ Each period was also one of tax cuts.ⁿ⁹¹ While raising taxes to balance the budget may be good accounting, it appears to be bad politics. The only exception is the decline of the national debt as a percent of GDP following World War II.ⁿ⁹² While there were some tax cuts under Presidents Harry Truman and John Kennedy, the main factor eroding the debt was high inflation, peaking in the late 1970s at double-digits.ⁿ⁹³ In fact, the rise in government debt as a percent of GDP under President Ronald Reagan had as much to do with the Federal Reserve's taming of inflation as with his fiscal policies.ⁿ⁹⁴

A second relationship reflected in Figure 4 is the fact that, prior to the Great Depression, the general rule throughout the developed world was that governments always ran budget surpluses, except during wars or inadvertently during depressions.ⁿ⁹⁵ This was true of the U.S. government until the Great Depression and the subsequent triumph of Keynesian economics.ⁿ⁹⁶ In the eighty years since 1929, in contrast, the federal government has managed only twelve surpluses: four under Truman after World War II, three under President Dwight Eisenhower, one under President Richard Nixon, and four under President Bill Clinton, after the ending of the Cold War.ⁿ⁹⁷ The War on Terror has simply started to bring the national debt as a percent of GDP back up to Cold War levels.ⁿ⁹⁸

It is also instructive to compare Civil War finance with the financing of three other major wars displayed in Figure 5. Finance of the American Revolution stands as a precursor to Confederate finance, with a similar low level of formal taxation (6 percent), heavy reliance on seigniorage (75 percent), and [*604] resulting hyperinflation.ⁿ⁹⁹ On the other hand, the proportions during World War I are almost identical to those of the Union during the Civil War.ⁿ¹⁰⁰ In both cases, seigniorage covered about 15 percent of the war's cost.ⁿ¹⁰¹ The resulting cumulative inflation during World War I was more severe, however, ranking as the highest the U.S. had experienced up to that time (outside of the Confederacy) since the American Revolution.ⁿ¹⁰²

LE#

Fig. 5

One difference between the Civil War and World War I was how the fiat money was generated. Greenbacks were simple fiat money, printed by the Treasury and used directly to make government purchases.ⁿ¹⁰³ But the Federal Reserve (Fed) was set up in 1914, shortly before U.S. entry into World War I, and it replaced Treasury-issued fiat money with central bank-issued fiat money.ⁿ¹⁰⁴ The process is a bit more difficult to understand but works out the same financially. The Fed simply creates money out of thin air and loans it to the Treasury, which in turns spends it.ⁿ¹⁰⁵ Or in the case of World War I, the Fed actually loaned money to private banks so long as they purchased Treasury

securities, re-loaning the created money to the [*605] Treasury.ⁿ¹⁰⁶ The Treasury pays interest directly or indirectly to the Fed for these loans but the Fed, after covering its operating expenses, has rebated around 90 percent of these interest payments back to the Treasury.ⁿ¹⁰⁷ The one thing that does change under a central bank is who is in charge of issuing fiat money, and the resulting incentives.ⁿ¹⁰⁸

World War II finance stands out for two reasons. Seigniorage covered nearly a quarter of the war's cost, the highest percentage for any U.S. war outside of the two hyperinflations: the American Revolution and the Confederacy.ⁿ¹⁰⁹ By pegging the interest rate on Treasuries at very low rates (2.5 percent for long-term Treasury bonds, and 0.375 percent for short-term Treasury bills), the Fed automatically monetized much of the World War II debt.ⁿ¹¹⁰ The total money stock tripled and inflation became so rampant that the government imposed comprehensive wage and price controls, along with rationing, when the inevitable shortages resulted.ⁿ¹¹¹ This heavy reliance on seigniorage undermines the widely believed myth that it was wartime deficit financing that finally ended the Great Depression.ⁿ¹¹² What looked like fiscal policy was really monetary policy in disguise.

Taxation covered another 40 percent of World War II's cost, the highest percentage for any major U.S. war until the Cold War.ⁿ¹¹³ This was mainly achieved by expanding the coverage of the income tax, which furnished three-fourths of all wartime tax receipts.ⁿ¹¹⁴ Despite major peacetime tax hikes under both Presidents Herbert Hoover and Franklin Roosevelt, only 4 million Americans were touched by the national income tax as late as 1939.ⁿ¹¹⁵ Five years later the number was around 42 million.ⁿ¹¹⁶ It was F.D.R. and World War II that brought income taxes to the common man.ⁿ¹¹⁷

[*606]

IV. Lessons?

The impact of the War on Terror on government finance can be gleaned from Figure 6, which depicts both federal expenditures and receipts as a percent of GDP from 1940 to 2008.ⁿ¹¹⁸ The end of the Cold War brought a modest decline of expenditures from a high of 23 percent to less than 19 percent of GDP, bestowing the peace dividend of the Clinton years.ⁿ¹¹⁹ The wars in Afghanistan (2001-present) and Iraq (2003-present) have merely pushed spending back up toward Cold War levels.ⁿ¹²⁰ More striking is the behavior of federal revenue, which shows far greater consistency than expenditures, having bumped up against 20 percent of GDP since the Korean War, for well over half a century.ⁿ¹²¹ That is quite an astonishing statistic when you think about all the changes in the tax code over the intervening years. Tax rates go up, tax rates go down, and the total bite out of the economy remains relatively constant.ⁿ¹²² This suggests that 20 percent is some kind of structural-political limit for federal taxes within the United States. It also suggests that variations in the deficit resulted primarily from changes in spending rather than in taxes.

[SEE FIGURE 6 IN ORIGINAL]

Fig. 6

[*607] Another implication of Figure 6 is that throughout the post-World War II period, taxes have covered the greater portion of national spending. All the acrimonious political debates about the size of the deficit have been squabbles about marginal items. The deficit never exceeded 6 percent of GDP and was usually far less, leaving little room for reliance on either government borrowing or seigniorage.ⁿ¹²³ In fact, seigniorage has become an utterly trivial source of government revenue, not just in the United States but also throughout the developed world.ⁿ¹²⁴ This is partly a consequence of globalization, in which international competition between central banks restrains their monetary expansionsⁿ¹²⁵ and partly the result of sophisticated financial systems, with fractional reserve banking, in which most

of the money that people actually use is created privately by banks and other financial institutions rather than by government. ⁿ¹²⁶ Consider how little of your own cash balances are held in the form of Federal Reserve notes and Treasury coin versus in the form of bank deposits and money market funds. Such privately created money, even when its quantity expands, provides no seigniorage. Consequently, during America's Great Inflation of the 1970s, seigniorage accounted for only 2 percent of federal revenue, which translates into less than half a percent of GDP. ⁿ¹²⁷

Unlike the War on Terror, the current financial crisis appears destined to have a gargantuan impact on government finance. The critical date was Thursday, September 18, 2008, when the interest rate on Treasury bills temporarily went negative, accompanied by the misbehavior of other credit market indicators. ⁿ¹²⁸ This was what caused Fed Chairman Ben Bernanke and Treasury Secretary Henry Paulson to hit the panic button. ⁿ¹²⁹ Up until this point, the Fed had conducted various bailouts, Bear Stearns being the most prominent, but had not **[*608]** allowed those actions to affect the money stock. ⁿ¹³⁰ In Fed speak, the interventions had been sterilized. ⁿ¹³¹ But after September 18, the monetary base, which consists of government created money directly controlled by the Fed, went through the roof. ⁿ¹³²

[SEE FIGURE 7 IN ORIGINAL]

Fig. 7

Figure 7 shows the behavior of the monetary base since the Great Inflation and before the current crisis, mostly under Fed Chair Alan Greenspan. ⁿ¹³³ The base has two components: (a) **[*609]** currency and coin in the hands of the general public and (b) reserves held by banks and other depository institutions. Between 1986 and 2005, the total base grew at a steady rate of under 6.5 percent annually. ⁿ¹³⁴ But nearly all of the growth was concentrated in currency, much of which was going abroad. ⁿ¹³⁵ The Fed estimates that the proportion of U.S. currency held by foreigners rose from 25 to 50 percent over these nineteen years. ⁿ¹³⁶ As a result total bank reserves were almost constant. ⁿ¹³⁷

[SEE FIGURE 8 IN ORIGINAL]

Fig. 8

Figure 8 brings base growth forward to the present. ⁿ¹³⁸ Talk about a "hockey stick," over the mere three months after September 18 the base doubled, from \$ 850 billion to \$ 1.7 trillion. ⁿ¹³⁹ Almost all of that increase was concentrated in bank reserves, which during that short period exploded by an incredible factor of thirteen. ⁿ¹⁴⁰ Moreover, the Fed's balance sheet **[*610]** grew even larger, as depicted in Figure 9. ⁿ¹⁴¹ It peaked at \$ 2.3 trillion in December 2008, as the Treasury loaned over half a trillion of newly borrowed money to the Fed, which turned around and loaned it to foreign central banks through currency swaps. ⁿ¹⁴² The Fed's balance sheet has since fallen back down to \$ 1.8 trillion as of February 11, 2009, but that is still more than twice its size less than half a year ago. ⁿ¹⁴³

[SEE FIGURE 9 IN ORIGINAL]

Fig. 9

Under normal circumstances, such a massive and sudden monetary expansion would bring both high inflation and great seigniorage. However, these are not normal circumstances, and so far we have seen neither. Whether the Fed's actions will ultimately bring inflation or not is still an open question that [*611] depends largely on its ability to reverse course as the new money begins to circulate throughout the economy. However, a virtually unnoticed change in the Fed's operations ensures that its actions will not contribute much seigniorage to federal finance. Buried within the bailout bill enacted on October 3, 2008, setting up the Troubled Asset Relief Program (TARP), was a provision permitting the Fed to pay interest on bank reserves.ⁿ¹⁴⁴ The Fed did so, and currently the interest that banks earn on their reserves is set at the Fed's target interest rate for Federal funds.ⁿ¹⁴⁵

This seemingly technical change not only gives banks an incentive to just hold reserves rather than loan them out - thereby dampening increases in bank created money and in the price level - but it also essentially converts reserves into more government debt.ⁿ¹⁴⁶ Paper fiat money, whether in the form of Greenbacks or Federal Reserve notes, earns no interest and therefore allows the government to purchase real resources without incurring any future tax liability.ⁿ¹⁴⁷ Currency and coin will continue to earn no interest and therefore be a minor source of government seigniorage.ⁿ¹⁴⁸ But with the Fed having to divert potential government revenue to pay interest on the base money held by banks, seigniorage, already trivial, has virtually been eliminated as a source of future funding.ⁿ¹⁴⁹ And this constraint will become tighter as the general public continues to replace its use of currency with reliance upon bank debit cards and other forms of electronic fund transfers.ⁿ¹⁵⁰

In short, the U.S. government is now virtually confined to only two sources of revenue: (1) current taxes and (2) borrowing, which represents future taxes. Furthermore, this restriction arises at a moment when government expenditures are programmed to soar upward.ⁿ¹⁵¹ Even before the current financial crisis, the aging of the baby boomers portended unprecedented [*612] increases in Social Security and Medicare.ⁿ¹⁵² Now add to that a \$ 700 billion TARP, President Barack Obama's nearly \$ 800 fiscal stimulus, plus whatever additional money Congress appropriates for further financial bailouts.ⁿ¹⁵³ Federal expenditures could therefore realistically rise from a little over one-fifth of GDP to over one-third within a single year. Some of these expenditures, particularly the TARP, will supposedly be reversed after the financial crisis is over.ⁿ¹⁵⁴ But others will surely join social insurance in permanently ratcheting up the total.

Before jumping too hastily to the conclusion that Bourne's maxim has become obsolete - with financial crises now replacing war as the health of the State - recall the 20-percent-of-GDP ceiling on total federal tax receipts that has proved binding for over half a century. The barrier may only be breachable during a truly major war, such as the Civil War or World War II, and even during the height of World War II, when the proportion of federal tax revenue was at its highest for all of U.S. history, it never reached even 25 percent of GDP.ⁿ¹⁵⁵ The prospects are therefore sobering. Everyone knows that there is a limit to how much debt an individual or institution can pile on if future income is rigidly fixed.

Although many governments around the world have experienced sovereign defaults, U.S. Treasury securities have long been considered entirely risk free.ⁿ¹⁵⁶ Yet that may be changing already. Economists have started considering a possible Treasury default, while the business news media and investment rating agencies have begun openly discussing a potential risk premium on the interest rate that the U.S. government must pay.ⁿ¹⁵⁷ The premiums of the much (and unfairly) maligned credit default swaps recently raised the probability of a U.S. Treasury default from a 1 percent chance over the next 10 years to a 6 percent chance.ⁿ¹⁵⁸ The market for credit default swaps prices the default risk on the bonds of some [*613] European governments still higher.ⁿ¹⁵⁹ War, not only the health of the State, can of course bring about the demise of a State, as the Confederate example reminds us.ⁿ¹⁶⁰ We can only begin to wonder whether fiscal crises will bring the demise of the modern welfare State.

Legal Topics:

For related research and practice materials, see the following legal topics:

Banking Law Bank Activities State Tax Governments Local Governments Finance Real Property Law Homestead Exemptions

FOOTNOTES:

n1. A.F. Beringause, The Double Martyrdom of Randolph Bourne, 18 J. Hist. of Ideas 594, 594 (1957).

n2. Randolph Bourne, The State, in *The Radical Will: Selected Writings 1911-1918* 360 (1977).

n3. Id. For a biography of Bourne, see generally Bruce Clayton, *Forgotten Prophet: The Life of Randolph Bourne* (Louisiana State Univ. Press 1984). I capitalize the word "State" when using it in its broader sense, meaning government in general, to distinguish that meaning from the constituent states within a federal system of government such as the United States.

n4. Robert Higgs, Crisis, Bigger Government, and Ideological Change: Two Hypotheses on the Ratchet Phenomenon, 22 *Explorations Econ. History* 2 (1985).

n5. Jeffrey Rogers Hummel, The Civil War and Reconstruction, in *Government and the American Economy A New History* 188, 189 (2007).

n6. John Joseph Wallis, The National Era, in *Government And The American Economy: A New History* 148, 152 (2007).

n7. Id.

n8. See generally Murray N. Rothbard, *War, Peace and the State*, in *Egalitarianism as a Revolt Against Nature And Other Essays* (2d ed. 2000); Bruce D. Porter, *War and the Rise of the State: The Military Foundations of Modern Politics* (1994); Charles Tilly, *The Formation of National States in Western Europe* (1975); and Charles Tilly, *War Making and State Making as Organized Crime*, in *Bringing the State Back*

In 169 (Peter B. Evans et al. eds., 1985).

n9. Hummel, *supra* note 5, at 189.

n10. Robert Higgs, *Crisis and Leviathan: Critical Episodes in the Growth of American Government* 59 (1987).

n11. *Id.* at 2; Bruce D. Porter, *Parkinson's Law Revisited: War and the Growth of Government*, 60 *The Publ. Interest* 50, 58 (1980).

n12. For Figure 1, data on government expenditures come from U.S. Dep't of Com., *Historical Statistics of the United States: Colonial Times to 1970* 1086-1134 (U.S. Government Printing Office 1975), pt. 2, as brought forward by *Budget of the United States Government: Historical Tables Fiscal Year 2008* (U.S. Government Printing Office 2008), available at <http://www.gpoaccess.gov/usbudget/fy08/hist.html>. Annual estimates for GDP are from Louis D. Johnston & Samuel H. Williamson, *What Was the U.S. GDP Then?* (MeasuringWorth 2008), <http://www.measuringworth.org/usgdp/>. Their GDP numbers from 1929 forward coincide with those of the U.S. Bureau of Economic Analysis, whereas previous estimates are drawn from various sources and become increasingly subject to error as you go back in time.

n13. See Figure 1.

n14. See Figure 1; Randall G. Holcombe, *Federal Government Growth Before the New Deal*, 47 *Freeman* (1997).

n15. See Figure 1.

n16. Sources for Figure 2 are the same as for Figure 1. See *supra* note 12.

n17. See Figure 2.

n18. Jeffrey Rogers Hummel, *Emancipating Slaves, Enslaving Free Men: A History of the American Civil War* 221 (1996).

n19. *Id.*

n20. I have used the Composite Consumer Price Index calculated by John J. McCusker, supplemented by more recent numbers from the Consumer Price Index, to deflate amounts to current prices. See generally John J. McCusker, *How Much is That in Real Money? A Historical Price Index for Use as a Deflator of Money Values in the Economy of the United States* (1992).

n21. *Id.*

n22. *Id.* at 222.

n23. *Id.* Total state and local revenue were found as averaging 1.41 times national revenue in the decade 1836-1845 and 1.15 times in the decade 1846-1855. See Wallis, *supra* note 6, at 150; John J. Wallis, *American Government Finance in the Long Run: 1790 to 1990*, 14 *J. Econ. Perspectives* 61, 61-82 (2000); John B. Legler et al., *U.S. City Finances and the Growth of Government, 1850-1902*, 48 *J. Econ. Hist.* 347, 347-56 (1988); and Richard Sylla et al., *Banks and State Public Finance in the New Republic: The United States, 1790-1860*, 47 *J. Econ. Hist.* 391, 391-403 (1987). Any conceivable differences between government revenue and expenditures could not possibly push those ratios much above 1.50. According to these estimates, total government revenue averaged 4.0 percent and 4.2 percent of GNP in the two antebellum intervals. For detailed data on expenditures of only state government see generally Charles Frank Holt, *The Role of State Government in the Nineteenth-Century American Economy, 1820-1902: A Quantitative Study* (1977).

n24. Hummel, *supra* note 5, at 190.

n25. Hummel, *supra* note 18, at 222.

n26. Hummel, *supra* note 5, at 190-91.

n27. *Id.*

n28. Hummel, *supra* note 18, at 222.

n29. Hummel, *supra* note 5, at 191.

n30. *Id.*

n31. Hummel, *supra* note 18, at 221-22.

n32. Johnston and Williamson estimate 1865 nominal GDP at \$ 9.88 billion. See Johnston & Williamson, *supra* note 12.

n33. Thomas Senior Berry, *Production and Population Since 1789: Revised GNP Series in Constant Dollars* 27 (1988), whose estimate of 1865 nominal Gross National Product (not much different than GDP) is \$ 8.98 billion.

n34. Hummel, *supra* note 5, at 197. I must confess that my earlier estimate that federal expenditures reached 20 percent of GDP in 1865 is too high. *Id.*

n35. See *infra* notes 46-49.

n36. United States Postal Service, <http://shop.usps.com> (last visited Aug. 1, 2009); United States Department of Agriculture, <http://www.usda.gov/wps> (last visited Aug. 1, 2009); California State Lottery, <http://www.calottery.com/default.htm> (last visited Aug. 1, 2009).

n37. Hummel, *supra* note 5, at 190-91.

n38. *Id.* at 197-99.

n39. See Kurt Schuler, *The World History of Free Banking*, in *The Experience of Free Banking* 30-32 (Kevin Dowd ed., 1992); *Black's Law Dictionary* 1388-1389 (8th ed. 1999).

n40. Hummel, *supra* note 18, at 222. See also Robert P. Sharkey, *Money, Class, and Party: An Economic Study of Civil War and Reconstruction* 25 (1959).

n41. Hummel, *supra* note 5, at 197.

n42. *Id.*

n43. Reinhard H. Luthin, *Salmon P. Chase's Political Career Before the Civil War*, 29 *Miss. Valley Hist. Rev.* 517, 517-19 (1943).

n44. Hummel, *supra* note 18, at 221.

n45. *Id.* at 222.

n46. Bert W. Rein, *An Analysis and Critique of the Union Financing of the Civil War* 16 (1962).

n47. Harry Edwin Smith, *The United States Federal Internal Tax History from 1861 to 1871* 23-24 (1914).

n48. *Id.* at 271-72.

n49. James G. Blaine, *Twenty Years of Congress: From Lincoln to Garfield, with a Review of the Events Which Led to the Political Revolution of 1860* vol. 1 433 (1884).

n50. Rein, *supra* note 46 at 17-18; James M. McPherson, *Ordeal by Fire: The Civil War and Reconstruction* 203 (1982).

n51. For an extensive discussion about the creation of the IRS and the administration and collection of taxes during the Civil War see Smith, *supra* note 47, at 270-91.

n52. *Id.* at 52-53.

n53. *Id.* at 52.

n54. *Id.* at 53-54.

n55. Hummel, *supra* note 18, at 223.

n56. See Figure 3; Hummel, *supra* note 18, at 223.

n57. See Figure 3.

n58. John Niven, *Salmon P. Chase: A Biography* 262-263 (1995); McPherson, *supra* note 50, at 202.

n59. Wesley Clair Mitchell, *A History of the Greenbacks* 20 (1903); Howard Bodenhorn, *A History of Banking in Antebellum America: Financial Markets and Economic Development in an Era of Nation-Building* 229 (2000).

n60. Hummel, *supra* note 18, at 224.

n61. Mitchell, *supra* note 59, at 38; Rein, *supra* note 46, at 35.

n62. Mitchell, *supra* note 59, at 40; Rein, *supra* note 46, at 35.

n63. McPherson, *supra* note 50, at 204; Rein, *supra* note 46, at 43.

n64. George A. Selgin & Lawrence H. White, *Monetary Reform and the Redemption of National Bank Notes, 1863-1913*, 68 *Bus. Hist. Rev.* 205, 207 (1994).

n65. Bodenhorn, *supra* note 59, at 229.

n66. Bray Hammond, *Sovereignty and an Empty Purse: Banks and Politics in the Civil War* 347 (1970).

n67. *Id.*

n68. See Figure 3.

n69. McPherson, *supra* note 50, at 202.

n70. Rein, *supra* note 46, at 49.

n71. Milton Friedman, Price, Income, and Monetary Changes in Three Wartime Periods 42 *American Econ. Rev.* 624 (1952).

n72. Gary M. Walton & Hugh Rockoff, *History of the American Economy* 298 (9th ed. 2002); Bruce G. Carruthers & Sarah Babb, *The Color of Money and the Nature of Value: Greenbacks and Gold in Postbellum America*, 101 *Am. J. Soc.* 1556, 1563 (1996).

n73. Hummel, *supra* note 5, at 199.

n74. Hummel, *supra* note 18, at 226.

n75. *Id.* at 234, 380.

n76. Hummel, *supra* note 5, at 199.

n77. *Hepburn v. Griswold*, 75 U.S. 603 (1869) (striking down the Greenbacks' retroactive legal-tender provision); 6 Charles Fairman, *History of the Supreme Court of the United States: Reconstruction and Reunion 1864-88 Part I* 677 (1971).

n78. Fairman, *supra* note 77, at 677; *Legal Tender Cases*, 79 U.S. 457 (1870-1871). For classic economic studies of the Greenbacks, see generally Mitchell, *supra* note 59 and Wesley C. Mitchell, *Gold, Prices & Wages Under the Greenback Standard* (Augustus M. Kelley Publishers 1966) (1908). For a good introduction to the debate about northern real wages see Stephen J. DeCanio & Joel Mokyr, *Inflation and the Wage Lag During the American Civil War*, 14 *Explorations Econ. Hist.* 311, 311-36 (1977).

n79. See Figure 3.

n80. See Figure 3; David J. Bolt & Mary Mathewes Kassis, *War Finance: Economic and Historic Lessons*, 95 *Soc. Stud.* 188, 189-90 (2004).

n81. *Id.*

n82. Hummel, *supra* note 18, at 228.

n83. For surveys of Confederate finance, see Hummel, *supra* note 5, at 197-203. See also generally Douglas B. Ball, *Financial Failure and*

Confederate Defeat (1991), Richard Cecil Todd, *Confederate Finance* (1954), and Christopher Schwab, *The Confederate States of America, 1861-1865: A Financial and Industrial History of the South During the Civil War* (1901). The standard estimate, in Eugene M. Lerner, *Monetary and Fiscal Programs of the Confederate Government, 1861-65*, 62 *J. Pol. Econ.* 506, 507 (1954) is 5 percent from taxation, 5 percent from seizures and donations, 30 percent from borrowing, and 60 percent from the seigniorage. However, Jack Hirshleifer, *Disaster and Recovery: A Historical Survey* 37-41 (1963), points out that these percentages ignore the resources gained through uncompensated impressments. Adding them into seizures changes the percentages to 7 percent from taxes, 17 percent from seizures and donations, 24 percent from loans, and 52 percent from seigniorage. See also Richard C. K. Burdekin & Farrokh K. Langdana, *War Finance in the Southern Confederacy, 1861-1865*, 30 *Explorations in Econ. Hist.* 352, 353 (1993).

n84. Bolt & Kassis, *supra* note 80 at 189-90; Hummel, *supra* note 18, at 331.

n85. Hummel, *supra* note 5, at 217.

n86. *Id.*

n87. See Figure 4 (The sources for Figure 4 are the same as for Figure 1, listed in n. 12 above. The total public debt excludes the holdings of government trust funds, such as OASDI and HI, to avoid double counting, although it does include the holdings of the Federal Reserve System).

n88. See Figure 4.

n89. Dennis S. Ippolito, *Why Budgets Matter: Budget Policy & American Politics* 4 (2003).

n90. See Figure 4; Benjamin U. Ratchford, *History of the Federal Debt in the United States*, 2 *Am. Econ. Ass'n.* 131, 137-41 (1947).

n91. Ratchford, *supra* note 90, at 137-41.

n92. See Figure 4.

n93. Iwan Morgan, Jimmy Carter, Bill Clinton, and the New Democratic Economics, 47 *Hist. J.* 1015, 1015-1027 (2004).

n94. Robert J. Sameulson, The great Inflation and its aftermath: The Past and Future of America Affluence 105-08, 135-38 (2008).

n95. Office of Mgmt. & Budget, Historical Tables, Budget of the United States Government, Fiscal Year 2010, at 5 (2009).

n96. Ratchford, *supra* note 90, at 131-32, 137-41.

n97. Office of Mgmt. & Budget, Historical Tables, *supra* note 95, at 21-22.

n98. See Figure 4.

n99. See Figure 5. The figures in Figure 5 for the American Revolution are derived from E. James Ferguson, *The Power of the Purse: A History of American Public Finance, 1776-1790* (1961). Those for World Wars I and II come from Gary M. Walton & Hugh Rockoff, *History of the American Economy* 418, 500 (9th ed. 2002). Additional details on U.S. finance of the two world wars can be found in Robert Higgs, *The World Wars, in Government and the American Economy A New History* (2007) and Higgs, *supra* note 10.

n100. Compare Figure 5 with Figure 3.

n101. See Figure 5 and Figure 3.

n102. See Lawrence H. Officer & Samuel H. Williamson, *Annual Inflation Rates in the United States, 1775-2008* (MeasuringWorth 2009), <http://www.measuringworth.org/inflation/>.

n103. Walton & Rockoff, *supra* note 99, at 457.

n104. Milton Friedman & Anna Jacobson Schwartz, *A Monetary History of the United States, 1867-1960* 189 (1971).

n105. Bob McTeer and Pamela Villarreal, *How the Fed Creates Money, Brief Analysis* (Nat'l Ctr. for Pol'y Analysis, Dallas, Texas), Feb, 28, 2008, at 1.

n106. Donald R. Wells, *The Federal Reserve System: A History* 29-30 (2004).

n107. Edward Flaherty, *Debunking the Federal Reserve Conspiracy Theories*, http://www.publiceye.org/conspire/flaherty/Federal_Reserve.html.

n108. See *supra* notes 103-107 and accompanying text.

n109. See Figure 5.

n110. Friedman & Schwartz, *supra* note 104 at 562-63.

n111. Walton & Rockoff, *supra* note 99 at 554-55.

n112. See Figure 5.

n113. See Figure 5.

n114. Walton & Rockoff, *supra* note 99 at 554-55.

n115. History of Income Tax, *Encyclopedia of Business and Finance* (Ed. Allison McClintic Marion, Gale Cengage, 2001), available at <http://www.enotes.com/business-finance-encyclopedia/income-tax-history>.

n116. *Id.*

n117. *Id.*

n118. The sources for Figure 6 are the same as for Figure 1. See *supra* note 12.

n119. See Figure 6.

n120. See Figure 6.

n121. See Figure 6.

n122. See Figure 6.

n123. See Data360.org, Federal Government Surplus (Deficit) as Percent of GDP, http://www.data360.org/dsg.aspx?Data_Set_Group_Id=409.

n124. Posting of Jeffrey Rogers Hummel to Liberty and Power Group Blog, <http://hnn.us/blogs/entries/53544.html> (Aug. 20, 2008, 23:10 EST).

n125. Joshua Aizenman & Yothin Jinjarik, Globalization and Developing Countries-A Shrinking Tax Base? (Jan 1, 2006) (unpublished manuscript, on file with Department of Economics, UCSC Paper 615), available at <http://repositories.cdlib.org/ucscecon/615/>.

n126. Posting of Jeffrey Rogers Hummel to Liberty and Power Group Blog, <http://hnn.us/blogs/entries/53544.html> (Aug. 20, 2008, 23:10 EST).

n127. Jeffrey Rogers Hummel, Death and Taxes, Including Inflation: The Public versus Economists, 4 Econ. J. Watch 48 (2007).

n128. David R. Henderson, Bernanke's Hype, Forbes.com, Sep. 28, 2008, available at http://www.forbes.com/2008/09/28/bernanke-bailout-crisis-oped-cx_drh_0928henderson.html.

n129. Jason Turcotte, Who Hit the Panic Button?, Real Estate Weekly, Oct. 29, 2008, at 10S.

n130. Matthew Goldstein, Bear Stearns' Big Bailout, *Bus. Week Online*, Mar. 14, 2008.

n131. A sterilized intervention is a way for a central bank to alter its debt composition without affecting its monetary base. See <http://www.investopedia.com/terms/s/sterilizedintervention.asp> (last visited August 1, 2009).

n132. Fed. Reserve, Statistical Release H.3 (503): Aggregate Reserves of Depository institutions and the monetary base (Oct. 9, 2008).

n133. The source for Figure 7 is the enormously convenient website of the St. Louis Federal Reserve, <http://research.stlouisfed.org/fred2/> (last visited July 26, 2009). For the monetary base I have used the Board of Governors Monetary Base, Not Adjusted for Changes in Reserve Requirements (BOGUMBNS). *Id.* For currency in circulation, I have used the Currency Component of M1 (CURRNS). *Id.* I have subtracted the latter from the former to get total reserves. The St. Louis Fed website does give several alternative direct estimates of reserves. However, those compiled by the St. Louis Fed are adjusted for changes in reserve requirements, whereas those compiled by the Board of Governors exclude any excess reserves held in the form of vault cash, all required clearing balances, and Fed float. This critical detail can only be found in the footnotes of the Federal Reserve System, Board of Governors, weekly Statistical Release H.3: <http://www.federalreserve.gov/releases/h3/>. For some idea of how massive the resulting distortion can be, consider December 2007 where the Board of Governors reported total reserves of \$ 42.7 billion. If you add in vault cash not covering reserve requirements, that number jumps to \$ 60.3 billion. Additionally, when you bring in required clearing balances and float, the number rises to \$ 72.6 billion, 70 percent greater than the board's estimate. If the distortion were consistent across time, the Board's reserve totals would still tell us something, but the distortion is not close to consistent across time, in part because banks increasingly used vault cash in their ATMs. Required clearing balances arise out of the Fed's check-clearing operations, pay interest. For an explanation, see E. J. Stevens, *Required Clearing Balances*, 29 *Fed. Res. Bank of Cleveland Econ. Rev.* 1, 2-14 (1993).

n134. David R. Henderson & Jeffrey Rogers Hummel, *Greenspan's Monetary Policy in Retrospect Discretion or Rules?*, 109 *Cato Inst. Briefing Papers* 1, 3 (2008).

n135. *Id.* at 3.

n136. *Id.*

n137. Id.

n138. Figure 8 was directly created on the St. Louis Fed website. See *supra* note 133, series BOGUMBNS.

n139. See Figure 8.

n140. See Figure 8.

n141. The source for Figure 9 is Federal Reserve System, Board of Governors, weekly Statistical Release H.4.1. See Fed. Reserve, Statistical Release H.4.1: Factors affecting reserve balances, <http://www.federalreserve.gov/releases/h41/>. See also posting of Jeffrey Rogers Hummel to Liberty & Power Group Blog, <http://hnn.us/blogs/entries/61061.html> (Feb. 2, 2009, 12:53 EST) and posting of Jeffrey Rogers Hummel to Liberty & Power Group Blog, <http://hnn.us/blogs/entries/60613.html> (Jan. 26, 2009, 12:15 EST).

n142. James Hamilton, Federal Reserve Balance Sheet, Econobrowser, http://www.econbrowser.com/archives/2008/12/federal_reserve_1.html (12/21/08).

n143. See Fed. Reserve, Statistical Release H.4.1: Factors affecting reserve balances of depository institutions and condition statement of federal reserve banks (Feb. 12, 2009).

n144. Press Release, Federal Reserve (Oct. 6, 2008).

n145. Id.; Press Release, Federal Reserve (Dec. 16, 2008).

n146. Posting of Jeffrey Rogers Hummel to Liberty & Power Group Blog, <http://hnn.us/blogs/entires/58090.html> (Oct. 25, 2008, 18:10

EST).

n147. Id.

n148. Id.

n149. Id.

n150. Posting of Jeffrey Rogers Hummel to Liberty & Power Group Blog, <http://hnn.us/blogs/entries/58090.html> (Dec. 10, 2008, 21:27 EST); Posting of Jeffrey Rogers Hummel to Liberty & Power Group Blog, <http://hnn.us/blogs/entries/56095.html> (October 25, 2008, 18:10 EST); Posting of Jeffrey Rogers Hummel to Liberty & Power Group Blog, <http://hnn.us/blogs/entries/55621.html> (Oct. 13, 2008, 22:49 EST).

n151. Press Release, The White House, White House Releases State by State Numbers; American Recovery and Reinvestment Act to Save or Create 3.5 Million Jobs (Feb. 17, 2009).

n152. Ronald Lee & Jonathan Skinner, Will Aging Baby Boomers Bust the Federal Budget?, 13 J. Econ. Persp. 117, 117 (1999).

n153. Press Release, The White House, White House Releases State by State Numbers; American Recovery and Reinvestment Act to Save or Create 3.5 Million Jobs (Feb. 17, 2009).

n154. H.R. 1424, 110th Cong. (2008) (enacted).

n155. Press Release, Republican Policy Committee, Tax Overpayment Causes Record Tax Burden (Feb. 6, 2001).

n156. Greg Ip, We're Borrowing Like Mad. Can the U.S. Pay It Back? Wash. Post, Jan. 11, 2009 at B1.

n157. Id. and Laurence J. Kotlikoff, The Emperor's Dangerous Clothes, 5 The Economists' Voice article 3 (2008), <http://www.bepress.com/ev/vol5/iss2/art3/>.

n158. Id.

n159. Jonathan Tirone & Zoe Schneeweiss, Austria Default Risk Passes Italy's as East Bet Sours (Update 1) Bloomberg (March 5, 2009), http://www.bloomberg.com/apps/news?pid=20601095&refer=east_europe&sid=av0_TxrNeFvg.

n160. Lieutenant Colonel H. Wayne Elliott, Book Reviews: A Government of Our Own, 148 Mil. L. Rev. 281 (1995).