

## GOVERNMENT SPENDING, DEFICITS AND OPTIMAL FINANCIAL POLICY

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Hardly a day goes by without some news about government finances. Usually it takes the form of some sound bite that the government is running “record deficits” or that cutting taxes (i.e. denying the government revenue) is irresponsible. Sometimes the comments focus on the effects of deficits, such as their impact on interest rates. Perhaps the most ridiculous argument put forward is that the government must raise taxes to create surpluses in order for the economy to grow. Much of the commentary is politically motivated and most of it lacks a fundamental understanding of economics. Superficial analysis is common and a big mistake is failing to put the current dollar figures in perspective by scaling them to the size of the economy. Another mistake is confusing government spending decisions with financing decisions.

In general, economic theory suggests that how much the government spends is of first-order importance in assessing the impact of government. The reason is spending determines the resources absorbed or extracted from the private sector for government activities. Whether the spending is raised through taxing the private sector or borrowing from it matters less—the resources are still unavailable for current use by the private sector. Much of the public debate about the deficit is, in reality, a veiled debate about spending. The debate, as it is carried-out, tends to deflect the important question of the size of government into a question about the size of the deficit. Put another, less charitable way, it allows those individuals who want bigger government and more spending, to portray themselves as fiscally responsible because they want to eliminate the deficit, but choose to do so primarily by raising tax revenue, not spending cuts.

In order to disentangle some of the many complexities and dispel some of the myths involved in the public discussion, this note is divided into two parts. The first part summarizes the facts about budget deficits and attempts to put some perspective on the

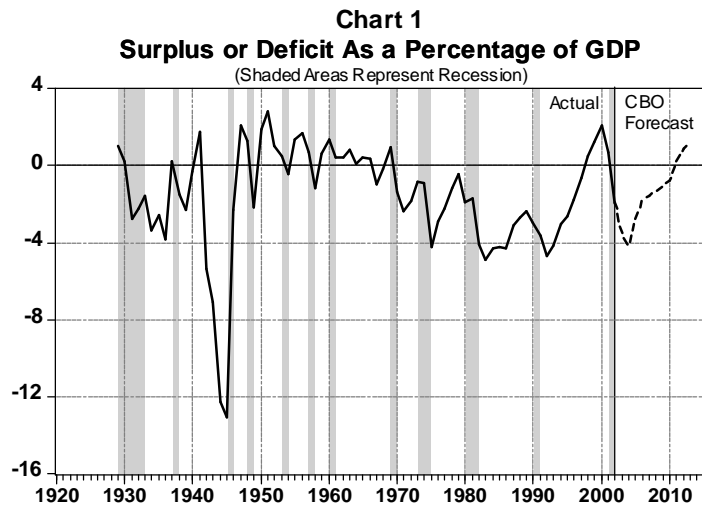
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current state of affairs from a historical point of view. The second section will summarize some of the standard approaches to the analysis of budget deficits and use that analysis to discuss how the government should think about optimal debt management and tax policy.

## Some Facts about Budget Deficits, Spending and Taxation

The most frequently cited fact about the budget deficit is that it is the largest on record measured in current dollars. The fact is true, yet it is highly misleading. The project deficit for 2003 is in the neighborhood of \$400 billion. This a large number and bigger than the previous record of approximately \$297 billion in 1992 and substantially bigger than the deficit incurred during World War II. Yet this way of measuring the deficit ignores that fact that the economy is bigger and wealthier than it was in 1992 or during World War II. A more meaningful way to measure the relative size of the budget deficit is as a share of GDP. Chart 1 below plots the historical path of the U.S. budget deficit since 1929 as well as the projections of the Congressional Budget Office (CBO) out to 2013.

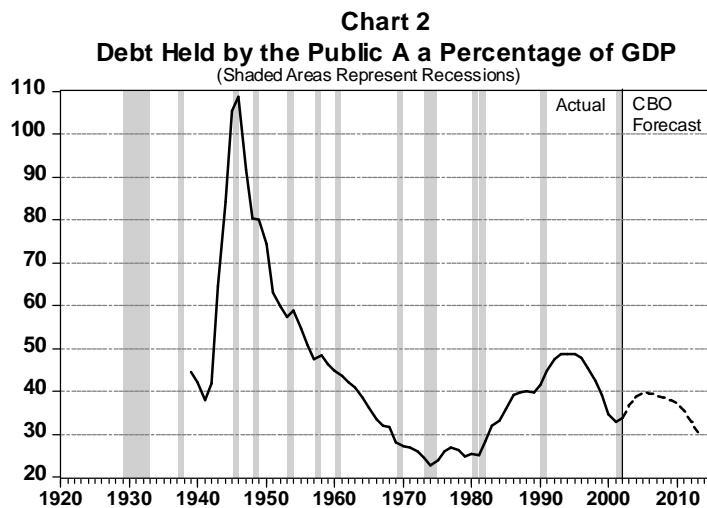


Source: Bureau of Economic Analysis and CBO

As is apparent from the graph, the recent experience is large but not record-setting. The CBO projects 2003 deficits of about 3.5% of GDP and reaching about 4.0% of GDP in 2004 before beginning to shrink. The current and projected deficits are not as large or as persistent as occurred in the mid 1980s where they reached almost 5.0% of GDP in 1983 and stayed about 4.0% until 1987. The most dramatic episode, of course,

was during World War II, when deficits reached 13% of GDP. Note also that budget surpluses rarely survive during recessions.

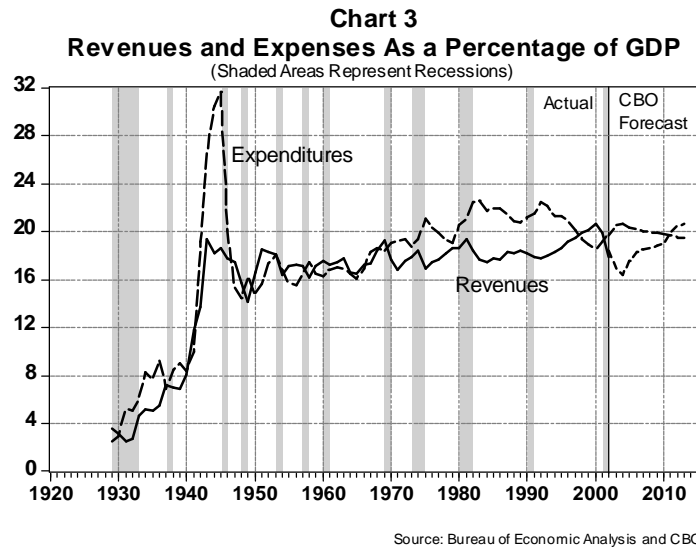
The same sort of argument applies to discussion of the Federal debt. It is often noted that government debt is exploding and the burden is rising to record levels. Federal government debt held by the public was \$3.5 trillion at the end of 2002 and the CBO projects it to rise to about \$5.8 trillion by 2011. Until the 1998-2001 period, the dollar value of the debt held by the public fell only six times since World War II (1947, 1948, 1949, 1951, 1956, and 1957). Once again it is important to put the debt in perspective by scaling it by GDP. Failing to do so is comparable to saying the family with a \$100,000 mortgage and \$500,000 of income is more burdened than the family with an \$80,000 mortgage and \$100,000 of income. Chart 2 plots the historical rise and fall of Federal government debt held by the public as a percentage of GDP.



Source: Bureau of Economic Analysis and CBO

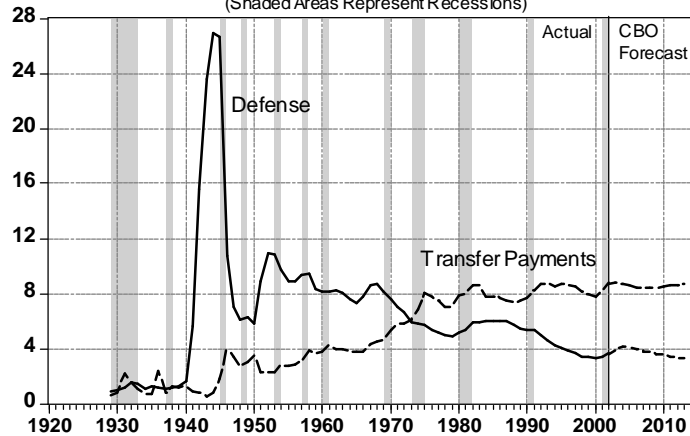
The chart shows the enormous amount of debt incurred during World War II—reaching nearly 109% of GDP. Once again, it is relevant to note that the U.S. economy did not crumble under the debt burden. Despite the fact that the dollar amount of debt continued to rise, debt as a percentage of GDP fell almost continuously from 109% in 1946 to about 23% in 1974. The period of significant deficits from the mid-1970s until the early 1990s saw the percentage rise to approximately 49% in 1993. The current debt as a percentage of GDP is about 34% and not out of line with historical experience, despite the claims to the contrary. Moreover, projections by the CBO show the percentage remaining below 40% for the next decade.

Budget deficits are driven by changes in the revenues and expenditures of the government. Chart 3 shows the historical experience of both revenues and expenses as a percentage of GDP. As the chart shows, the budget deficits of the 1970s and 1980s arose from a steady rise in expenditures, from 16%-17% of GDP between 1950 and 1965 to 21%-23% between 1975 and 1995, that was not offset by revenue increases.



Revenues did not keep pace with the growth with spending on the Great Society. As Chart 4 shows, spending began stabilize in the 1980s and fall in the 1990s primarily a consequence of the slowing in the growth of transfer payments and declining defense spending. Transfer payments doubled from less than 4% of GDP in the mid-1960s to over 8% by the early 1980s. Since that time they have fluctuated between 7.4% and 8.7% of GDP. Defense spending, however, declined from about 6% in the mid-1980s to 3.2% by 2002. The decline in defense spending accounts for 2.8 percentage points of the 3.3 percentage point decline in spending between 1986 and 2000.

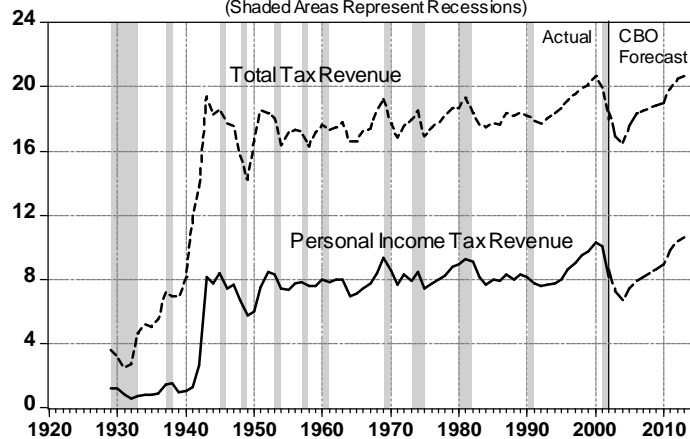
**Chart 4**  
**Transfer Payments and Defense Expenditures**  
 (Shaded Areas Represent Recessions)



Source: Bureau of Economic Analysis and CBO

Chart 5 shows the historical trend in total revenues and also the amount of personal income tax revenue as a percentage of GDP. It is interesting to note that the fluctuations in total tax revenue mostly mirror the fluctuations in personal income tax revenue. Another observation that I will return to below is that the rise in tax revenue from 1992 to 2000 was one of the largest continuous increase in taxes since the sharp increase from 1941 to 1943. By 2000, total tax revenues as a percentage of GDP had reached a record 20.7% of GDP (see Table 1). As a percentage of National Income, tax revenue had risen to 25.5%. Both of these numbers were significantly above the historical trend.

**Chart 5**  
**Revenues As a Percentage of GDP**  
 (Shaded Areas Represent Recessions)



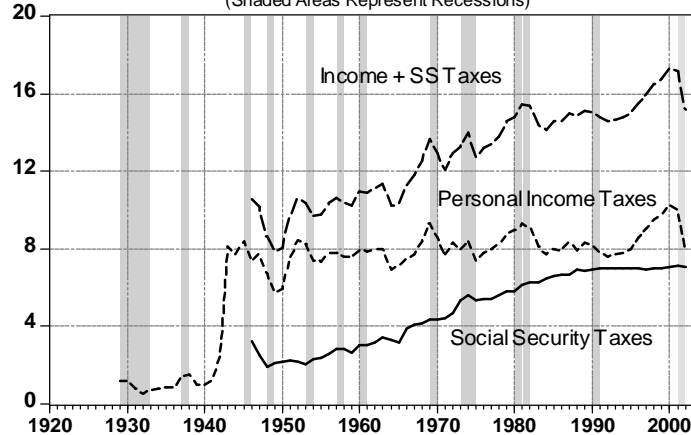
Source: Bureau of Economic Analysis and CBO

Table 1  
Total Federal Tax Revenue

	As a Percentage of	
	National Income	GDP
1950-2002	22.32%	18.00%
1950-1959	21.12%	17.29%
1960-1969	21.56%	17.57%
1970-1979	22.02%	17.74%
1980-1989	22.73%	18.19%
1990-2001	23.84%	19.03%
2000	25.47%	20.70%

The other significant source of revenue is Social Security taxes. In Chart 6 it is evident how much these taxes have increased, raising the average tax burden borne by individuals. Nevertheless, the large increase in tax revenue since the early 1990s is entirely attributable to increases in income taxes. Both Charts 5 and 6 show the impact of recessions on tax revenue. In every recession revenues decline more than GDP and the most recent recession is no exception. Similarly, during strong expansions, tax revenue tends to rise faster than GDP. One reason for this phenomenon is that the tax code is progressive, so as nominal incomes rise individuals are pushed into higher tax brackets, hence owing a larger share of their income to the government.

Chart 6  
Income and Social Security Taxes As a Percentage of GDP  
(Shaded Areas Represent Recessions)



Source: Bureau of Economic Analysis and CBO

Table 2 shows personal income tax revenue as a percentage of both GDP and personal income. The remarkable story in this table is the surprising stability of income taxes to personal income over much of the post-war era. For every decade between

1950 and 1990 the percentage averaged between 10.00% and 10.06%. In the 1990s the average jumped to 10.27% reaching a record level of 12.00% in 2000.

Table 2  
Personal Income Tax Revenue

	As a Percentage of	
	Personal Income	GDP
1950-2002	10.07%	8.13%
1950-1959	10.04%	7.56%
1960-1969	10.06%	7.86%
1970-1979	10.02%	8.09%
1980-1989	10.00%	8.36%
1990-2001	10.27%	8.68%
2000	12.00%	10.27%

Table 3  
Some International Comparisons of Debt and Deficits

	Gross Public Debt/GDP	Government Surplus/GDP
Belgium	124.5%	-4.6%
Canada	85.8	-3.6
Denmark	71.0	0.3
France	54.2	-3.1
Germany	51.2	-2.1
Italy	120.4	-7.6
Japan	93.4	-2.7
Netherlands	70.5	-2.6
Spain	63.2	-3.6
Sweden	68.3	-1.0
U.K.	53.5	-2.1
U.S.	67.5	-2.8

Source: OECD

### Some International Comparisons

The above analysis is confined to the U.S. historical experience. Yet we can also look across countries to determine whether the U.S. experience is within reason bounds or not. Table 3 looks at gross public debt (not just held by the public) as a percentage of GDP in a number of countries for the 1986-2002 period. It also reports a measure of government budget deficits as a percentage of GDP over the same period. The data are base on consolidated government measures. For the U.S. this means that state and local government debt and deficits are included. This is done to make the numbers more nearly comparable across countries. Averages over a 16 year period were used to

avoid the problems of recessions and onetime events that might complicate snapshot comparisons.

The table shows that the U.S. experience is at neither extreme. Many of the countries have substantially more public debt outstanding as a percentage of GDP and a few have less. The same characterization holds true when you look at the budget deficit. In this collection of countries, only Denmark has, on average, a budget surplus over this period.

## **Budget Deficits and Optimal Financing of Government Spending**

How should the government finance its public expenditures? How should it choose between debt and taxes? Are there times when it is preferable to raise or lower taxes rather than issue or retire debt? An important first-step in such an analysis is to take the path of government spending as given so that we can focus on the financing choices. Recall that regardless of the way the government chooses to finance its expenditures, it still extracts resources from the private sector either through tax levies or borrowing. Thus the first-order “crowding-out” effect is measured by the amount of government spending, independent of the means used to finance it.

### **Budget Deficits—The Conventional Wisdom**

The conventional view of budget deficits is found in many Keynesian textbooks and widely accepted among policymakers. The basic premise of this standard view is the assumption that a deficit-financed tax cut leads to an expansion of aggregate consumer demand. This expansion comes about because individuals or households in the economy are fooled into thinking that a deficit-financed tax cut makes them wealthier. The argument is that the deficit means households must hold more government bonds as assets but there is no off-setting liability, hence they feel wealthier and aggregate demand rises. In fact, if government spending is held fixed, deficits today mean higher taxes in the long-run which offset the government bonds on household balance sheets. If households feel wealthier, private saving rises less than the amount of the tax cut (if at all) so that real interest rates have to rise to restore a balance between saving and investment demand. The higher real interest rate “crowds-out” private sector investment resulting in a lower capital stock in the long run. Thus, the new government debt is a burden on future generations in that they inherit a smaller capital stock.



The standard view does not specifically provide policy advice on how the government should decide when to run deficits and how much government debt is too much. However, because deficits have an unambiguous positive impact on aggregate demand in this framework, it is often thought that deficit spending is an appropriate and effective stabilization tool. Indeed, this is one of the key messages of Keynesian fiscal policy.

### **Budget Deficits—The Alternative View**

Economists have long been skeptical of theories and policy advice that rely on the government fooling the public in some systematic or repeated way or where consumers are viewed as myopic and limited in their view of the world. The argument is both a practical and a philosophical one. As a practical matter economists ask if such theories make sense and are the implications believable or predictable. At a philosophical level, some economists ask whether government should undertake policies that rely on duping the public into doing something it would not otherwise choose to do. The conventional wisdom, as noted above, relies on the public incorrectly believing they are wealthier when in fact they are not.

A more appealing baseline case for thinking about the government's financing decisions is one where households have full knowledge of the environment and are not fooled by a government policy nor are they myopic in their outlook. In this environment the choices between debt and taxes do not matter. This view is often referred to as Ricardian equivalence in honor of the 19<sup>th</sup> century economist David Ricardo who first articulated the proposition.<sup>1</sup> Sufficient conditions for this invariance result to hold are lump-sum taxes; certainty about future levels of income, public spending, and interest rates; infinitely-lived households (or households with a bequest motive); and perfect capital markets. Under these conditions, the present value of taxes must equal the known present value of spending. By issuing debt the government can change the timing of taxes, but not the present value.

More importantly, the conditions imply that households only care about the present value of taxes. This means that a deficit-financed tax cut does not change consumer wealth or the present value of the taxes owed (as long as the present value of government spending is unchanged). Since consumer wealth is unchanged, it follows that the tax cut does not affect consumer demand, raise interest rates, or crowd-out

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<sup>1</sup> The revival of interest in Ricardian equivalence was stimulated by the work of Barro (1974).

investment. Households simply use the extra dollars from the tax cut to buy the new government debt and nothing else changes. Put another way, the dissaving by the government is matched by an equivalent amount of new saving by households.

In this framework, what matters for consumer wealth is the present value of spending. Higher government spending today means that the present value of spending rises unless it is offset in the future in a manner that leaves the present value unchanged. Thus, higher government spending tends to reduce private sector wealth, “crowding-out” private sector consumption and investment. Deficit-financed tax cuts holding spending fixed has no effect on wealth or demand.

In this Ricardian environment it makes no difference how the government chooses to finance its spending. Neither the form nor the quantity of public debt is relevant for any economic variable of interest. Of course, no one believes that Ricardian equivalence holds exactly. Nevertheless, like a lot of useful theoretical frameworks it guides us in a search for what does matter and how to evaluate departures from the baseline case. For example, for Ricardian equivalence to hold exactly, taxes must be lump-sum. So an important factor to consider is that real world taxes are not lump-sum but distortionary. In particular, income taxes based on wages influence how much and when individuals choose to work. Taxes on capital income, such as the corporate tax and capital gains tax, influence investment decisions. These sorts of taxes mean that individuals care about more than just the present value of taxes; they care about their timing as well. For example, people are encouraged to work harder when labor taxes are low and less when they are high.

When distortionary taxes are present Ricardian equivalence no longer holds, but that does not mean that the standard Keynesian results apply either. A deficit-financed tax cut is now much more difficult to analyze. The impact on consumption, investment and interest rates now depends on what taxes were cut and the public’s expectation of what types of taxes will be levied in the future. For example, cutting labor taxes now with the anticipation that labor taxes will be raised in the future would stimulate extra work now, but encourage people to plan on working less in the future. In order to fund future consumption when they are working less, current saving would actually rise; lowering the real interest rate and stimulating investment. This would be “crowding-in” instead of “crowding-out.” The message is that it is very difficult to predict the effect of deficits on investment and interest rates as the effects may be different under different taxation schemes. Thus, while strict Ricardian equivalence does not hold, it does not

follow that the standard analysis is correct. It is not surprising, therefore, that it has been difficult empirically to isolate a systematic and stable impact of deficits on interest rates and investment. That is exactly what one would expect since the direction of the effect is likely to depend on the form of present and expected future taxes. Such tests are fraught with difficulty and given the huge literature on the subject it is unlikely I can shed any light on the matter in this brief note.

This view of budget deficits, however, does not provide policy advice regarding when a government should run deficits. It does say that the standard Keynesian view of deficit-financed tax cuts is likely to be inappropriate. In particular, the alternative view stresses that the impact of deficit-financed tax cuts stems not from the Keynesian idea that government bonds are net wealth, but from the incentive effects created by the precise nature of the tax cut. Thus the nature of the tax cut is what matters for the economy, not the mere fact the government is running a deficit. It serves no useful purpose to talk about the burden of the debt or the “crowding-out” effects of deficits. All deficits are not created equal. What will matter is how the deficits get created and how they will be eliminated.<sup>2</sup>

### **Optimal Taxation**

How should the government determine its deficit policy? Since the work of Ramsey (1927), economists have understood that in the face of distorting taxes, such as an income tax, wage tax or tax on capital, optimal taxation implies that tax rates should be smooth. In particular, Ramsey policies call for smoothing distortions over time which means that tax rates should be constant. In addition, it has been found that the optimal tax on capital income is zero.<sup>3</sup> Smoothing tax rates avoids distortions that arise from frequent changing of tax rates. Frequent changing of tax rates introduces arbitrary variations in the incentives to work and consume.

The implication of the tax smoothing concept means that governments should run deficits in times of temporarily high public spending. The clearest example of such a circumstance is war-time finance. During wars, spending is temporarily very high. This is evident for World War II when government expenditures jumped to almost 32% of GDP by 1945 after having been less than 9% in 1940s and dropped to about 15% by 1948 (see Chart 3). Under these circumstances the extra spending should be financed

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<sup>2</sup> It is perhaps worth pointing out that even if one wishes to accept the standard view of deficits that government bonds are net wealth, the incentive effects caused by the nature of the tax cuts can undo the standard result.

<sup>3</sup> For a discussion of these and other related results see Chari and Kehoe (1999).

primarily by borrowing, rather than current taxation. A similar situation might arise when there are natural disasters. The basic idea is that to pay for extra spending with debt if the spending is anticipated to be temporary. Permanent increases in public sector spending should be financed through increased taxes.

This line of reasoning also suggests that budget deficits should be high in times of temporary economic distress, such as recessions, and low during good times. Since revenues typically fall more than proportionately with income during recessions and public spending does not, budget deficits are an appropriate means of avoiding an increase in taxes during recessions and keeping tax rates relative stable.

This analysis does not say what the optimal level of government spending should be nor the appropriate tax rate, but it does suggest how government should approach debt management.

Is there any evidence that tax smoothing is at work in the U.S.? Looking at Chart 6 and Table 2 provides modest support for the idea. Personal income taxes as a share of GDP and National Income have been remarkably stable when you look at decade averages. The notable departures come in 1969, 1981 and 2000. In 1969 there was a temporary tax surcharge that moved the tax burden up substantially from about 7.7% of GDP in 1967 to 9.3% in 1969. But the surcharge was temporary and income tax revenue returned to about 8% of GDP, which was not far from average in the 1950s and 1960s. By 1981, incomes taxes had climbed again from about 8% during the early 1970s to 9.3%. Once again the political process brought about change and the Reagan tax cuts were implemented, once again bringing the personal income tax share down to about 8% of GDP. Beginning in 1994, another steady rise in tax rates began brought about by the Clinton tax increases on 1993. The steady increases were attributable to the increase in marginal tax rates and the steady growth in GDP and personal income which pushed individuals into higher and higher brackets. By 2000, a new record was set at 10.27% for the income tax share of GDP. This was more than 2 percentage points above the long-term average and once again, the political process (plus a recession) brought taxes down and by 2002 they were once again about 8% of GDP.

This interpretation of the record is interesting, but it begs an important issue apparent in Chart 6—Social Security taxes. While Social Security taxes have been mostly smooth, they have not been constant. Presumably they have risen primarily because the assessment of the obligations and spending on the aged has continued to rise.

## Summary and Some Implications

There several important implication of this analysis. The first is that neither the current and projected future U.S. budget deficits nor the associated increases in the public debt are as terrifying as they first appear. While they are significant they are well within historical and international experience.

The second point is that it incorrect to adopt casually the conventional wisdom that deficits “crowd-out” private investment by raising real interest rates for two important reasons. First, all deficits are not created equal. If the deficits come about through increased spending then economic theory predicts that “crowding-out” will generally occur regardless of the financing choice. In fact, it will happen even if the spending is paid for with tax increases rather than a deficit. If spending is held constant, then the alternative or Ricardian view of deficits says that it is the present value of spending and taxes that matter, so that rearranging the timing of taxes and debt does not change interest rates or aggregate demand. The second reason not to accept the conventional wisdom or the alternative view is that taxes are distortionary and depending on how the deficits were created. For example, deficit-financed tax cuts will have an effect on interest rates and investment, but the impact is unknown without specific knowledge of how taxes are cut and how the public expects them to be raised in the future. In this world the effects are determined by the incentive effects brought about by the change in present and future taxes, not the deficit per se.

The third point of this note is that optimal tax policy, when only distortionary taxes are available, suggests that tax rates should be constant and capital taxes should be zero. This means that optimal financial policy for the government requires running deficits at times when spending is temporarily high, such as the case with wars (e.g. the war on terror) and when the economy is in distress, such as when the government responds to natural disasters or during recessions. An implication one can draw from this analysis is that the tax cuts were not unreasonable from a tax smoothing perspective since personal income taxes had reach a record level as a share of GDP—about 2 percentage points above the long-term average. In addition, deficits caused by increased public spending on the wars in Afghanistan and Iraq should clearly be funded substantially by debt, not higher taxes. Moreover, the recession of 2001 also justifies the issuance of public debt. Thus the deficits seem largely justified from optimal debt management point of view. The subject of the efficiency of the tax code and to sorts of

taxes that are the least detrimental to long-run growth is a topic reserved for another time.

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