

Is the Fed Facilitating an Unpleasant Fiscal Calculus?

by

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1. Introduction

Is the United States headed for an unprecedented economic disaster? The fact that prominent economists are posing this question is itself informative about what they may be expecting.¹ Federal expenditure commitments on account of its massive entitlement programs are growing larger and becoming less reversible. The traditional perspective about how significant inconsistencies between outstanding government liabilities and the government's future expected budget balances are resolved suggests that higher inflation could be the mechanism by which those two items are realigned with each other.

There is ongoing debate about whether faster inflation would occur because the Federal Reserve would eventually be forced to support the government's future debt-financed expenditures through monetary accommodation or whether a sudden realignment of prices could occur even without an independent or fiscally-induced monetary expansion – following the predictions of the so-called “fiscal theory of the price level” (FTPL).

This paper first outlines the scope of the prospective federal budget crunch confronting the United States by reporting the federal “fiscal imbalance” and its components. The fiscal imbalance measure compares, in present value terms, outstanding debt plus the government's aggregate non-interest spending commitments with its future revenues under current policies. Latest available calculations suggest that the federal fiscal imbalance equals \$67.2 trillion. The Social Security program contributes \$11.2 trillion to that amount. Assuming that annual general revenue transfers

¹ For example, see Kotlikoff (2006).

to Medicare are not dedicated to it, Medicare contributes \$65.2 trillion and the rest of the federal government, which includes Medicaid, contributes –\$9.2 trillion.

An overall fiscal imbalance of \$67.2 trillion suggests that *expected* future primary budget surpluses may (or should) be considerably out of line with the real value of outstanding government debt. Although the FTPL would predict an immediate price level adjustment, such an adjustment has not been observed -- as yet.² Although economists have attempted to garner evidence in support of the FTPL by analyzing evidence from other countries [most notably Loyo (1999)], there is as yet a lack of broad consensus about the empirical validity of the FTPL. Because the chief focus of this conference is monetary policy, and because the FTPL essentially bypasses all concerns about the conduct of monetary policy, this paper says little about the FTPL beyond noting it as a theoretically valid possibility. More attention is paid to the traditional monetary-policy-supported inflationary mechanism as analyzed in Sargent and Wallace (1981).

Sargent and Wallace's "unpleasant monetarist arithmetic" provides the theoretical framework for analyzing how U.S. fiscal and monetary policymakers could be interacting. Although that framework is based on special assumptions about how fiscal and monetary policies are made, it reveals the trade-offs involved in doing so depending on which authority is the "leader" and which is the "follower." The most common interpretation is that when fiscal policymakers lead by setting a path for taxes and government spending, the monetary authority must coordinate its actions to accommodate that path if it involves excessive debt creation.

² The FTPL would also predict a similar price level adjustment whenever changes to fiscal policies widen the gap between current real outstanding debt and expected future primary surpluses – for example in the aftermath of major legislation such as the Medicare prescription drug law enacted in 2003. Again, however, a significant re-adjustment of the price level was not observed at that time.

Based on more realistic assumptions about fiscal and monetary authorities' policymaking horizons, however, this paper suggests that current world market forces, a "not-so-independent" Federal Reserve, and relatively shortsighted fiscal policymakers may be coordinating to allow a worsening of the already severe prospective budget crunch. As every economist should know by now, maintaining an imbalanced fiscal policy for a number of years – as U.S. policymakers appear to be doing -- implies redistributing resources from younger and future generations toward older ones.³ In turn, that implies permanently higher taxes or permanently higher inflation in order to extract the requisite resources from younger and future generations.

2. Plumbing The Depths of The U.S. Fiscal Hole

The seeds of the current looming economic difficulties were sown many decades ago through a combination of social insurance policies and a protracted boom-bust sequence in fertility rates that was completed by the mid 1960s. The consequence of that temporary fertility surge – a 76-million strong baby-boom generation – is now approaching retirement with expectations of substantial Social Security, Medicare, and other entitlement transfers – roughly consistent with current benefit rules.⁴ Fulfilling those expectations for a cohort equaling one-quarter of the total U.S. population would require steep increases in future taxes – not least because U.S. labor force and federal revenue growth are projected to slow just as the boomers begin retiring en masse toward

³ The first major treatise on the measurement of U.S. intergenerational redistribution through fiscal policies was completed 15 years ago.

⁴ Most studies on individual expectations of future Social Security benefits suggest that younger people are more skeptical than older ones of receiving benefits. However, conditioned on the continued existence of the Social Security system, most people expect to receive benefits consistent with current levels. See Dominitz et al (2001).

the end of the current decade. One way of raising those larger revenues may be via faster inflation.

Table 1 shows an estimate of the U.S. fiscal imbalance with budget projections extended without a time limit. It shows that the United States faces a federal budget shortfall equivalent to \$67.2 trillion as of this year (2006) calculated under the Office of Management and Budget's baseline economic and demographic assumptions.⁵ It means that continuing current policies under those assumptions involves government debt plus the excess of projected outlays over receipts totaling \$67.2 trillion in present discounted value.⁶ Social Security contributes \$11.2 trillion and the Medicare program contributes \$65.2 trillion to the total federal imbalance. The rest-of-federal government (which includes Medicaid) contributes -\$9.2 trillion.⁷

These fiscal imbalance figures have a simple interpretation: For example, Social Security's imbalance of \$11.2 trillion shows the amount of *additional* resources that the government must have on hand, invested at interest, in order to forever avoid changing Social Security's current payroll tax and benefit policies. The same interpretation applies to Medicare's fiscal imbalance estimate.⁸ Because the rest-of-federal government account shows a negative fiscal imbalance, that federal sector could reduce taxes or

⁵ See Gokhale and Smetters (2006b).

⁶ Debt worth \$67.2 trillion would not actually accumulate because the government would be forced to change fiscal and monetary policies at some point in the future in order to pay off accumulating debt. Fiscal-imbalance-type measures are useful, however, to show the magnitude of the mismatch between outstanding debt and future budget balances under current policies.

⁷ This assumes that general revenues used to finance a part of the Supplementary Medical Insurance program and the entire Medicare Part D (prescription drug) program represent resources that are "appropriated" rather than "dedicated" to those programs. Under the latter assumption, Medicare's fiscal imbalance would equal \$24 trillion rather than \$65 trillion. However, under that assumption, the imbalance on account of the rest-of-federal-government would be \$32 trillion rather than -\$9 trillion.

⁸ This assumes that the general revenue transfers to Medicare are "appropriated" for that program rather than "dedicated" to it. See Gokhale and Smetters (2006b) for a fuller discussion of this issue.

increases outlays totaling \$9.2 trillion in present value. Of course, overall, the federal government is short by \$67.2 trillion in present value and must raise those resources by enacting future policy changes – some combination of expenditure reductions and tax increases, with the latter partly achieved via faster inflation.

Table 1 also shows that the fiscal imbalance would grow larger over time as long as no corrective policy adjustments are undertaken. For example, the imbalance as of 2007 would amount to \$69.7 trillion if no policy changes were enacted in 2006 to reduce its size. The accrual of an additional \$2.5 trillion to the fiscal imbalance arises because the dates when revenue shortfalls are projected to occur move nearer to the present with the passage of time. An alternative way to state the same is that the fiscal imbalance outstanding as of 2006 accrues interest costs. The current annual cost of postponing fiscal adjustments – \$2.5 trillion – is about 10 times larger than the officially reported annual deficit for fiscal year 2006.⁹

If the fiscal imbalance embodied under current policies is resolved largely from tax-side adjustments, how high must taxes be increased? Panel C of Table 1 shows that taxes on total payrolls would have to be increased immediately and permanently by 15.2 percentage points – a more than doubling of the existing payroll tax of 15.3 percent – most of which is levied on capped payrolls.¹⁰

Alternatively, if the fiscal imbalance were resolved largely through entitlement benefit cuts, those benefits (Social Security plus Medicare) would have to be reduced by

⁹ See the United States Treasury (2006).

¹⁰ The Social Security employer plus employee payroll tax of 12.4 percent is levied on capped payrolls. The 2.9 percent employer plus employee Medicare payroll tax is not subject to a similar ceiling on taxable employee compensation.

48.5 percent immediately and permanently. Yet another alternative would be to permanently cut non-Social Security and non-Medicare outlays by 68.2 percent.

Table 2 shows Social Security's fiscal imbalance and its components: Past and living generations account for more than 100 percent of the program's total fiscal imbalance (\$12.3 trillion out of \$11.2 trillion). That means, past and current generations stand to reap an additional 12.3 trillion in Social Security benefits over and above their payroll tax payments into the system (the sum of accumulated past taxes plus discounted future benefits minus discounted future taxes). Future generations, on the other hand, would pay an additional \$1 trillion in net taxes into the system.

Table 2 shows that as ratio of the present value of GDP, Social Security's fiscal imbalance equals 1.2 percent as of 2006. Next year, that ratio would be slightly higher if no policy adjustments are made during 2006. Table 3 shows similar information for the Medicare program, indicating that its fiscal imbalance is about 6 times larger than Social Security's fiscal imbalance. Past and living generations are projected to receive Medicare benefits in excess of their payroll taxes to the tune of \$25.6 trillion. Thus, for Social Security and Medicare combined, current and past generations are being awarded about \$36 trillion in excess benefits as a result of those programs' policies to date.

So far, the two major political parties appear to be stuck in a logjam, refusing to compromise on their preferred approach to resolving future budget shortfalls. The forces sustaining the current budget policy logjam and why a resolution-forcing mechanism may involve faster inflation are discussed in the following sections. It also suggests that the Federal Reserve's current commitment to price stability itself may be helping to postpone a resolution and, hence, making the budget crunch worse.

3. What Sustains the Current Budget-Policy Logjam?

The current economic environment clearly provides no absolute imperative for policymakers to adopt corrective fiscal adjustments immediately. Indeed, lawmakers recently worsened the budget outlook by enacting the Medicare Prescription Drug program (Medicare Part D) in 2003 when the fiscal imbalance was already quite large and positive.¹¹ Similarly, Congress may decide to enact yet more programs or expand existing ones during the next few years to increase rather than reduce the overall federal fiscal imbalance.

Today's budget policy logjam appears to be the result of two interacting forces and the lack of pressure to compromise is supported by three features of the current economic environment: The two forces producing the logjam are, first, electoral pressure for politicians to deliver ever-larger "benefits" to voter blocs while distributing the costs as broadly as possible, which includes passing them forward to future generations.

Second, conflict among current voters about intra-generational redistribution – essentially about how entitlement and other benefits should be financed at the margin – via tax increases or expenditure cuts. Within a political system dominated by two major political parties, voters' support is generally aligned according to whether their *current* net gains are larger on the spending or tax sides of the budget ledger. Everyone knows that larger government spending implies higher taxes, now or later. Hence, those hurt less by tax increases and helped more by government expenditures – call the Group A – prefer larger public resource allocation. Those who benefit little from government

¹¹ Estimates from 2003 excluding the Bush Administration's proposed Medicare Part D outlays would have shown a U.S. fiscal imbalance of \$38.1 trillion.

spending but could lose significantly from tax increases – Group B – favor tax cuts in the hope of (eventually) reducing government-directed resource allocation (known as the “starve the beast” hypothesis).

One could contemplate resolving fiscal imbalances – and the associated problem of imposing unsustainable fiscal burdens on future generations – by associating current tax increases with larger future entitlement cuts for the same generation of taxpayers. However, this policy runs into difficulties from both Groups. Group A fears the backward extension of cuts in prospective benefits to cutting *current* benefits and Group B fears expansion of intra-generation redistribution policies under the guise of saving the tax cuts for compensating those whose future benefits would be reduced. Both political adversaries view compromise as surrender and fear the electoral losses that may follow.¹²

The longer that the fiscal imbalance remains unresolved, however, the larger the losses from a forced future adjustment – either through direct fiscal action or through a Fed-induced inflation in response to market forces. This means that the interaction between the two Groups can be viewed as a “prisoners’ dilemma” game.¹³

Three elements in the current economic environment appear to support a postponement of fiscal adjustments to resolve the imbalance. First, as experience from the 1980s and 1990s suggests, the “prisoners’ dilemma” game between the two political opponents can continue as long as the deficit outlook can be made to appear benign or

¹² Demand-side economic management and stabilization through fiscal policy generally requires more information generation and processing than is feasible for timely policy implementation by Congress and the Administration. Adherents to establishing a stable and credible low tax environment and allowing private entrepreneurship, innovation, and free trade, to direct economic resources to their best uses following market-generated price signals seem to have grown in number in recent years – especially after Reagan era tax cuts ushered in two-plus decades of robust economic growth – interrupted only by two mild economic recessions.

¹³ See Gokhale (2006) available at http://www.cato.org/pub_display.php?pub_id=6405, for another description of the prisoners dilemma political game.

favorable.¹⁴ The current “baseline” budget projections by the Congressional Budget Office, that show very low debt accumulations through the next decade, do just that. Second, experience from the 1970s suggests that stable prices are an important element for ensuring a benign economic outlook. The Federal Reserve’s strong commitment and high credibility in delivering current price stability is an important element in establishing such an outlook. Finally, foreign residents’ and governments’ preference for “investing” their savings in the United States allows postponement of fiscal adjustments. It reduces the financing cost and supports extension of the government’s “pro-consumption” fiscal policies. The following sub-sections examine the dimensions of each of these factors in greater detail.

A. The Budget Outlook: Baseline Versus Alternative

Arising partly from recent higher-than-average economic growth, federal revenues have grown robustly during 2006 and have reduced deficit projections over the next few years. According to the Congressional Budget Offices’ most recent projections, the federal budget deficit is expected to shrink from 1.9 percent of GDP (\$248 bn. / \$13,308 bn.) to just 0.4 percent of GDP (\$93 bn. / \$21,052 bn.) by 2016.¹⁵

¹⁴ In connection with the prisoners’ dilemma game continuing as long as deficits can be made to look benign, recall experience from the early and mid 1990s, when an outside Presidential candidate (Ross Perot) successfully played on the dangers of higher projected deficits to get many voters to defect from the two major parties.

¹⁵ See Congressional Budget Office (2006). Under the CBO’s long-range projections (CBO 2005), however, assuming intermediate spending levels and higher revenues (from continuation of current AMT law and bracket creep) shows federal spending to rise to 38 percent of GDP and federal debt held by the public to increase to 100 percent of GDP by 2050. Under lower assumed revenues (where laws are periodically changed to hold revenues at their historical average of 18.3 percent of GDP), the ratio of debt held by the public to GDP explodes to more than 300 percent of GDP by 2050.

However, the “current law” baseline on which those projections are based includes several elements that may not be realized. It assumes that certain war outlays would remain fixed in dollar terms rather than growing with nominal GDP; that the AMT would remain un-reformed; and that recent tax cuts won’t be extended beyond their “sunset” dates. Although the Congressional Budget Office is constrained to adopt a strict “current law” basis when making budget projections, recent CBO reports have made considerable efforts to reveal the implications of alternative policies.

Take CBO’s updated Budget Outlook from August 2006, which presents alternative projections in considerable detail. If all of the revenue side alternatives – extending recent tax cuts and reforming the Alternative Minimum Tax – are included, and if Iraq and Afghanistan war outlays are assumed to grow with nominal GDP, projected deficits during the next 10 years would be much larger: The 2016 deficit would equal 4.6 percent of GDP (\$962 bn. / \$21,052 bn.). Notwithstanding such auxiliary projections, politician-lawmakers maintain focus only on the CBO’s benign “baseline” projections and de-emphasize the need for an early implementation of budget reforms.

The Congressional Budget Offices’ long-range projections also exhibit widely different outcomes. Assuming intermediate federal spending levels and higher revenues (from continuation of current AMT law and bracket creep), federal spending is estimated to increase to 38 percent of GDP by 2050 but federal debt held by the public would increase to just 100 percent of GDP by that year. Under lower assumed revenues (where laws are periodically amended to hold revenues at their historical average of 18.3 percent of GDP), the ratio of debt held by the public to GDP explodes to more than 300 percent of GDP by 2050. That implies capital market participants should weight a sustained

escalation in future debt levels quite heavily. If capital markets are weighting downside budget risks properly, that is not evident in the behavior of long-term interest rates, which have remained low. Alternatively, other offsetting factors may be operating to keep interest rates from rising.

B. The Federal Reserve's Emphasis on Delivering Current Price Stability

The Federal Reserve's strong emphasis on maintaining price stability is grounded in the belief -- supported by historical experience -- that there is no stable and exploitable trade-off between inflation and unemployment. That perspective holds that price stability itself delivers maximum sustainable economic growth by clarifying to individual economic agents the real trade-offs involved among alternative uses of their resources.

However, is (or can) the Federal Reserve (be) committed to delivering price stability permanently or just to delivering "current" price stability? According to Sargent and Wallace (1981), the extent of the Fed's commitment could be important in determining the course of fiscal policy adopted by the Fed's principal – Congress. But their emphasis is on imposing fiscal discipline over the long-term. During the short-term, however, the Fed's effective commitment to maintaining current and prospective price stability quite clearly contributes toward maintaining a benign/favorable economic outlook – which may be helping to prolong – and even worsen – the fiscal policy logjam. Fiscal policymakers may believe that delays in adopting fiscal reforms will not prove costly because the Fed's monetary policy actions would help ensure a robust economy. However, failure to undertake pro-active fiscal adjustments to resolve fiscal imbalances, indeed, even enacting policies that worsen those imbalances, could unhinge the Fed's

ability to deliver price stability in the future. Why this line of reasoning makes sense can be explained with reference to Sargent and Wallace (1981) proposition of the “unpleasant monetarist arithmetic” – as described in the next section.

C. Growing Foreign Ownership of U.S. Government Debt

The government’s current policies – generous entitlement benefits, high (war related) discretionary spending growth, and low taxes – may be maintained for a few more years – but only as long as foreign savers continue to lend to the United States at prevailing low interest rates. Such “pro-consumption” policies have caused rapid growth in goods and service imports, trade deficits, and a sharp decline in the United States’ net investment position vis-à-vis the rest of the world. According to the United States’ Bureau of Economic Analysis, the U.S. net asset position – U.S. owned assets abroad minus foreign owned assets in the U.S. – is at an all-time low of –\$2.6 trillion and the U.S. current account balance reached –\$791 billion during 2005.¹⁶

Foreign borrowing is an important component of the “debt constraint” that the federal government may confront as population-aging-related budget deficits continue to mount. The recent trend of foreign capital inflows in the United States indicates that the share of U.S. government debt held by foreign residents and institutions has increased especially rapidly during the 1990s (Figure 1): From 21 percent in 1994 to 53 percent in 2004. A similar trend of increasing non-resident-held government debt share is evident among European countries (Figure 2). How much longer this trend can continue for the United States will determine when today’s consumption-oriented fiscal policies

¹⁶ Measured at current cost. See the comparison between U.S. net investment positions for 2004 and 2005 in the latest BEA bulletins available at http://www.bea.gov/bea/di/intinv05_t1.xls and <http://www.bea.gov/bea/newsrelarchive/2006/trans206.xls>.

encounter a binding debt-constraint and force either the Federal Reserve to compromise on its current commitment to price stability or force the federal government to increase taxes and cut benefits sharply.¹⁷ Either way, a market-precipitated economic adjustment is likely to cause considerably more economic damage and spread more of the adjustment costs on those least able to bear them.¹⁸ From a public policy perspective, adopting proactive fiscal adjustments instead in order to avoid market-driven economic disruptions would obviously be preferable.

4. The Monetary-Fiscal Connection

As mentioned in the earlier section, the longer the “prisoners dilemma” game between the two political parties continues, the more “locked in” future entitlement outlays would become. However, the firmer the fiscal authority’s commitment to an unsustainable policy, the worse the trade-off faced by the monetary authority. To explore the link between fiscal policy and the monetary authority’s options, this section provides a brief sketch of the “unpleasant monetarist arithmetic” as proposed by Sargent and Wallace (1981). It also briefly describes the rationale underlying the “Fiscal Theory of the Price Level” which confers primacy to fiscal policy in directly determining the price level – without any concomitant monetary expansion. That is followed by a discussion of the implications of the current fiscal stance for monetary policy and vice versa.

¹⁷ It is instructive to note that total EU countries’ general government debt amounted to €4.7 trillion by July, 2006. This debt level (and the foreign held component) can only be expected to increase as European population-aging-related budget deficits increase during coming years.

¹⁸ External or total debt constraints are unlikely to be a fixed magnitude – even as a ratio to some income measure like GDP. New information about productivity, labor market regulations, the prospect of new debt issues, and the likelihood of default mean that the government’s ability to borrow for supporting current consumption (or its sensitivity to market interest rates) changes over time.

A. The Unpleasant Monetarist Arithmetic

One component of the connection between monetary and fiscal policies is the public's demand for a "monetary" asset – for use, most importantly, as an exchange medium. Today's monetary systems depend on "fiat" money issued by the government, which serves as the basic monetary asset – also called "base" or "reserve" money.¹⁹ Total money creation by the banking system -- is limited by the amount of base money in circulation and the "reserve requirements" and other regulations that various types of bank deposits are subjected to by the Federal Reserve System.

Two features of the government's supply of base money are important: First, although base money constitutes its liability, the government pays zero nominal interest to its holders. Therefore, private agents' demand for real money balances is inversely related to the prevailing nominal interest rate. If the real interest rate were fixed –as under the assumption of a "real steady state" economy – the private sector's demand for money would be inversely related to the prevailing inflation rate.²⁰ Second, the Federal Reserve's monopoly control over the supply of base money means that it can be used as a fiscal instrument to generate seignorage revenues.

¹⁹ Government-issued fiat money serves as the basis for the creation of "near money" substitutes that also perform "monetary" functions for the private sector – such as bank checking and saving deposits, money market accounts etc. However, monopoly control over the supply of "base" money enables the government (or the central bank as the government's agent) to control the total amount of monetary assets in the economy.

²⁰ Real variables, including the real interest rate are assumed to be fixed because the Sargent and Wallace discussion is within the context of a "monetarist" economy wherein money-supply has no impact on real variables: real output, the real interest rate, and real consumption spending, all of which are assumed to remain constant over time.

The central bank determines how much of the government's outstanding public debt it should purchase in exchange for base money (through "open-market operations") to achieve its current price level (or inflation) objective. A larger fraction of existing government debt held by the central bank (instead of by the public at large) produces larger seigniorage revenues.²¹ However, it also implies a larger the stock of base money circulating with commercial and other banks, and a correspondingly larger potential for increasing the amount of liquid ("monetary") assets in the economy. All other things equal, a larger supply of liquidity induces proportionally greater inflationary pressure. Given that all real variables are fixed in the "real steady state" economy, an increase in liquid assets by x percent would increase the price level – also by x percent.

Now consider the choice that the fiscal authority confronts: It wishes to finance a series of expenditures from its receipts through time. Because, similarly to private citizens, it cannot spend each dollar of revenues (taxes and seigniorage revenues) more than once, any debt incurred to bridge past revenue shortfalls must be repaid (or serviced) out of future (primary) budget surpluses. In addition, the government faces a "debt constraint" defined by the public's willingness to hold no more than a given amount of real government debt per unit of real income.²²

Within this framework, monetary policymakers face an intertemporal choice if fiscal policy is pre-committed – that is, if the series of future government nominal revenues, expenditures, are fixed in advance and the implied future nominal debt levels

²¹ Each year, the central bank returns its earnings on government bonds back to the Treasury.

²² The debt constraint need not reflect the private sectors willingness to hold a fixed amount of debt but could be manifested as an increasingly interest-inelastic demand for bonds as total private bond-holdings increase. A highly interest-inelastic demand for bonds means that private agents' would have to be compensated by large increases in interest rates to induce additional bond-holding by withdrawing an equivalent amount of additional money holdings from circulation.

would breach the limit on how high the debt to income ratio can be given the current price level (remember that the real income level is fixed). That choice is between achieving lower inflation today versus in the future. To achieve a lower price level and lower inflation today, the central bank would sell government debt and reduce the ratio of liquid to other assets in private agents' portfolios. But doing so reduces current seignorage revenues and implies the need to increase those revenues by more in the future to raise the required amount of total revenues. In addition, it means that under lower current inflation and seignorage, the debt limit would be breached earlier and the central bank would be forced to increase earlier its holdings of treasury securities to provide larger seignorage for financing the predetermined sequence of government spending. But the resulting larger issue of "monetary" assets would generate faster inflation.^{23, 24}

The usual interpretation of such "unpleasant monetarist arithmetic" is that a fiscal authority that is committed to a specific policy course can force the Federal Reserve into a dilemma – of choosing between lower current inflation at the expense of a higher future one. An alternative conclusion is that the monetary authority may be able to discipline the fiscal authority by holding steadfast to its price-stability objective through time. Then, the fiscal authority must retreat from a profligate fiscal policy at some future date when expenditure commitments cannot be financed.

The key lesson however, is that both the Federal Reserve and Congress cannot commit to independent and inconsistent monetary and fiscal policies respectively. A

²³ Under certain circumstances – especially if today's money demand is highly sensitive to future expected inflation, a monetary policy that promises to deliver a higher pace of future money creation in exchange for slower current money creation may generate higher expected inflation – which, in turn, could affect current inflation despite low current money creation.

²⁴ Note, that this does not constitute what is known in the literature as the "fiscal theory of the price level," in which future (expected) inflation is driven by the government's budget constraint but is completely divorced from all direct and indirect monetary impulses.

more locked-in and irreversible fiscal policy means that the Federal Reserve must eventually coordinate its policy to generate adequate seignorage revenues. As noted earlier, waiting longer to resolve existing fiscal imbalances directly locks in federal expenditure commitments and, if taxes cannot be increased, locks in debt creation. Then the Fed's commitment to maintaining low inflation today directly implies higher inflation tomorrow.

B. The Fiscal Theory of the Price Level

Sargent and Wallace note that the “unpleasant monetarist arithmetic” is consistent with reversing the role of “leader” and “follower.” A sufficiently strong commitment by the monetary authority to price stability could be successful *if* it forces the fiscal authority to revert to fiscal prudence. Thus, a strong commitment to price stability by the monetary authority is *by itself* sufficient to guarantee price stability. The fiscal theory of the price level challenges this notion of sufficiency and suggests that without an appropriate fiscal policy, monetary commitment to price stability by itself won't work no matter how strong it is. Thus a central bank should not be sufficiently independent just to set the correct monetary policy, it must also be able to cajole its principal into following a fiscal policy consistent with achieving stable prices.²⁵

In simple terms, fiscal policy is consistent with price stability if the present value of future *expected* primary budget surpluses equals the real value of outstanding

²⁵ The speech by Ben S. Bernanke, chairman of the Federal Open Market Committee to the Washington Economic Club may be viewed under this perspective as an attempt to nudge fiscal policy toward greater prudence – to safeguard the Fed's long-term credibility in delivering low inflation. The speech is available at <http://www.federalreserve.gov/boarddocs/speeches/2006/20061004/default.htm>.

government debt (nominal debt divided by the price index). If the price index is stated in terms of today's prices ($P_t=1$, with t representing this year), then we have

$$(1) \frac{D_t}{P_t} = \frac{\$5 \text{ trillion}}{1} = \text{Expected present value of future primary budget surpluses.}$$

Here, D_s represent outstanding government debt and P_s are price indices for periods indexed by s (with $s=t$ being the current period and $P_t=1$).

According to the FTPL, equation (1) should be viewed not as a constraint on government's intertemporal budget choices, but as an "equilibrium condition." Given the monetary authority's commitment to price stability, if the fiscal authority commits to undertake no adjustments to spending or taxes even were the real value of debt (D_t/P_t) to grow explosively, then the FTPL predicts an immediate price level adjustment in order to restore balance.²⁶ Thus, operating a fiscal policy that is considerably out of sync with the requirements of price stability could trigger (a hyper) inflation – *even without a fiscally induced monetary expansion*.

That fiscal policymakers do not consider equation (1) as limiting the relative magnitudes of prospective revenues and expenditures that could or should be enacted appears to be a reasonable conjecture. Why? Simply replace the right hand side of equation (1) with the "*present value of all primary surpluses under current policies*," to get $-\$62.2$ trillion instead of $\$5$ trillion.

²⁶ Note that the government's budget constraint can assume a price-setting role if the traditional equation of exchange approach is inadequate to fix the price level. That is either the money supply is endogenous, or the current price level depends on future price expectations – directly, or because short-term movements in output depend on short-term price movements etc. Under such cases, multiple price level sequences through time could be consistent with the equation of exchange and the government's intertemporal budget constraint could become instrumental in determining which price-level path is realized.

C. Adjustment Alternatives

Since we have not observed any equilibrating price level adjustments, either the deviation of prospective budget surpluses under “current policy” from those “expected” by the public is not large or the public expects fiscal policy adjustments to occur sufficiently early to warrant a continuation, for some time, of the apparent disconnect between the two. Both alternatives seem unreasonable. The difference appears to be quite large and there appears little prospect that the budget policy logjam is nearing a resolution.

Note that high deficits and debt accumulation during the 1980s and early 1990s were brought under control by budget controls imposed between 1990 and 2002.²⁷ That experience could be driving current public expectations that fiscal policymakers would respond similarly to future increases in debt levels. However, the cause of high deficits during those earlier decades was spiraling discretionary appropriations – especially the defense build-up of the 1980s. Future increases in deficit and debt levels will be driven by entitlement programs, public support for which is considerably stronger. Hence, future increases in deficits are likely to be more difficult to pare back through spending cuts the longer the fiscal logjam continues. A third possibility, however, is that we will see either a Fed-accommodated increase in inflation or FTPL-driven price level adjustment in the future – as fiscal spending commitments become firmer and the public expects debt growth to be more explosive than the CBO’s baseline projections suggest.

²⁷ The Budget Enforcement Act of 1990 was extended through 2002 and imposed spending caps on discretionary expenditures and anti-deficit increasing pay-go restrictions on new entitlement expenditure increases.

5. Is Federal Reserve Policy Aiding An Unpleasant Fiscal Calculus?

The foregoing discussion of the unpleasant monetarist arithmetic is anchored on a “monetarist” model wherein real variables – output, employment, consumption, and interest rates – remain fixed irrespective of inflation or government taxes and spending. That’s clearly not a good approximation in the short-term, but it’s also not likely to be true in the long-term. Indeed, there is little point in discussing the monetary-fiscal policy tradeoff if profligate fiscal policy only affects inflation and nominal aggregates but has no impact on real economic magnitudes in the long run. The monetarist model is therefore useful only as a first approximation to understanding the market impulses that may first force the Fed into monetizing a larger share of government debt and triggering permanently faster inflation. Subsequently, this may generate slower productivity growth and permanently reduced employment, output, and consumption.²⁸

Note also that the analysis does not pin down which of the two policy authorities (fiscal or monetary) makes a firmer commitment to a pre-specified policy rule. As mentioned earlier, most discussions suggest that if the monetary authority sticks to its price stability commitment (say, by announcing a fixed money growth rate rule), the fiscal authority must back down and alter the path of future deficits. But that, again, means higher job-destroying taxes or cuts in benefits and reduced aggregate expenditures.

This “game of chicken” between monetary and fiscal authorities requires one of them to move first and fix a sequence of policy actions *throughout the future*. The other

²⁸ The permanently higher inflation would result from government debt reaching the public’s (or the world’s) debt-holding limit. It would generate larger inflation-tax revenues to service that debt given that the government refuses to increase direct taxes to do so. Whether additional revenue to finance irreversible benefit commitments is eventually obtained from permanently faster inflation or higher direct taxes would not matter: Hours worked, output, and consumption would likely be lower, *ceteris paribus*, in a higher-tax environment.

authority must then coordinate its actions to the fixed policy of the first authority given the budget constraint it faces. In the real world, however, announcing and adhering to a policy rule in perpetuity is obviously not how policies are made. Fiscal and monetary policymakers may, however, have different time horizons given current political institutions. A reasonable assumption to make is that that fiscal policymakers have shorter time horizons over which to maximize their personal/political payoffs because of short electoral cycles and uncertainty. The Federal Reserve, however, has an extended “institutional” memory because of its long-serving personnel. In addition, the Federal Reserve makes effective policy decisions throughout the year whose sizes can be calibrated to emerging economic information whereas tax policies take time to enact and are subject to lobbying and manipulation by particular interest groups.

If under those assumptions, the Federal Reserves’ current apparently firm commitment to maintaining price stability, could be generating an “unpleasant fiscal calculus” on the part of fiscal policymakers -- each generation of whom, being relatively shortsighted, “pass the buck” to the next generation of policymakers. This could be the explanation, for example, of why today’s fiscal policymakers avoid difficult economic choices by extending the “debate” on budget policy reforms. Such delays are feasible because many expect a continued benign or favorable economic outlook – as long as Fed policy helps to establish low inflation expectations. In the meanwhile, however, the existing fiscal imbalances accrue interest and grow larger over time. Indeed, the Fed supported benign outlook may encourage fiscal policymakers to undertake *additional*

unfunded spending commitments without much risk of immediate adverse economic effects.²⁹

Under this reasoning, the Fed’s high credibility in delivering current price stability may eventually exacerbate its future problems if, as conjectured by Sargent and Wallace, the Fed really faces a trade-off between low current or low future inflation, but not both. Indeed, with relatively shortsighted fiscal policymakers, such a trade-off may emerge from cumulatively profligate policies adopted by successive groups of fiscal policymakers when no such (binding) trade-off existed to begin with. The decision to enact a Medicare prescription drug benefit – that increased future spending commitments by vastly more than current deficits – appears to be consistent with such reasoning.

Most economists and actuaries are (should be) aware by now that maintaining an unbalanced fiscal policy for a number of years – as U.S. policymakers appear to be doing -- implies a redistribution of resources from younger and future generations toward older ones.³⁰ In turn, that requires a permanently higher ratio of taxes to GDP or a permanently higher inflation rate in order to extract the requisite resources from succeeding generations.

6. Conclusion

The game between monetary and fiscal policymakers is usually analyzed with reference to the “unpleasant monetarist arithmetic.” That analysis suggests that if one of

²⁹ Note that in the “monetarist” model of Sargent and Wallace (1981) described earlier, there can be no adverse impact on real output, consumption, or real interest rates. To the extent those assumptions are not satisfied in the real world, faster current inflation may exert adverse effects on real output, employment etc. and spoil the expectations coordination discussed in the text.

³⁰ The first major treatise on the measurement of U.S. intergenerational redistribution through fiscal policies was completed 15 years ago.

these policymakers is a “leader” and sets a policy rule for the entire future, the other must be a “follower” and coordinate its policy with that of the leader in order to satisfy the government’s budget constraint through time. When the monetary authority is the “follower” and the federal government’s pre-determined fiscal policy breaches the public’s willingness to hold government debt, the Fed’s policy trade-off consists of achieving low inflation today or low inflation tomorrow, but not both. Despite its commitment to maintaining price stability, it must eventually monetize a larger share of government debt to generate extra seigniorage revenues and help finance government’s pre-committed outlays. Alternatively, under the FTPL, budget policies that are inconsistent with the real value of current debt would trigger an inflationary re-alignment of the price level independently of monetary impulses. The latter theory, however, is not adequately empirically validated (as yet).

This paper describes the economic forces sustaining the current stalemate on policy adjustments to resolve the large existing fiscal imbalance implicit under current policies. The budget reform logjam – a conflict between inter- and intra-generational redistribution of resources – is sustained by three elements: Current budget reporting that helps policymakers to highlight benign or favorable budget outlooks – by more than warranted by the likelihood that their underlying assumptions would be realized; a surge in global saving allowing continuation of pro-consumption public policies; and the Federal Reserve’s current commitment to maintaining price stability that helps to coordinate public and policymakers’ expectations around benign or favorable economic outlooks.

Unfortunately, under alternative and perhaps more realistic assumptions, the fiscal outlook would be far from benign. Indeed, calculations suggest that under current policies, a total fiscal imbalance to the tune of \$67.2 trillion dollars that must be paid out of future tax or seigniorage revenues or reduced via government expenditure cuts. Social Security and Medicare are the chief sources of the large fiscal imbalance implied under current policy and economic projections.

Finally, the paper suggests the possibility that the Fed's commitment to price stability may be assisting and encouraging an "unpleasant fiscal calculus" among relatively shortsighted fiscal policymakers. Expecting a stable or favorable economic climate, fiscal policymakers have enacted large expenditure commitments that could eventually force the Federal Reserve off its current commitment to price stability. If faster inflation becomes unavoidable, the implications for future productivity growth, employment, output, and U.S. living standards would be considerably less bright than many of us believe. Then the much-lauded independence of the Fed would, in hindsight, be revealed as an instrument for eventually weakening the economy rather than disciplining fiscal policymakers.

References

- Dominitz, Jeff, Charles F. Manski, and Jordan Heinz** (2001), "Social Security Expectations and Retirement Saving Decisions" mimeo, Northwestern University.
- Ben S. Bernanke**, "The Coming Demographic Transition: Will We Treat Future Generations Fairly?" Speech delivered to the Washington Economic Club, available at <http://www.federalreserve.gov/boarddocs/speeches/2006/20061004/default.htm>.
- Congressional Budget Office** (2006), "The Budget and Economic Outlook: An Update," August 17.
- Congressional Budget Office** (2005), "The Long-Term Budget Outlook," A CBO Study, December.
- Gokhale, Jagadeesh, and Kent Smetters** (2006a), "Why Don't Capital Markets Care About the \$2.5 Trillion Federal Deficit?" mimeo.
- Gokhale, Jagadeesh, and Kent Smetters** (2006b), *Fiscal and Generational Imbalances: An Update*, Tax Policy and the Economy, vol. 20. pp. 194-223.
- Gokhale Jagadeesh** (2006), "Congressional Prisoners' Dilemma," Tech Central Station Daily, May 24, 2006.
- Gokhale, Jagadeesh, and Kent Smetters** (2003), *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*, Pamphlet, American Enterprise Institute.
- Kotlikoff, Laurence, J.** (2006), "Is the United States Bankrupt?" Federal Reserve Bank of St. Louis *Review*, Vol. 88, No. 4, pp. 235-50.
- Loyo, Eduardo**, (1999), "Tight Money Paradox on the Loose: A Fiscalist Hyperinflation," unpublished manuscript, Kennedy School of Government, Harvard University.
- Sargent, Thomas, J. and Neil Wallace** (1981), "Some Unpleasant Monetarist Arithmetic," Federal Reserve Bank of Minneapolis, *Quarterly Review* vol. 5, no. 3, pp 1-17.
- United States Treasury** (2006), Announcement on the budget deficit for fiscal year 2006, available at <http://www.treas.gov/press/releases/hp135.htm>.
- Woodford, Michael**, (1995), "Price Level Determinacy Without Control of a Monetary Aggregate," National Bureau of Economic Research Working Paper No. 5204.

Table 1: U.S. Federal Fiscal Imbalance and Its Components

Panel A. Present Values in Billions of Constant 2006 Dollars

Fiscal Years	2006	2007
Total Fiscal Imbalance--U.S. Federal Government	67,213	69,792
Social Security	11,223	11,691
Medicare	65,181	67,578
Rest of Federal Government	-9,190	-9,477

Panel B. As a Percent of the Present Value of GDP

Total Fiscal Imbalance--U.S. Federal Government	7.2	7.2
Social Security	1.2	1.2
Medicare	6.9	7.0
Rest of Federal Government	-1.0	-1.0

Panel C: As a Percent of the Present Value of (Uncapped) Payrolls

Total Fiscal Imbalance—U.S. Federal Government	15.2	15.3
Social Security	2.5	2.6
Medicare	14.7	14.8
Rest of Federal Government	-2.1	-2.1

Key assumptions: Discount rate = 3.65 percent, consistent with rates on 30 year Treasuries outstanding; Terminal labor productivity growth rate = 1.8 percent, consistent with the economic assumptions of the Office of Management and Budget under the Budget for the United States Government, Fiscal Year 2007; AMT fix applied for the next 10 years only. Allowance made for higher revenues from bracket creep throughout the projections. Figures as a percent of the present value of payrolls use the Medicare wage tax base.

Source: Authors' calculations.

Table 2: Social Security's Fiscal and Generational Imbalances

Present Values in Billions of Constant 2004 Dollars

Fiscal Years	2006	2007
Total Fiscal Imbalance in Social Security	11,223	11,691
Past and Living Generations (GI)	12,320	12,783
Future Net Benefits of Living Generations†	14,341	14,947
Trust Fund	-2,020	-2,164
Future Generations††	-1,097	-1,092

As a Percent of the Present Value of GDP

Fiscal Years	2006	2007
Total Fiscal Imbalance in Social Security	1.20	1.21
Past and Living Generations (GI)	1.31	1.33
Future Net Benefits of Living Generations†	1.53	1.55
Trust Fund	-0.22	-0.22
Future Generations††	-0.12	-0.11

As a Percent of the Present Value of (Uncapped) Payrolls

Fiscal Years	2006	2007
Total Fiscal Imbalance in Social Security	2.53	2.57
Past and Living Generations (GI)	2.78	2.81
Future Net Benefits of Living Generations†	3.23	3.28
Trust Fund	-0.46	-0.47
Future Generations††	-0.25	-0.24

† Those born 15 years ago and earlier. In the year 2004, for example, this category includes people born before 1990.

†† Those born 14 years ago and later. In the year 2004, for example, this category includes people born during 1990 and later.

Source: Authors' calculations.

Table 3: Medicare's Fiscal and Generational Imbalances

Present Values in Billions of Constant 2004 Dollars

Fiscal Years	2006	2007
Total Fiscal Imbalance in Social Security	65,181	67,578
Past and Living Generations (GI)	25,595	26,852
Future Net Benefits of Living Generations†	25,926	27,201
Trust Fund	-332	-349
Future Generations††	39,586	40,727

As a Percent of the Present Value of GDP

Fiscal Years	2006	2007
Total Fiscal Imbalance in Social Security	6.95	7.01
Past and Living Generations (GI)	2.73	2.78
Future Net Benefits of Living Generations†	2.76	2.82
Trust Fund	-0.04	-0.04
Future Generations††	4.22	4.22

As a Percent of the Present Value of (Uncapped) Payrolls

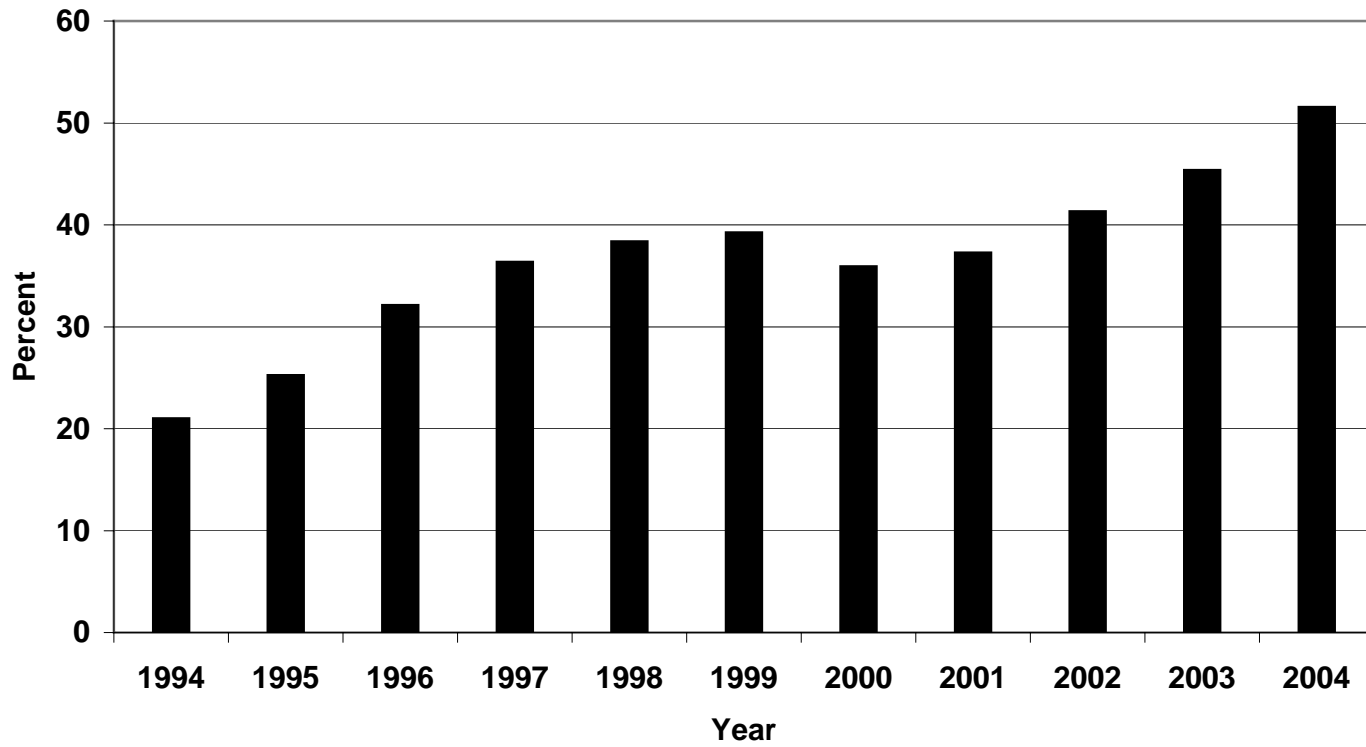
Fiscal Years	2006	2007
Total Fiscal Imbalance in Social Security	14.70	14.83
Past and Living Generations (GI)	5.77	5.89
Future Net Benefits of Living Generations†	5.85	5.97
Trust Fund	-0.07	-0.08
Future Generations††	8.93	8.94

† Those born 15 years ago and earlier. In the year 2004, for example, this category includes people born before 1990.

†† Those born 14 years ago and later. In the year 2004, for example, this category includes people born during 1990 and later.

Source: Authors' calculations.

Figure 1: Share of Foreign Held In Total Privately Held Treasury Debt



**Figure 2: Marketable Government Debt held by Non-Residents
Selected European Countries**

