

Unclassified

ECO/WKP(2010)62

Organisation de Coopération et de Développement Économiques  
Organisation for Economic Co-operation and Development

22-Oct-2010

English - Or. English

ECONOMICS DEPARTMENT

ECO/WKP(2010)62  
Unclassified

## RESTORING FISCAL SUSTAINABILITY IN THE UNITED STATES

ECONOMICS DEPARTMENT WORKING PAPER No. 806

By Patrick Lenain, Bob Hagemann and David Carey

*The United States faces challenging budgetary prospects, as do most other OECD countries. The federal budget deficit widened considerably during the recession, reaching about 10% of GDP in both 2009 and 2010, reflecting the operation of automatic stabilizers and the policy response to the crisis. Consequently, public debt now stands at its highest level since the early-1950s. The Administration has proposed the objective of stabilising the debt-GDP ratio by 2015, which is realistic in scope and ambition, though it requires fiscal tightening measures which are yet to be identified. In the next decade, the effects of population ageing on entitlement spending will be increasingly felt and the fiscal situation could deteriorate significantly in the absence of structural reforms of pension and, especially, health care programmes.*

All economics Department Working Papers are available through OECD's internet website at [http://www.oecd.org/eco/Working papers](http://www.oecd.org/eco/Working_papers)

JT03290934

Document complet disponible sur OLIS dans son format d'origine  
Complete document available on OLIS in its original format

English - Or. English

## ABSTRACT/ RÉSUMÉ

### United States: Restoring Fiscal Sustainability

The United States faces challenging budgetary prospects, as do most other OECD countries. The federal budget deficit widened considerably during the recession, reaching about 10% of GDP in both 2009 and 2010, reflecting the operation of automatic stabilizers and the policy response to the crisis. Consequently, public debt now stands at its highest level since the early-1950s. The Administration has proposed the objective of stabilising the debt-GDP ratio by 2015, which is realistic in scope and ambition, though it requires fiscal tightening measures which are yet to be identified. In the next decade, the effects of population ageing on entitlement spending will be increasingly felt and the fiscal situation could deteriorate significantly in the absence of structural reforms of pension and, especially, health-care programmes.

This Working Paper related to the 2010 OECD Economic Survey of the United States.

[www.oecd.org/eco/surveys/united states](http://www.oecd.org/eco/surveys/united_states)

*JEL Codes:* B20; H51; H55; H60; H68; H75

*Keywords:* United States 2010; fiscal policy; sustainability; tax expenditures; VAT; budget; deficit; debt; health care; ageing population

\*\*\*\*\*

### États-Unis: Rétablir la stabilité budgétaire

Comme la quasi-totalité des autres pays de l'OCDE, les États-Unis sont confrontés à des perspectives budgétaires difficiles. Le déficit du budget fédéral s'est considérablement creusé au cours de la récession, pour atteindre environ 10 % du PIB tant en 2009 qu'en 2010, du fait du jeu des stabilisateurs automatiques et des mesures prises par les pouvoirs publics face à la crise. En conséquence, la dette publique s'établit maintenant à son plus haut niveau depuis le début des années 1950. Le gouvernement a proposé de viser une stabilisation du ratio dette/PIB d'ici à 2015, ce qui représente un objectif ambitieux mais réaliste, même si sa concrétisation passe par un durcissement de la politique budgétaire dont les modalités restent à préciser. Au cours des dix prochaines années, le vieillissement de la population fera de plus en plus sentir ses effets sur les dépenses correspondant à des droits à prestations, et la situation budgétaire risque de se dégrader nettement en l'absence de réformes structurelles du système de retraite et, surtout, du système de santé. La récente réforme du système de santé vise à freiner cette croissance des dépenses. La réforme sera plus efficace en réalisant des économies budgétaires à condition que les futures administrations et congrès ne remplacent pas les dispositions de la présente loi.

Ce document de travail se rapporte à l'Étude économique de l'OCDE des États-Unis, 2010

[www.oecd.org/eco/etudes/Etats-Unis](http://www.oecd.org/eco/etudes/Etats-Unis)

*Codes JEL :* B20; H51; H55; H60; H68; H75

*Mots-clés :* États-Unis 2010 ; politique budgétaire ; budget ; dépenses fiscales ; TVA ; budget ; déficit dette ; système de santé ; vieillissement de la population

**Copyright OECD 2010**

**Application for permission to reproduce or translate all, or part of, this material should be made to:  
Head of Publications Service, OECD, 2 rue André Pascal, 75775 Paris Cedex**

## TABLE OF CONTENTS

RESTORING FISCAL SUSTAINABILITY IN THE UNITED STATES.....	5
After the crisis: dealing with large fiscal imbalances .....	5
Pre-crisis policies already widened the federal fiscal deficit .....	5
Large fiscal interventions were made during the recession.....	6
The government aims to stabilise the debt-GDP ratio.....	10
Fiscal options beyond 2015 .....	12
Pathways toward fiscal stability.....	14
Spending needs to be restrained .....	14
Tax revenue will likely have to increase .....	14
The tax base should be broadened and a more balanced tax structure sought.....	15
Adopting transparent fiscal rules and debt objectives can help to sustain fiscal tightening.....	19
The long-term fiscal outlook is challenging .....	20
Public pension spending is set to rise .....	21
The growth of health care spending is projected to outstrip GDP growth .....	22
The recent health-care reform may curb rising spending .....	23
Local governments also face long-term fiscal challenges .....	25
Summary of recommendations for restoring fiscal sustainability.....	25
BIBLIOGRAPHY .....	27
ANNEX A SMALL BUDGET SIMULATION MODEL.....	30
The reduced form of output gap equation .....	30
The Financial Conditions Index equation .....	30
The Phillips curve inflation equation .....	31
The Taylor rule for policy interest rates.....	31
The term structure of interest rates .....	31
The risk premium on interest rates.....	31
Government fiscal balance (as % of GDP) .....	31
Net interest payments on government debt (as % of GDP) .....	32
BIBLIOGRAPHY .....	33

### Tables

1. United States - General government account.....	7
2. ARRA provides a large stimulus in 2010 .....	9
3. Tax Expenditures in personal income tax: international comparisons.....	15
4. Options for Reforming Tax Expenditures.....	17
5. The CBO estimates that the recent health reform will reduce the federal budget deficit slightly over 2010-19.....	24

**Figures**

1. US budget balances were already weak when the crisis struck .....6  
2. The federal deficit has a substantial structural component .....10  
3. United States – Eliminating the federal deficit by 2020 would bring down the debt ratio .....13  
4. The US tax-GDP ratio is low by OECD standards .....15  
5. The United States relies less heavily on consumption taxes.....18  
6. The share of the elderly (65 years or over) in the total population is set to rise rapidly over coming decades.....21  
7. Long-term fiscal trends are challenging.....22

**Boxes**

1. The budgetary costs of fiscal interventions during the crisis .....8  
2. Impact of the recession on state budgets.....10  
3. Measures proposed in the FY 2011 budget of the US government .....11  
4. Summary of recommendations for restoring fiscal sustainability.....25

## RESTORING FISCAL SUSTAINABILITY IN THE UNITED STATES

By Patrick Lenain, Bob Hagemann and David Carey<sup>1</sup>

1. The US federal fiscal deficit widened sharply during the recession, as did government budget deficits in most other OECD countries. In addition to the adverse budgetary implications of the automatic stabilizers, the stimulus package (the American Recovery and Reinvestment Act) implemented to support the economy has increased the deficit in both 2009 and 2010, as did the financial rescue measures introduced to shore up market confidence. While an early withdrawal of fiscal support could endanger the recovery, running large budget deficits during an extended period of time would lead to rapid debt accumulation, which could limit the ability to use fiscal policy in the future and eventually trigger an adverse reaction of bond-market participants (though there is no evidence so far of concern in the market regarding the ability of the US government to fund its debt). This paper discusses these fiscal challenges and presents possible pathways to sustainability. The recent health-care reform seeks to restrain this expenditure growth. It will most effective in achieving target saving if future administrations and congresses do not override the provision in the law.

### **After the crisis: dealing with large fiscal imbalances**

2. Although the current federal deficit is mainly explained by the effects of the recession and the policy response to it, US public finances were already in deficit at the peak of the previous upswing, reflecting past policy choices, notably large income tax cuts and spending increases. The operation of automatic stabilizers, the implementation of the fiscal stimulus and other supportive measures sharply increased the federal deficit in 2009 and will keep it above 10% of GDP in 2010. Thereafter, the budget deficit will start to improve as anti-crisis policies come to an end, the economy recovers and some of the past income tax cuts are allowed to expire.

### ***Pre-crisis policies already widened the federal fiscal deficit***

3. The federal budget deteriorated during 2001-07 from the surpluses of the late 1990s (Table 1 and Figure 1). Initially, this reflected the bursting of the dotcom bubble and the response to terrorist attacks in 2001 (Lenain, Bonturi and Koen, 2002). But more fundamentally, widening fiscal imbalances resulted from policy choices. Tax rate reductions under the Economic Growth and Tax Relief Reconciliation Act of 2001 (EGTRRA) and the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA) contributed to a fall in revenue. Broadly, EGTRRA cut individual income tax rates, increased the child tax credit, phased out the estate tax, raised deductions for joint filers, increased benefits for pensions and individual retirement accounts, and created additional benefits for education. JGTRRA mostly reduced business taxes. Barring legislative initiative to extend their provisions, both EGTRRA and JGTRRA expire at end-2010, as would the Making Work Pay tax credit. The temporary relief from the Alternative Minimum Tax (AMT) via inflation-indexation of its parameters expired at end-2009. The Administration has proposed to extend these tax reliefs for most taxpayers.

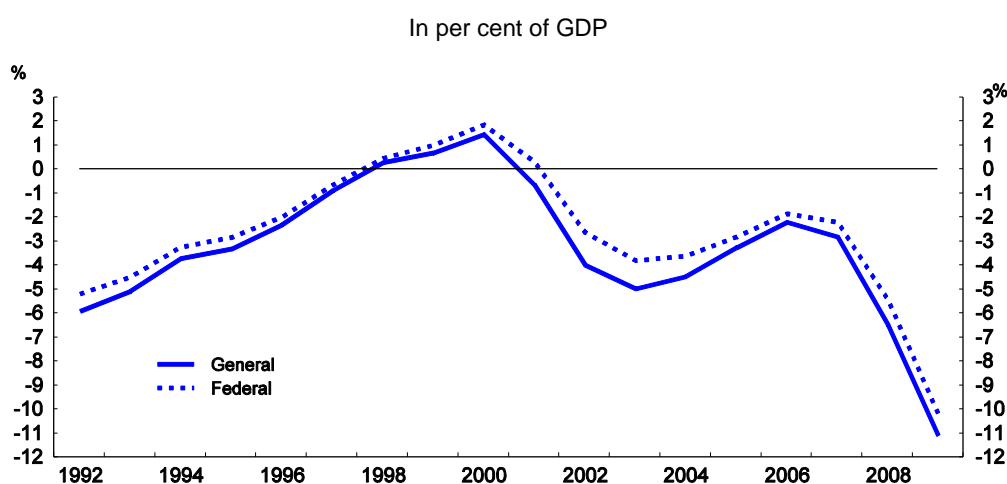
---

<sup>1</sup> This paper was originally produced for the 2010 OECD Economic Survey of the United States, published in September 2010 under the authority of Economic and Development Review Committee (EDRC) of the OECD. We would like to thank Andrew Dean, Robert Ford and members of the EDRC for valuable comments and/or discussions. We are also grateful to Jérôme Brézillon and Josette Rabesona for technical assistance and to Heloise Wickramanayake for secretarial assistance.

4. While revenue began to recover during 2004-07, largely due to the buoyancy of the economy and financial market, spending rose relentlessly, reflecting increased outlays on homeland security and defence (military interventions in Afghanistan and Iraq) and the introduction of the Medicare Part D prescription drug programme for the elderly. A key factor contributing to the weakening of the fiscal position was the abandonment in 2002 of pay-as-you-go (PAYGO) budgeting strictures requiring deficit-neutrality for any new tax or spending initiative. PAYGO rules were introduced with the Budget Enforcement Act of 1990, which superseded previous disciplining mechanisms spelled out in the Balanced Budget and Emergency Deficit Control Act of 1985 (referred to as Gramm-Rudman-Hollings). Under PAYGO rules, the focus of discipline shifted away from fixed deficits to discouraging Congress from passing new legislation that would increase the deficit. Albeit imperfect, not least in terms of its inability to restrain tax expenditures (Kleinbard, 2010), PAYGO was a reasonably effective institutional constraint on spendthrift policymakers.

5. As a result of these policy choices, the United States was still running a budget deficit<sup>1</sup> of close to 3% of GDP in 2007 (the federal budget deficit was 1.2% of GDP), at the peak of the cycle, even as budgets in many other OECD countries were either in surplus (Australia, Canada, Denmark, Finland, Iceland, Ireland, Korea, Luxembourg, Netherlands, New Zealand, Norway, Slovak Republic, Spain, Sweden, Switzerland), in balance (Belgium, Germany) or improving significantly (Italy and Japan).

**Figure 1. US budget balances were already in deficit when the crisis struck**



Source: OECD, National accounts database.

### ***Large fiscal interventions were made during the recession***

6. The government responded to the financial crisis and the ensuing economic recession with extraordinary fiscal interventions (Box 1). As noted in OECD (2010, chapter 1), the government provided support to two government-sponsored enterprises (Fannie Mae and Freddie Mac) in the form of preferred stock purchase agreements and coverage of losses. Massive budgetary funds were also injected into the financial sector to shore up confidence and support distressed private financial firms, mostly through the Troubled Asset Relief Program (TARP). The 2009 American Recovery and Reinvestment Act (ARRA) and its extensions provided a large countercyclical fiscal stimulus, consisting of tax cuts and spending increases, with an impact on the budget of about 2% of GDP in 2009 and 2¼ per cent of GDP in 2010 (Council of Economic Advisers, 2010).

**Table 1. United States - General government account<sup>1</sup>**  
(percentage of GDP, calendar years)

	95-2000	2001-07	2008	2009	2010(f)	2011(f)
<b>Total current receipts</b>	<b>34.3</b>	<b>32.6</b>	<b>32.1</b>	<b>30.2</b>	<b>30.7</b>	<b>31.8</b>
- Household direct taxes	11.3	10.0	9.9	7.7	8.0	8.6
- Corporate direct taxes	2.7	2.5	1.8	2.0	2.6	3.1
- Indirect taxes	7.3	7.3	7.3	7.2	7.1	7.1
- Social security contributions	7.1	7.0	6.9	6.8	6.7	6.9
- Other receipts	5.8	5.8	6.2	6.5	6.3	6.1
<b>Total current outlays</b>	<b>34.3</b>	<b>34.6</b>	<b>36.8</b>	<b>39.0</b>	<b>39.7</b>	<b>39.3</b>
- Government consumption	14.7	15.5	16.5	17.0	17.0	16.7
- Social security benefits	11.1	11.8	12.9	14.6	15.0	14.5
- Interest / property income paid	4.3	2.8	2.7	2.7	3.0	3.4
- Other current outlays	4.2	4.5	4.7	4.7	4.8	4.7
<b>Gross saving</b>	<b>0.0</b>	<b>-2.0</b>	<b>-4.7</b>	<b>-8.7</b>	<b>-9.0</b>	<b>-7.5</b>
<b>Net lending</b>	<b>-0.7</b>	<b>-3.2</b>	<b>-6.5</b>	<b>-11.0</b>	<b>-10.7</b>	<b>-8.9</b>
<b>Memorandum items</b>						
- Underlying net lending	-0.9	-3.4	-5.9	-8.5	-8.9	-8.1
- Federal budget balance (OMB)	0.2	-1.9	-4.7	-10.3	-10.6 <sup>2</sup>	-8.3 <sup>2</sup>
- Federal net lending (NIPA)	-0.3	-2.4	-5.4	-10.2	-10.4	-9.0
- Capital transfers and payments <sup>3</sup>	0.0	0.2	0.7	1.2	0.7	0.5
- Fixed capital formation	3.1	3.2	3.4	3.6	3.4	3.4
- General government gross debt <sup>4</sup>	64.5	59.5	70.4	83.0	89.6	94.8
- General government net debt <sup>5</sup>	45.8	40.1	47.0	58.2	66.6	72.6
- Federal debt held by public <sup>6</sup> (OMB)	36.6	36.5	44.1	54.8	63.6 <sup>2</sup>	68.6 <sup>2</sup>

1. Following OECD practices, the fiscal position of the government is measured in this table in terms of general government (i.e., administrations at the level of the federal government, states, municipalities and social security trust funds).
2. Fiscal years.
3. Includes the net cost of the financial stability plan and the GSE rescue.
4. Government debt is presented on a consolidated basis with holdings of Treasury securities by the social security trust funds and other government agencies netted out.
5. Net of financial assets held by the federal government.
6. Net of debt held by government accounts.

Source: (May 2010) *OECD Economic Outlook* No. 87.

### **Box 1. The budgetary costs of fiscal interventions during the crisis**

Federal fiscal interventions during the crisis have been unprecedented in their level and scope. This response reflected a broadly shared view among policymakers that there was an exceptionally high risk of a collapse of the financial system under the weight of troubled assets, and that the pace of the unfolding crisis at end-2008 and in early 2009 and the ongoing recession could lead to a repeat of the Great Depression. The most prominent responses of the federal government since the onset of the crisis include the placing of the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) into conservatorship in September 2008, the creation of the USD 700 billion Troubled Asset Relief Fund (TARP) in October 2008 and enactment in February 2009 of the stimulus bill, providing funding authority for up to USD 787 billion of tax relief and spending measures to boost the economy.

#### **Fannie and Freddie**

In placing Fannie and Freddie into conservatorship, the US Treasury obtained, through its new majority ownership status, rights to eventual compensation in various forms (notably potential gains from the use of warrants to purchase common stock) in exchange for injections by the federal government to ensure the solvency of the two government-owned enterprises (GSEs). In its accounting of the support of the GSEs, the Administration treats these entities as nongovernmental bodies, recording only cash infusions on the budget. On this basis, in fiscal year 2009, the cost was USD 91 billion, and the Administration projects a further cost of USD 57 billion in 2010. By contrast, the Congressional Budget Office (2010a), following treatment guidelines prescribed in the 1967 Report of the President's Commission on Budget Concepts, classifies the GSEs as legally part of the government. In turn, the budgetary costs are calculated as the net present value of anticipated cash flows, using a discount rate that reflects their riskiness. Under this treatment, and on the basis of CBO's projections of the GSEs' assets and liabilities over the long run, the CBO estimates that ownership of Fannie and Freddie raised the federal deficit by USD 291 billion in 2009. The total budgeting cost for the period 2010-20 is currently estimated at around USD 100 billion.

#### **TARP**

The Troubled Assets and Relief Programme (TARP) comprise several sub-programmes. Under the Capital Purchase Program, the Treasury was authorized to give direct support to financial institutions through the purchase of preferred stock. Of disbursements totalling USD 205 billion, USD 73 billion remained outstanding as of mid-February 2010. In addition, support totalling USD 45 billion was provided to Citigroup and Bank of America under the Targeted Investment Program and through asset guarantees, of which only USD 5 billion was outstanding at end-2009. Additional disbursements to AIG, the American automotive industry, for the Term Asset-Backed Securities Loan Facility, for the Public-Private Investment Partnership and for the Home Affordable Mortgage Program totalled USD 231 billion, roughly 95% of which remains outstanding. TARP legislation requires that the budgetary costs be calculated not on the basis of gross cash outlays, but instead as the net cost to the government, defined as the purchase price minus the present value (using a discount rate that reflects the risk of the assets) of the estimated future earnings from holding the assets, plus the proceeds from their eventual sale. CBO (2010b) estimates the budgetary cost of TARP over the life of the program at USD 109 billion.

#### **ARRA**

The American Recovery and Reinvestment Act of 2009 provides sustained fiscal stimulus over the period 2009-19, with about half of the cumulative impact taking place in 2010 (Table 2). The legislation provides revenue and spending initiatives designed to transfer funds to states and local authorities to: benefit a wide range of programmes, including Medicaid, higher education, and local transportation; support people in need, including through the Supplemental Nutrition Assistance Program and expanded and extended unemployment insurance benefits; purchase goods and services; and provide temporary tax relief to both individuals and businesses. Budget authorization was originally for USD 787 billion, but the legislation is now estimated by the CBO (2010c) to add USD 862 billion to cumulative 2009-19 deficits. ARRA provided a total direct injection (outlays plus revenues measures) of USD 200 billion (1.4% of GDP) in 2009, slightly over half of which was in spending. Over 80% of ARRA spending in 2009 was for five programmes: Medicaid; unemployment compensation; Social Security, the State Fiscal Stabilisation Fund; and student financial aid. On the tax side, the Make Work Pay tax credit (which provides tax relief for people below certain income levels) had the single greatest impact (USD 29 billion) on reduced revenues in 2009, followed by corporate tax relief via more generous depreciation provisions. The ARRA injection in fiscal year 2010 is almost double the amount of 2009.

**Table 2. ARRA provides a large stimulus in 2010**

(In billions of US dollars)

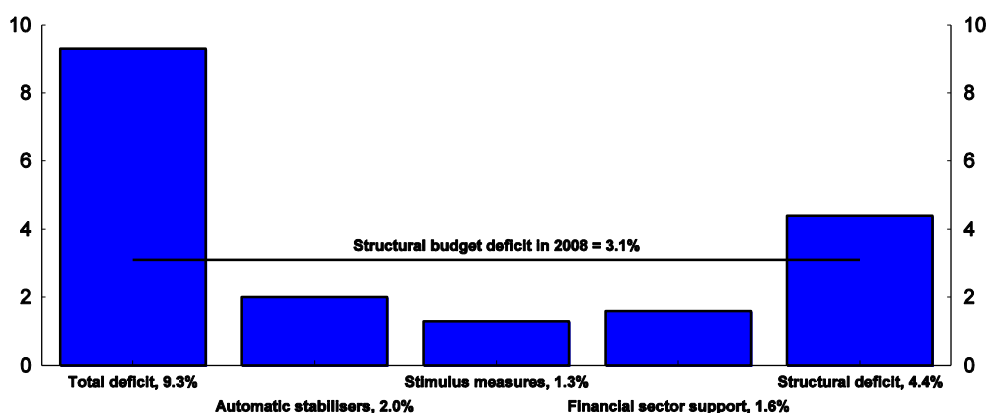
	<b>Actual</b>			
	<b>2009</b>	<b>2010</b>	<b>2011-19</b>	<b>2009-19</b>
Outlays	112	224	289	625
Department of Health and Human Services programs				
Medicaid	32	42	19	93
Other	1	12	27	40
Refundable tax credits	2	33	36	71
Unemployment compensation	27	31	2	60
Supplemental Nutrition Assistance Program	5	11	39	55
Department of Health and Human Services programs				
State Fiscal Stabilization Fund	12	31	10	53
Other (Including Pell Grants)	9	19	17	45
Department of Transportation programs	4	15	28	47
Department of Energy programs	1	5	36	42
Build America Bonds	0	2	28	30
Social Security	13	*	1	14
Other	7	23	46	76
Revenues	-88	-180	31	-236
Total direct effect on the deficit	200	404	258	862

Source: Congressional Budget Office (2010c).

7. The large size of the federal budget deficit is partly explained by the effects of the cyclical downturn, but its origin is mainly structural reflecting, as mentioned, the weakening of fiscal trends before the crisis and the large government interventions thereafter. The federal deficit of fiscal year 2009, which represents 9.3% of potential GDP, can be decomposed into several components, following CBO methodology (CBO, 2010d): a relatively small contribution of automatic stabilizers (2% of potential GDP), consistent with their relatively limited role in the United States (Van den Noord, 2000); the measures introduced to support distressed financial firms, through TARP and GSE support (1.6% of potential GDP); the fiscal stimulus package implemented in 2009 estimated by the CBO at USD 200 billion (1.3% of potential GDP); and a structural deficit unrelated to anti-crisis policies (4.4% of potential GDP), which would persist even as economic activity normalizes and the extraordinary fiscal measures are withdrawn (Figure 2). The recession also substantially weakened the budgets of states and local governments (Box 2), which contributed to raising the overall general government deficit to 11% of GDP in 2009 (in terms of net lending).

**Figure 2. The federal deficit has a substantial structural component**

2009, in per cent of potential GDP



Source: CBO, (2010d) and OECD.

**Box 2. Impact of the recession on state budgets**

State legislatures have had to fill fiscal gaps totalling more than USD 300 billion since the start of the recession, USD 53 billion of which was made possible by federal funds provided under ARRA (PEW Center on the States, 2010a). State budget authorities report that the recession has contributed to historically large revenue declines, largely due to the exceptional severity of the downturn, and a large majority anticipate only slow and weak budgetary improvements as the recovery takes hold (National Conference of State Legislatures, 2009). Thus, large projected budget gaps will continue to pose challenges to states in the near term, at the same time as ARRA support is tapering off. Given balanced-budget constraints, states must draw down reserves, raise taxes or cut spending, with attendant pro-cyclical risks, or turn to the federal government for more assistance. According to GAO estimates, states and local governments will face deficits of USD 39 billion in 2010 and USD 124 billion in 2011 (GAO, 2010).

***The government aims to stabilise the debt-GDP ratio***

8. The federal deficit is projected to exceed 10% of GDP in 2010, reflecting the implementation of the ARRA stimulus package, higher net interest costs and other spending increases. Budget deficits of this size result in a pace of debt accumulation that cannot be sustained for long. The deficit will therefore have to be reduced towards a level consistent, at least initially, with stable public indebtedness. The Administration has taken a step in this direction by proposing the goal of balancing the federal primary budget (*i.e.* receipts minus non-interest outlays) by 2015, which should result in a stable debt-GDP ratio. As a rule of thumb, a deficit will stabilise the debt-GDP ratio when it reaches a level equivalent to the product of the debt-GDP ratio and the nominal GDP growth rate. In the government's proposal, the federal deficit would be reduced to 3% of GDP, which would be consistent with stabilizing the federal debt held by the public, net of financial assets owned by the federal government, at 66% of GDP, assuming trend nominal GDP growth of 4½ per cent ( $66\% \times 4.5\% = 3\%$ ). Assuming that the effective nominal interest rate on the federal public debt is 4.5%, this would imply balancing the primary federal budget.

9. The Administration's goal would involve reducing the federal deficit from 10.6% of GDP in fiscal year 2010 to 3% of GDP in fiscal year 2015. This is an ambitious goal, yet a necessary and realistic one, which should be implemented in full, to reap benefits in terms of retaining financial market confidence.

Deficit reduction would stem from the following developments:

- The winding down of the fiscal stimulus package as ARRA expires (about 2% of GDP);
- The exit from financial rescue measures (about 1½ per cent of GDP);
- The favourable impact of automatic stabilizers: for instance, the CBO projects that the output gap will fall from 6½ per cent of potential GDP at the end of 2009 to zero per cent by the end of 2014, from which it can be inferred that fast economic growth is projected on average over this period; this would reduce the deficit by 2% of GDP ;
- Deficit reduction measures outlined by the Administration in the fiscal year 2011 budget proposal, which would cut the deficit by about 1% of GDP (Orzag, 2010). In particular, the tax cuts introduced under EGTRRA and JGTRAA would not be extended for top-income taxpayers and non-security discretionary spending would be frozen (Box 3);
- Additional, measures which are still to be identified would reduce the deficit from 4% of GDP to 3% by 2015. The President appointed a “National Fiscal Commission on Fiscal Responsibility and Reform” with a mandate to identify such measures.

### **Box 3. Measures proposed in the FY 2011 budget of the US government**

The principal policies put forward in the proposed budget include:

#### **Revenue**

- Permanently extend EGTRRA and JGTRAA for joint taxpayers with income under USD 250 000 (USD 200 000 for single taxpayers), making permanent the 0 and 15% rate on dividends and capital gains, respectively, for those same taxpayers.
- Increase the top income tax rates on joint taxpayers with income over USD 250 000 (USD 200 000 for single taxpayers) to pre-2001 levels; for these taxpayers, the tax rate on dividends and capital gains would increase from 15 to 20%.
- Freeze thresholds of the Alternative Minimum Tax at 2009 levels and index by the CPI.
- Return the estate tax to its 2009 rate of 45% with an exemption of USD 3.5 million.
- Extend the USD 1 000 child tax credit enacted under EGTRRA and the reduced qualifying income thresholds introduced under ARRA.
- Extend the making work pay tax credit and expand the earned income tax credit.
- Increase the Medicare payroll tax rate from 2.9% to 3.9% for joint taxpayers with income over USD 250 000 (USD 200 000 for single taxpayers), and extend the full tax to interest income, dividends and capital gains.
- Introduce a financial responsibility fee of 0.15% on the value of liabilities of large financial institutions.

#### **Spending**

- Expand health insurance coverage.
- Increase spending on education via the Pell Grant programme.
- Reduce Medicare reimbursement rates to physicians.
- Extend and expand the Build America Bonds program.
- Increase outlays on unspecified job creation programs.
- Extend unemployment insurance benefits and provide a one-time USD 250 benefit to each social security recipient.
- Freeze non-security discretionary spending for three years.

***Fiscal options beyond 2015***

10. Assuming that the Administration's fiscal plan is successfully implemented, US federal debt held by the public, net of financial assets owned by the government, would stabilize at about 66% of GDP in 2015 if the budget deficit were to remain at 3% GDP. This level of net federal debt would be roughly equivalent to gross federal debt held by the public of 73% of GDP (Budget for FY 2011, *Summary Tables*). However, because current proposals do not yet include the last 1% of GDP intended to be cut based on the recommendations of the Commission, they are clearly not sufficient to keep the federal deficit at this level after 2015. Thus, in the absence of fiscal measures going beyond those already proposed, public debt would continue to increase. This is illustrated by CBO analysis of the President's budgetary proposals, which suggests that the deficit is likely to widen once again after 2015, putting the federal debt-GDP ratio back on a rising trend (CBO, 2010c). In the CBO projection, gross federal debt held by the public continues to increase after 2015 and reaches 90% of GDP in 2020. To put this in an international perspective, financial liabilities of lower levels of governments need to be added, following OECD practice. Assuming that the difference between the two measures of debt remain constant in relation to GDP, this would imply that gross general government debt would reach about 100% of GDP in 2015 and about 120% of GDP in 2020. It should be noted, however, that state and local governments mostly borrow to finance their capital expenditure and that these local debts are not federally guaranteed.

11. Although the US government has been able to borrow so far at attractive rates, reflecting its strong reputation in the bond market, an increase of government debt towards this high level could trigger some concern in the investor community, who could then demand a higher risk premium, though there is no evidence of this so far and, in fact, bond yields on government are near record lows. In addition, large issuance of government debt, both by the central and local governments, could lead to higher interest rates as the economic recovery develops, potentially resulting in lower levels of business investment and trend growth of GDP per capita (CBO, 2009b, Auerbach and Gale, 2009, and Cecchetti *et. al*, 2010). Prospective large fiscal deficits and rising debt levels could cause countervailing reactions by private-sector agents. In effect, households and business could see the deterioration of fiscal trends as a sign of upcoming tax increases, increasing saving in anticipation, which would reduce the risk of growing mismatch between the supply of saving and the demand for credit. But recent empirical work suggests that the private saving offset is less than 30% in the United States (*i.e.*, an increase of 1% of GDP of the government deficit is offset by increase of private saving of 0.3%), slightly less than in the entire OECD area (Röhn, 2010). Thus, the effect would mitigate, but fall well short of fully offsetting, the crowding out of private borrowers.

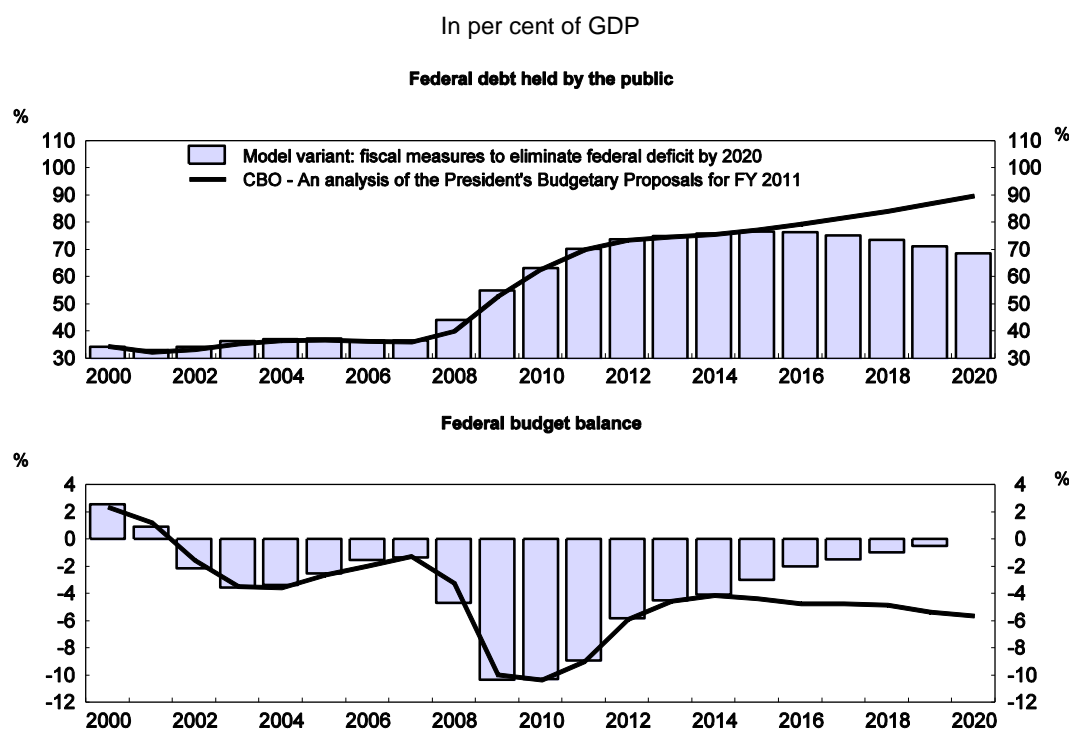
12. If these projections are realised, the United States would be approaching the period when the ageing of baby-boomer cohorts will boost the trend of mandatory outlays of Social Security and Medicare with a high level of public debt, making sustainability even more challenging to achieve. In addition, such a high debt level would leave little room for manoeuvre for counter-cyclical fiscal policy, should another economic recession or financial crisis occur. If the Administration reaches its budgetary goals described above, the results would be better than those projected by the CBO.

13. In view of these considerations, the plan to stabilize the debt-GDP ratio in 2015 should be followed by a policy to put the federal debt ratio on a downward path during the second half of the decade, although the actual pace of reduction should depend on economic circumstances. Not only would this re-create fiscal room for manoeuvre to respond to unexpected contingencies, it would also help to prepare for the long-run budget effects of population ageing. Achieving this goal would require the federal government to aim at running primary surpluses after 2015. This is arguably a challenging undertaking as it would require deficit-reduction measures going beyond those that the Fiscal Commission has yet to identify. For illustrative purposes, a small model was simulated to explore possible public finance pathways to eliminate most of the federal deficit by 2020. Although extremely simple, the model is based on behavioural

equations and traditional rules of thumb conventionally used in larger models; it also includes a small endogenous financial sector, with the risk premium reacting to the level of public debt expected for the future, with a feedback effect on the economy through a Financial Conditions Index (see Annex 2.1). The model was simulated to examine the impact of policies seeking to eliminate most of the federal budget deficit by 2020 (Figure 3). In the simulation, a fiscal policy reaction function represents the behaviour of a fiscal policymaker seeking to eliminate most of the federal deficit by 2020. As a result, the federal budget deficit is eliminated instead of increasing to 5.6% of GDP in 2020 as projected by the CBO (2010d) based on the Administration's proposed budget. Instead of rising to 90% of GDP, gross federal debt held by the public declines after 2015 and falls to just below 70% of GDP by 2020. Putting debt on a downward trend can result in a virtuous circle. Lower public debt would keep long-term interest rates lower than otherwise, as bond-market participants would be content with a lower risk premium (Laubach, 2009). In the simulation, net interest costs are lower than in the baseline scenario (where the debt ratio remains unchanged) reflecting both the effects of a lower debt stock and a reduced risk premium. Of course, in reality, risk premia can hardly be lower than they are currently, so fiscal consolidation will not provide a boost in this way, though it may help prevent an increase in interest rates in the future.

14. Reducing the federal deficit from 3% of GDP in 2015 (as targeted by the Administration) to 0% in 2020 would imply an annual pace of deficit contraction of 0.6% per year. This would negatively impact on GDP growth in the short term, although monetary policy would be able to offset the fiscal contraction with lower interest rates if it has moved away from the zero bound in the meantime. The long-term effect would depend on the evolution of potential output.

**Figure 3. United States – Eliminating the federal deficit by 2020 would bring down the debt ratio**



1. The model variant incorporates the reduction in the federal budget deficit by 1% of GDP through measures to be identified by the fiscal commission, bringing the deficit down to 3% of GDP by 2015, whereas the CBO analysis of the President's budgetary proposals does not.

Source: Congressional Budget Office (2010d) and OECD calculations.

### **Pathways toward fiscal stability**

15. In order to establish political consensus on the modalities of fiscal consolidation, the President created by executive order a bipartisan “National Commission on Fiscal Responsibility and Reform”.<sup>2</sup> Its mandate is to “... *identify policies to improve the fiscal situation in the medium term and to achieve fiscal sustainability over the long run*”. More specifically, the Commission is asked to identify policies that will eliminate the primary deficit by 2015, including specific tax and spending measures to reduce the projected deficit from 4% of GDP to 3%. The Commission will issue its recommendations by December 2010.

#### ***Spending needs to be restrained***

16. In moving forward with consolidation, empirical research and experience in some other OECD countries suggests that spending reductions should be given priority over tax increases (Perotti, 1999; Alesina and Perotti, 1997), though the substantial fiscal consolidation in the United States in the 1990s took place with both spending restraint and tax increases.

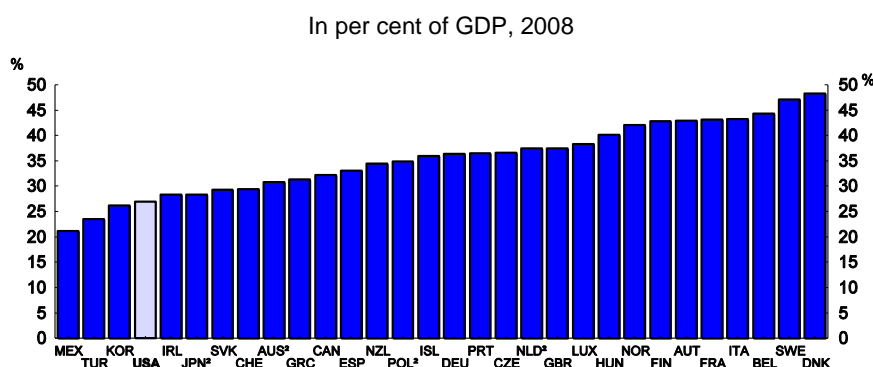
17. Restoring fiscal discipline, through more efficient spending, is an important component of Administration’s policy. In addition to proposing a freeze on non-defence discretionary spending, the government is taking steps to move towards best practices in the management of its public agencies. In particular, the authorities have reviewed past policies increasing the contracting out of public services to private-sector suppliers and decided to strengthen the management and oversight of these contracts, so as to get more value for money and reduce wasteful spending on ineffective contracts. In the area of defence, the government seeks to cut back the use of outside contractors in the battlefield and has taken steps to reduce the cost of weapons procurement, with an outright cancellation of acquisition programmes when deemed outdated or made unnecessary by new strategic orientations. New procurement guidelines also seek to move to fixed-price contracts rather than “cost-plus” contracts, which have led to slippages and cost overruns. As well, a new effort is underway to more rigorously evaluate the performance of public programmes, notably by formulating policy based on evidence-based analysis regarding the attainment of final outcomes. Agency leaders are increasingly being held accountable for achieving specific goals: the policy requires that agency heads commit to a limited number of priority goals that matter, with ambitious targets to be attained without the need for new resources or legislation, and have received well-defined outcome-based measures of progress.

#### ***Tax revenue will likely have to increase***

18. The measures implemented by the government to restrain spending are helpful, but it would take a long time before significant effects on budget balances are felt. In the meantime, higher revenues are likely to have a role to play. Given that the tax-to-GDP ratio in the United States is among the lowest in the OECD area, even including taxes at the levels of state and municipalities, modest tax increases could be made while keeping the overall tax burden at a relatively moderate level (Figure 4). A variety of options is available to raise tax revenue, which are discussed below. Combined, they have the potential to raise considerably more revenue than is required to close the fiscal gap by 2015. Hence, any fiscal package would only need to include some of these options, not all of them. The advantage of relying on a package of measures is that the increase in taxation faced by individual groups is more limited than otherwise, reducing incentives to mobilise to oppose the tax increase, and may appear to be more equitable as other groups are also facing tax increases. A package of reforms could also enable the most vulnerable and lowest income groups to be compensated for any losses. The tax increases that are made should be done in ways that are least harmful to growth, notably by reforming aspects of the tax system that are particularly inefficient and cause large distortions. The focus should be on base-broadening rather than rate increases, and on reducing the most detrimental distortions. Indeed, the present fiscal challenge provides an opportunity to reform the US tax system in ways that hold promise of improved efficiency, greater

horizontal and vertical fairness, and increasing revenue. Additional revenue should also be derived from internalizing the cost of various practices that have negative social effects, such as the cost induced by the emission of greenhouse gases.

**Figure 4. The US tax-GDP ratio is low by OECD standards<sup>1</sup>**



1. The Revenue Statistics database contains data provided by the national tax authorities, which are generally based on standard national accounts definitions and methodologies. However, divergences with the national accounts exist in some areas. The differences are small for most countries and in most years, but are substantial in some cases. The most frequently used measure of the tax burden is shown in the figure (total taxes plus social security contributions as a percentage of GDP).
2. 2007 final data, provisional 2008 data not available.

Source: Revenue Statistics database.

*The tax base should be broadened and a more balanced tax structure sought*

19. Another distinguishing feature of the US income tax system is the scale and scope of tax expenditures, which reduce the tax base and substantially complicate compliance. The major 1986 tax reform reduced considerably the number and value of tax expenditures and lowered statutory tax rates for both the personal and corporate income tax. Since then, however, the number of tax expenditures has resurged: their number grew more since 2000 than during the previous decade (Kleinbard, 2010). According to the Congressional Research Service (2008), there were 247 tax expenditures affecting personal and corporate taxes in 2008, with a value of USD 1.2 trillion, 90% of which pertained to personal income taxation. To give a sense of magnitude, the value of tax expenditures roughly equalled total collections of federal personal income taxes that year.<sup>3</sup> Relative to countries for which recent and comparative data are available, only in Canada are tax expenditures higher than in the United States relative to central government personal income tax receipts (Table 3).

**Table 3. Tax expenditures in personal income tax: international comparisons**  
(as a per cent of central government personal tax receipts)

	Canada (2004)	Germany (2006)	Korea (2006)	Netherlands (2006)	Spain (2008)	United Kingdom (2006)	United States (2008)
Total	32.97	2.91	10.09	2.74	3.86	13.47	29.36
of which							
Retirement	10.72	0.05	0.10	0.16	0.46	6.38	5.77
Health	1.70	0.00	1.67	0.00	0.00	0.00	5.38
Housing	1.29	2.01	0.29	0.12	1.12	3.30	5.90
Intergovernmental	9.94	0.30	0.00	0.00	0.00	0.00	3.54
Other	9.32	0.55	8.03	2.46	2.28	3.79	8.77

Source: OECD (2010), Tables 29 and 30.

20. To be sure, not all tax expenditures are undesirable, because they are meant to promote public policy. But many are distorting and poorly targeted. A scaling back of many tax preferences would raise revenue, be more conducive to economic growth and improve fairness. Tax preferences that should be eliminated or reformed in the interest of efficiency and fairness include those affecting owner-occupied housing, employer-provided health insurance, and state and local taxes. Table 4 lists a number of tax expenditures that hold the most potential for base-broadening along with estimates by the CBO of the possible yields from the measures:<sup>4</sup>

- Reduce the mortgage interest deduction: The tax code provides very favourable treatment to owner-occupied housing by allowing the deduction of mortgage interest and property taxes from adjusted gross income without, however, including the rental income implicitly accruing to the owner-occupant. The deduction is presently limited to interest on mortgages up to USD 1.1 million. It would be preferable to replace the mortgage interest income tax deduction by a homebuyer savings account scheme where the government provides matching contributions to encourage access to homeownership (see OECD, 2010, chapter 1). The policy could be phased in during 2013-18 as the housing market stabilises. By reducing the preferential treatment of owner-occupied housing, this policy would likely boost the amount of capital flowing to other sectors of the economy.
- State and local taxes: Taxpayers itemising deductions can subtract from adjusted gross income the totality of state and local income taxes, as well as real estate and personal property taxes.<sup>5</sup> This essentially represents a federal subsidy for state and local public services. Moreover, the deduction represents a higher value to the rich, as they tend to itemise deductions and face higher tax rates. Another concern is that the deduction discourages sub-national governments from financing local services from more efficient taxes (such as consumption taxes, which would not be deductible under present rules) and user fees. Eliminating or reducing the value of the deduction would lower these distortions and yield very substantial revenues; therefore this deserves serious consideration.
- Limit the tax rate for deductions: Given that the value of itemized deductions increases with the tax rate, the implied subsidy (for the deductible activity) is greater for taxpayers facing higher marginal tax rates. In turn, lowering the tax rate at which deductions can be applied yields a more uniform pattern of subsidies across households, with attendant efficiency and fairness gains. The proposal by the President to limit to 28% the tax rate applicable to deductions could be further lowered. For instance, estimates by the CBO suggest that reducing the rate to 15% would bring about USD 1.3 trillion of additional tax revenues over 2010-19.
- Tax employer-provided health insurance premiums: Under current law, employer-provided health insurance premiums are excluded from taxable income (and payroll contributions). This encourages employer-provided health insurance, but also the purchase of policies that have little cost sharing, accentuating problems of moral hazard (Carey *et al.*, 2009). This effect arises because employer-sponsored health insurance is purchased with pre-tax income whereas out-of-pocket expenses are paid with after-tax income. While the recent health reform legislation partly reduces the importance of this exclusion by introducing in 2018 an excise tax on so-called “Cadillac” plans, the exclusion has been left largely intact. In view of the risk that this exclusion contributes significantly to excess growth of health care costs, and of the substantial potential revenue gains, the government should reduce this tax expenditure as part of a broader revenue mobilizing effort.

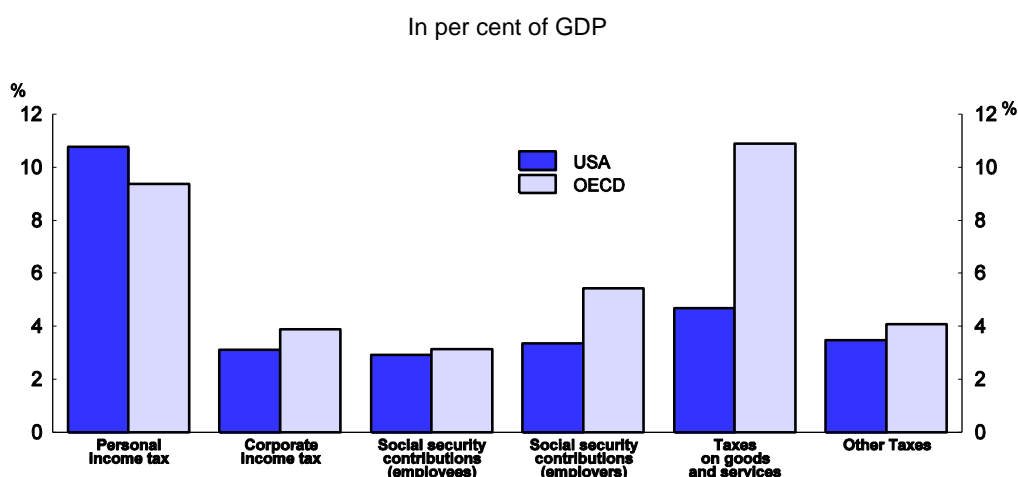
Table 4. Options for Reforming Tax Expenditures

Measure	Revenue Gain (Billions)		Comments/Advantages
	2010-14	2010-19	
<b>Homeownership:</b>			
1. Gradually reduce mortgage on which interest can be deducted, from USD 1.1 million to USD 500 000.	2.3	41.1	<ul style="list-style-type: none"> <li>• If phased in during 2013-18, would allow housing market to recover.</li> </ul>
2. Convert deduction to 15% tax credit.	64.3	387.6	<ul style="list-style-type: none"> <li>• Improves efficiency by reducing tax-favoured treatment of owner-occupied housing, raising capital to other sectors.</li> <li>• Reduces incentives to consume through tax-reduced interest costs.</li> <li>• Would reduce home ownership.</li> <li>• Option 2 equalizes interest rate subsidy across income levels.</li> </ul>
<b>State and Local Taxes:</b>			
<ul style="list-style-type: none"> <li>• End the current itemized deduction</li> </ul>	342.6	861.9	<ul style="list-style-type: none"> <li>• Reduces Federal subsidy to states and local governments.</li> </ul>
<ul style="list-style-type: none"> <li>• Cap deduction at 2% of adjusted gross income</li> </ul>	248.6	625.7	<ul style="list-style-type: none"> <li>• Raises incentives to introduce user fees at state and local levels.</li> </ul>
<b>Limit itemized deductions to 15%.</b>	524.2	1320.7	<ul style="list-style-type: none"> <li>• Provides more equal treatment across taxpayers.</li> <li>• Improves allocation of resources to the extent some items have lower marginal social value.</li> </ul>
<b>Curtail deduction for charitable giving.</b>	90.8	221.5	<ul style="list-style-type: none"> <li>• Would limit deduction to excess of 2% of adjusted gross income</li> <li>• Unlikely to reduce significantly overall giving, especially for large donations.</li> </ul>
<b>Include in taxable income employer-paid premiums for income-replacement insurance.</b>	96.1	225.9	<ul style="list-style-type: none"> <li>• Equalizes treatment across income-replacement schemes.</li> <li>• Spreads tax burden across all covered workers.</li> </ul>
<b>Eliminate tax exclusion for employer-provided life insurance.</b>	11.6	25.2	<ul style="list-style-type: none"> <li>• Eliminates subsidy for life insurance.</li> <li>• Increases fairness.</li> </ul>
<b>Include investment income from life insurance and annuities in taxable income.</b>	117.9	265.0	<ul style="list-style-type: none"> <li>• Equalizes treatment of investment income from life insurance/annuities and income from other forms of financial gains.</li> </ul>
<b>Include in taxable income all income earned abroad.</b>	28.3	71.2	<ul style="list-style-type: none"> <li>• Equalizes tax treatment of earned income wherever earned.</li> <li>• Eliminates subsidy to corporations employing US citizens abroad.</li> <li>• Lessens complexity of tax code.</li> </ul>
<b>Increase the maximum taxable earnings for social security payroll tax:</b>			
1. Tax 92% of earnings.	281.5	688.5	<ul style="list-style-type: none"> <li>• Makes payroll tax less regressive.</li> </ul>
2. Tax 91% of earnings.	250.8	588.5	<ul style="list-style-type: none"> <li>• Improves long-term social security finances.</li> </ul>
3. Tax 90% of earnings.	216.7	503.4	
<b>Reduce the tax exclusion for employer-provided health insurance and the health insurance deduction for self-employed individuals.</b>	108.1	452.1	<ul style="list-style-type: none"> <li>• Reduces incentives to purchase overly generous plans.</li> <li>• Reduces excess demand for health services.</li> </ul>

Source: CBO (2009c).

21. Compared to other OECD countries, the US tax system relies much less on consumption taxation (Figure 5). Some features of the personal income tax favour capital income, such as the exclusion from taxable personal income of pension-fund earnings, moving the personal income tax system close to a consumption tax. One estimate puts at one-third the share of income on household savings that is effectively taxed in this way (President’s Advisory Panel, 2005). On balance, however, US taxation remains less oriented toward consumption taxation than elsewhere. Raising consumption taxes to address fiscal challenges instead of raising personal income taxes has the advantage of not reducing the after-tax rate of return on saving. This could have a beneficial effect on the rebalancing of the US growth pattern, notably by helping to narrow the structural saving-investment gap. For this purpose, one option would be to introduce a broad-based federal value-added tax (VAT). To be sure, introduction of a VAT would not be without controversy, as was the experience elsewhere, such as in Japan and Canada when these countries introduced national consumption taxes. Several issues are of particular importance in the debate over the introduction of a VAT in the US tax system. First, some are concerned that it is regressive. Second, many worry that a VAT, as a “money machine”, could fuel the growth of government spending precisely at a time when restraints on outlays are needed. Third, there are worries that introduction of a VAT would be inconsistent with or pre-empt state and local governments’ retail sales taxes. A fourth concern is administrative complexity and associated costs.

**Figure 5. The United States relies less heavily on consumption taxes**



Source: OECD, Revenue Statistics database, 2008.

22. That these are relevant concerns is reflected in the inability of the President’s Advisory Panel in 2005 to reach consensus to recommend the introduction of a VAT as either a full or partial replacement of the current income tax. Nevertheless, the Panel demonstrated how a partial replacement VAT (*i.e.*, introduction of a VAT accompanied by offsetting cuts in income taxation) could be structured in a way that addresses some of the concerns. Recognizing that an extremely high rate of 15-20% would be needed to fully replace the current income tax system, the panel considered that a lower rate that facilitated lower top marginal income tax rates and financed refundable tax credits for low income households would improve overall efficiency while broadly preserving the progressivity of the system.

23. With respect to the political economy worry of some—that a VAT would fuel the growth of government—it was recognized that empirical evidence is inconclusive. The simple observation that the share of government is greater in countries with VATs does not address the direction of causality. Indeed, studies that control for additional factors are inconclusive on the matter of causality. Moreover, recent US fiscal history demonstrates in part that independent forces drive federal revenue and spending policies, with little causality linking the two, absent strong and effective disciplining mechanisms (such as PAYGO

rules). Tax rate increases during the 1990s were accompanied by reduced spending (admittedly facilitated by the ending of the Cold War) while rate reductions during the 2000s were accompanied by rising federal spending (admittedly due in part to the war on terrorism).<sup>6</sup>

24. Matters of fiscal federalism and administrative burdens are not without merit. The President's Panel recognized the complexities posed by the pre-existence of state and local retail sales taxes, noting in particular the difficulties posed to some Canadian provinces following introduction of its Goods and Services Tax in 1997. Some analysts, however, have a more favourable assessment of Canada's experience and its implications for the feasibility of a VAT in the United States (Bird and Gendron, 2009). On administrative costs, evidence suggests that a VAT can be much less costly per dollar of tax receipts than the current income tax, given the very high compliance costs borne by income-taxpayers (President's Advisory Panel, 2005). Introduction of a VAT without abolishing personal income tax, however, would add to compliance costs, absent substantial accompanying simplification of the income tax.

25. A balance of considerations argues in favour of an eventual introduction of a VAT, absent a strong and concerted effort to transform the existing income tax into an outright expenditure tax. The rate at which a VAT would be introduced cannot be determined in isolation, and would depend on a host of factors, not least of which would be the residual fiscal gap once the maximum politically tolerable spending cuts and revenue enhancements to the existing federal tax system have been agreed. Moreover, VAT could be introduced at a low, single rate, with increases phased in over time if institutional reforms and/or political will are insufficient to dramatically reduce the rate of growth of entitlement spending.

26. In the event that it proves not to be politically feasible to raise significant extra revenue from broadening the tax base, it will likely be necessary to increase taxation of personal incomes to achieve the requisite reduction in the federal budget deficit. Such increases should occur when the economy is back on its feet and should be done in such a way as not to unduly blunt incentives to work. In this regard, tax hikes on secondary earners should be avoided as their labour supply decisions are more responsive to changes in tax rates than are those of primary earners (CBO, 2007). Similarly, persons in the low-income deciles should be spared as their labour supply decisions are also more responsive to changes in after-tax income than are those of people in the top deciles.

### ***Adopting transparent fiscal rules and debt objectives can help to sustain fiscal tightening***

27. The reinstatement of pay-as-you-go rules in January 2010 aims to ensure that all new spending and tax legislation be fully paid for. It requires the Congress to fully offset the costs of any entitlement increases or tax cuts by finding savings elsewhere -- a critical approach to achieve expenditure restraint. The legislation is not foolproof, however. It excludes temporary measures to address the so-called "economic crisis or emergency situations". Recent emergency spending requests include USD 5.1 billion to replenish dwindling balances in the Federal Emergency Management Agency's disaster relief fund; USD 33 billion war supplemental budget to fund military operations in Afghanistan and Iraq; and USD 8.4 billion requested by Fannie Mae to cover higher-than-expected first-quarter losses. Notable improvements to PAYGO would include tightened rules applying to "emergency" exceptions and present-value calculation of offsets.<sup>7</sup> Also critical is the need to tighten constraints on the use of tax expenditures, which are subject to much more lax review and control (Kleinbard, 2010).

28. Experience in a number of OECD countries suggests that it may be important to adopt longer-term objectives for public debt than those of the Administration, which are to stabilise the publicly-held federal debt-to-GDP ratio by 2015, for putting public finances on a sustainable path. Such objectives, which may be qualitative (e.g., stabilisation by a certain date, falling thereafter) and should remain flexible in the face of changing economic circumstances, make clear the implications of short-term budget decisions for the sustainability of public finances. Drawing on the example of legislation protecting

central-bank independence, Australia and New Zealand passed legislation in the 1990s requiring budgets to be formulated taking into account their long-term consequences and, when budgets departed from a prudent long-term path, requiring government to indicate how fiscal policy would be returned to such a path. The idea behind this legislation was that while future governments could repeal these laws, doing so would be unattractive as it would entail a political cost to the government's reputation for sound economic management. Both countries have had considerable success in improving their net government debt positions.

29. Adopting medium-term targets for the federal government debt-to-GDP ratio and the associated budget balances needed to achieve these ratios would create an environment more conducive to fiscal responsibility. To fix these targets, it would be helpful to determine an agreed legislative framework that provides guidance, as in Australia and New Zealand. For example, one element of putting public finances on a sustainable path is likely to be reducing the government debt-to-GDP ratio before the retirement of the baby-boom generation increases entitlement spending. Once medium-term debt targets have been fixed, there would be an envelope that fixes the range of compatible annual budget paths: larger deficits in the short term would need to be offset by subsequent smaller deficits. For these arrangements to be effective, there would need to be transparent reporting (preferably by an independent organisation, such as the CBO) on whether annual budgets are compatible with the medium-term debt targets and if budgets are not compatible, rules that determine how they will be made so. It is also important, though, that such goals include appropriate escape clauses contingent on economic circumstances such that these goals do not become destabilizing forces in the event of an economic setback, when fiscal policy may need to be used to help to stabilize the economy.

### **The long-term fiscal outlook is challenging**

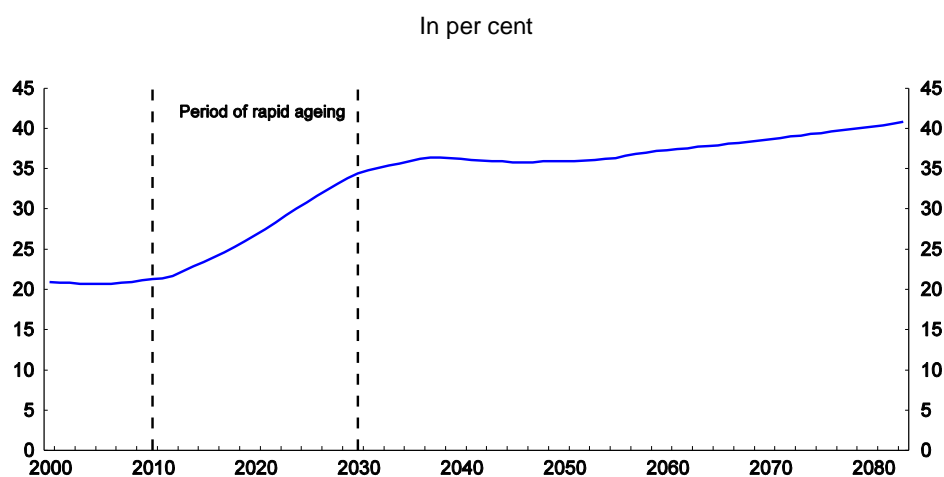
30. The US long-term fiscal outlook is dominated by growth in health-care entitlements and, to a lesser extent, pension entitlements. Population ageing (Figure 6), reflecting the ageing of the large cohorts of post-war baby boomers and rising life expectancy, *per se*, will boost expenditures on social security pension benefits and on Medicare and Medicaid (Figure 7), the federal government's two main health-care programmes, as the proportion of the population qualifying for these entitlements grows rapidly. Growth of Medicare and Medicaid outlays will be additionally and mostly boosted by rapid growth of health care costs per recipient. At the same time, given the relatively slower growth of the labour force and, hence, the social security contributor population, revenue sources will not keep pace with outlays.

31. While the measures in the March 2010 health-reform legislation<sup>8</sup> to expand health insurance coverage will increase some areas of federal health-care spending, this effect is expected to be compensated by other measures in the legislation that reduce overpayments, waste, fraud, and abuse in Medicaid and Medicare. Indeed, mandatory federal health care spending could well turn out to be lower than in the CBO's alternative fiscal scenario projections shown in Figure 7, which reflect the CBO's assessment of current policy, because it did not score various cost-saving measures in the reform owing to uncertainty about the scale of their effects (this also applies to CBO's extended baseline projection, which reflects the implications of current law) and assumes that other cost-saving measures in health reform will be rolled back by Congress starting in 2020 (increasing health-care expenditures by 0.8% of GDP by 2035 compared with the extended baseline scenario). Furthermore, revenues would be higher over the long-run than shown here if fiscal drag (the increase in tax revenues from leaving tax rates, brackets and other features of the tax system unchanged in the face of rising nominal incomes) were not to be offset after 2020. In the projection shown here, CBO assumes that revenues remain constant near their historical average of 19% of GDP after 2020, whereas, without the enactment of new tax cuts, revenues would tend to rise naturally as real income growth produces higher average tax rates under the graduated income tax and as the tax base subject to the health reform's new excise tax on high-cost insurance expands (these factors increase revenue in the CBO's extended baseline by 2.6% of GDP by 2035).

***Public pension spending is set to rise***

32. Actions taken during the 1980s postponed but did not eliminate the long-run challenge of ensuring the financing of social security benefits. Social security contribution rates that have remained above rates strictly needed on a pay-as-you-go basis have provided a substantial degree of pre-funding of benefits through the Social Security Trust Fund (Social Security Administration (SSA), 1983). Invested exclusively in non-marketable US Treasury securities, however, this pre-funding is more virtual than real from a general government perspective: the US Treasury will have to issue debt to the public as the Trust Fund runs down its assets to settle pension promises. The reforms of the 1980s also provided for a phased-in increase in the statutory retirement age from 65 to 67 during the first two decades of the current century. Together with other measures, this postponed eventual deficits for several decades. Similar solutions could be used again to raise more revenue and contain expenditures. Linking the age of social security eligibility to active life expectancy so as to hold the ratio of work life to active retirement stable would be one such solution. Now that the health reform has passed (see below), extending health insurance coverage to almost the entire legally-resident population, it would also be feasible to reduce Medicare outlays by making the age of eligibility the same as for full social security benefits.

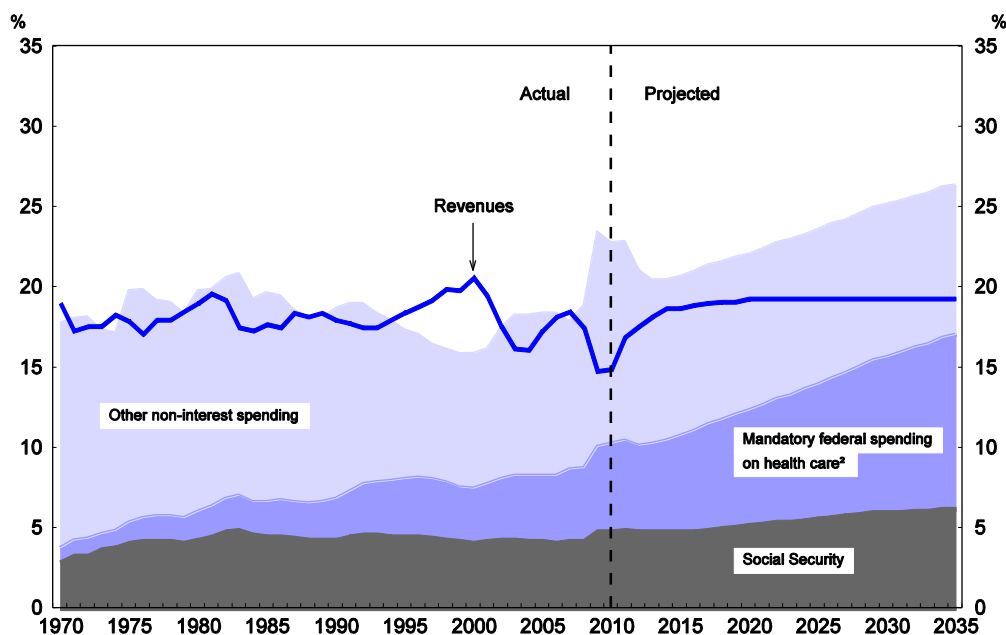
**Figure 6. The share of the elderly (65 years or over) in the total population is set to rise rapidly over coming decades**



Source: Congressional Budget Office (2009b).

**Figure 7. Long-term fiscal trends are challenging<sup>1</sup>**

In per cent of GDP



1. The scenario depicted is the CBO's alternative fiscal scenario, which incorporates several changes to current law (shown in the extended baseline scenario) that are widely expected to occur or that would modify some provisions that might be difficult to sustain over a long period. (For details, see CBO (2010e), Table 1.1). As discussed in the text, the CBO heavily discounted many new health care cost containment and revenue provisions after 2020.
2. Mandatory federal spending on health care includes Medicare, Medicaid and CHIP and, for the projection period, Exchange Subsidies.

Source: Congressional Budget Office (2010e).

### ***The growth of health care spending is projected to outstrip GDP growth***

33. Prospective growth of spending on Medicare and Medicaid presents a much greater challenge than that of the pension system. Medicare and Medicaid spending has grown markedly as a share of GDP in recent decades and, together with other federal health-care programmes, is projected to continue doing so, rising from about 5% of GDP in 2009 to 11% by 2035 and 20% by 2080 in the CBO's alternative fiscal scenario, although it should be recognised that such long-term projections are subject to considerable uncertainty (Figure 7). Most of this growth is attributable to “excess cost growth”, which measures the extent to which the growth in health-care expenditure per enrollee exceeds that in GDP per capita after adjusting for changes in the age structure of the population. Excess-cost appears to be driven mainly by technological progress making new, expensive treatments available. Population ageing is the other main factor explaining the projected rise in government health-care expenditures, accounting for 45% of the increase up to 2035, but only 30% of the long-term increase. Slowing growth in total health-care expenditures by increasing value for money is the most important health-policy challenge for the United States. The comprehensive-health-reform legislation should contribute to the achievement of these goals by reducing the growth rate of public health care spending, but, as noted above, the CBO does not allow for these effects in the alternative scenario shown in Figure 7.

34. The CBO assumes for these projections that the private sector will take steps to restrain excess-cost growth so that the annual increase in health-care expenditure converges to the total annual increase in consumption expenditure (*i.e.*, excess-cost growth converges to zero) by 2084. Such steps would probably

entail households facing increased cost sharing, new technologies being introduced and diffused more slowly, and more treatments or interventions not covered by insurance. State governments, which pay half of Medicaid costs, could respond to growing costs by limiting the services they cover and by tightening eligibility criteria. Such a slowdown in excess-cost growth would affect Medicare, which is integrated with the rest of the health-care system, through the spread of lower-cost “patterns of practice”. The CBO assumes that Medicare’s excess-cost growth will decline linearly from 1.7% in 2020 to 1.0% in 2084, one third of the reduction assumed for non-Medicare spending. The CBO also assumes for the “alternative scenario” shown in Figure 7 that Medicare payments to physicians grow with the Medicare economic index rather than at the lower rates of the “sustainable-growth-rate” (SGR) mechanism, which would entail an immediate 21% cut in payment rates if applied; it has not been possible to implement the SGR because it would result in an untenable increase in the discrepancy between provider fees for Medicare- and other patients.

### *The recent health-care reform may curb rising spending*

35. The recent health-care reform approaches universal health insurance coverage, which exists in almost all other OECD countries, but also raises taxes and cuts some spending items. In its official scoring of the bill, the CBO projects that the reform will barely reduce the budget deficit over the coming decade (savings of USD 143 billion) but will have a considerably larger effect in the following decade (savings of USD 1 trillion in the extended-baseline scenario), although it should again be recognized that such long-term projections are uncertain. The largest sources of financing are a 0.9 percentage point increase in the Medicare payroll tax rate for high-income households (individuals with income of more than USD 200 000 per year and married couples with income exceeding USD 250 000 per year) to 3.8% and the extension of this tax to high-income households’ unearned income, a reduction in Medicare fee-for-service (FFS) market-based price updates for hospitals by 1% per year (reflecting economy-wide productivity growth) for the next decade, and a cut in overpayments to Medicare Advantage (private) plans, which cost more than the traditional FFS-Medicare programme (Table 5).

36. For these budget savings to be realised, Congress will need to refrain from subsequently overriding the relevant provisions of the legislation. It should not be too difficult for Congress to hold the line on the reduction in hospital price updates over the coming decade, as studies indicate that there is considerable scope for productivity improvements and the hospitals association publicly agreed to this measure to support passage of the health-reform bill, which will benefit its members through increased activity. Similarly, the reduction of overpayments to Medicare Advantage plans should not be too difficult to sustain, because beneficiaries could obtain the same services through traditional FFS Medicare. On the other hand, the absence of indexation of the income thresholds for the tax on unearned income and the indexing of both subsidies offered in the new health insurance exchanges and the threshold for the new excise tax on high-cost (“Cadillac”) plans at rates lower than medical inflation may be politically difficult to sustain in the long run. These arrangements would result in a growing proportion of households having to pay the higher rate of Medicare tax on earned income and the Medicare tax on unearned income, the threshold for plans to be classified as high cost becoming progressively more restrictive, and rising prices for health-insurance plans bought on the new health insurance exchanges. If Congress nevertheless maintains these provisions in the bill as passed into law beyond 2020, as assumed in the CBO’s extended baseline but not in the alternative fiscal scenario, and if these measures have the intended effects, the long-term budget outlook will be substantially better than shown in Figure 7.

37. The legislation also includes measures that could significantly reduce government health care outlays in the long term, but for which the CBO was generally unable to estimate budget effects owing to uncertainty regarding their effectiveness or how they could be scaled up. The effectiveness of these provisions may be a critical part of containing long-run health costs. A potentially important measure in this regard is the creation of a Centre for Medicare and Medicaid Innovation, within the Centres for

Medicare and Medicaid Services, to test provider-payment reforms that move away from the current FFS model. These reforms, which concern medical homes<sup>9</sup>, accountable-care organisations<sup>10</sup> and hospitals (bundled payments for hospital and post-acute care, remunerating such care as a single episode of treatment), have considerable potential to slow growth in health-care outlays by better aligning health providers' incentives and patients' interests. This is particularly important for episodes of treatment that include hospital treatment and ambulatory care, which is the fastest growing component of US health-care expenditure. For example, Hussey *et al.*, (2009) estimate that bundling payments for chronic diseases and elective surgeries could reduce medical spending by 5.4% through 2019. The plan is to roll out widely those reforms that are found to be effective in reducing costs without compromising quality of care.

**Table 5. The CBO estimates that the recent health reform will reduce the federal budget deficit slightly over 2010-19**

	USD Billion
<b>Net change in the deficit</b>	<b>-143</b>
<b>Net cost of coverage provisions</b>	<b>788</b>
Medicaid and CHIP outlays	434
Exchange subsidies and related spending	464
Small employer tax credits	40
Penalty payments by uninsured individuals	-17
Penalty payments by employers	-52
Excise tax on high-premium plans	-32
Other effects on tax revenues and outlays	-48
<b>Reductions in health-care spending</b>	<b>-511</b>
Provider payment updates	-157
Medicare Advantage Payments	-136
Community living assistance	-70
Medicare prescription drug coverage	-38
Independent Payment Advisory Board	-16
Other	-94
<b>Revenue-raising provisions</b>	<b>-420</b>
Tax increases	-210
Fees on certain manufacturers and insurers	-107
Other	-103

Source: Congressional Budget Office (2010f).

38. In another provision, the newly created Independent Payment Advisory Board (IPAB) would be required to make recommendations to reduce growth in Medicare spending if projected growth per beneficiary exceeded the rate of growth of national health expenditures per capita or the average of the growth rates of the CPI for medical services and the overall CPI. This is potentially a very powerful tool because the recommendations would go into effect automatically unless blocked by subsequent legislative action, which would be subject to presidential veto, like all legislation. There is also a variety of other cost-saving proposals in the legislation, including value-based benefit design, funding for comparative effectiveness research, which analyses the effectiveness of treatments (and could be important for deciding prices to pay for new drugs) and incentives for hospitals to reduce hospital-acquired infections. The legislation is also funding demonstration projects to reduce the practice of defensive medicine, thought to be caused by high medical malpractice awards, by finding routes other than litigation to resolve disputes.

Despite the potential importance of the IPAB and other deficit-reduction measures, the CBO assumes in the alternative scenario shown above that they are curtailed by Congress after 2020, whereas if implemented as enacted, the long-term fiscal outlook would be significantly improved.

### *Local governments also face long-term fiscal challenges*

39. Many state and local governments also face a challenging long-run fiscal outlook. The Government Accountability Office (2010) estimates that, on unchanged policies, the 50-year fiscal gap facing states and local governments could be as high as 12% of GDP. The principal drivers of the widening operating budget gap are pension and health care costs for public employees. Pew Center on the States (2010b) puts the scale of the unfunded pension liability at end-June 2008 (the end of most sub-national governments' fiscal year) at around USD 1.1 trillion. The gap is likely to be much higher, however, due to two factors. First, since most of the substantial decline in equity markets was in the second half of 2008, the brunt of the collapse of the stock market is not reflected in this estimate. Second, states and localities are allowed to smooth gains and losses over several years in calculating their net position. In turn, states' funding levels still reflect more of the upswing in equity prices than they will in the period ahead. Finally, the present value of future pension liabilities could well be under-estimated due to the high rate used to discount liabilities. A much larger estimate of the unfunded liability of state pension schemes is obtained when pension obligations are discounted not by the expected rate of return on assets—as is required by state government accounting standards—but by a lower discount rate that more appropriately reflects the low risk profile of pension liabilities (there is a high degree of certainty about the payments due) (Novy-Marx and Rauh, 2009). On this basis, already-promised 2008 state pension liabilities amounted to USD 5.17 trillion, assuming that states cannot default on pension benefits that workers have already earned. Net of the USD 1.94 trillion in assets, these pensions are underfunded by USD 3.23 trillion according to this calculation. This pension debt dwarfs the states' publicly traded debt of USD 0.94 trillion. Health care costs are also projected to weigh heavily on states through their cost-sharing responsibilities for Medicaid.

### **Summary of recommendations for restoring fiscal sustainability**

40. The main recommendations to restore fiscal sustainability that emerge from this paper are summarised in Box 4.

#### **Box 4. Summary of recommendations for restoring fiscal sustainability**

- Allow measures in the fiscal stimulus package to expire.
- Implement the proposed plan to stabilize the debt-GDP ratio by the middle of the decade.
- Bring the debt-GDP ratio down during the second half of the decade to create fiscal room and to prepare for demographic ageing.
- Strengthen the budget process and restrain spending, including by expanding the coverage of PAYGO.
- Increase tax revenue, mainly by broadening the tax base.
- Stabilise the ratio of work life to active retirement by linking the age of social security eligibility to active life expectancy.
- Do not override expenditure restraints contained in the March 2010 health care reform.
- Roll out Medicare provider-payment reforms that prove to be successful in pilot tests across the programme, as planned.

Notes

1. The budget deficit is measured as the net lending position of the general government (federal, states and local governments) recorded by the national accounts, following OECD practice. The public debate in the United States focuses, however, on the federal government and measures the budget deficit as the saving balance, which excludes government capital formation, net capital transfers and non-current receipts. Reconciliation between these two concepts is provided by BEA (2009 and 2010), CBO (2009a) and OMB (2010a). Public debt is taken from the Federal Reserve's Flow of Funds (total consolidated financial liabilities of federal, state and municipal governments).
2. The Commission is composed of 18 members drawn equally from both parties. Recommendations will require agreement among 14 members. A final report is expected by early December 2010.
3. Strictly speaking, tax expenditures cannot simply be summed due to interactive effects. Notwithstanding, their aggregation gives a sense of their relative importance.
4. The table focuses on advantages, but each proposed measure of course has disadvantages as well. On balance, the former outweigh the latter on economic grounds.
5. The 1986 tax reform eliminated the deductibility of state and local sales taxes.
6. Empirical support for doubting the effectiveness of tax cuts to engender reduced spending is provided by Romer and Romer (2009), who find "[...] no support for the hypothesis that tax cuts restrain government spending; indeed, [the findings] suggest that tax cuts may actually increase spending. The results also indicate that the main effect of tax cuts on the government budget is to induce subsequent legislated tax increases."
7. Under current procedures, a billion dollar expenditure increase or tax cut today can be "offset" by a billion dollar spending cut or tax increase ten years hence.
8. The health-care reform comprises two pieces of legislation, the Patient Protection and Affordable Care Act (PPACA), and the Health Care and Education Act of 2009.
9. A Medical Home, which is also known as a Patient-Centred-Medical Home, is an approach to providing comprehensive primary care that facilitates partnerships between patients and their health-care providers.
10. An accountable-care organisation (ACO) is a group of doctors and hospitals jointly paid by Medicare to provide all the health-care needs of a group of at least 5 000 Medicare beneficiaries. Doctors and hospitals would be paid based on their ability to hold costs and meet quality-of-care indicators instead of the volume of services provided and of hospital admissions, as occurs under current Medicare FFS arrangements.

## BIBLIOGRAPHY

- Alesina, A. and R. Perotti, (1997), “Fiscal Adjustments in OECD Countries: Composition and Macroeconomic Effects.” *IMF Staff Papers* 44, No. 2: 210–48.
- Auerbach, A. and W. Gale (2009), “The Economic Crisis and the Fiscal Crisis: 2009 and Beyond, An Update,” *Tax Notes*, October.
- Bureau of Economic Analysis (2009), “Advance Estimates for the Fourth Quarter of 2008”, *Survey of Current Business*, February.
- Bureau of Economic Analysis (2010), “NIPA Translation of the Fiscal Year 2011 Federal Budget”, *Survey of Current Business*, March.
- Bird, R. and P. P. Gendron (2009), “Sales Taxes in Canada: The GST-HST-QST=RST ‘System’”, paper presented at the American Tax Policy Institute’s conference on *Structuring a Federal VAT: Design & Coordinating Issues*, February, Washington, D.C.  
([www.americantaxpolicyinstitute.org/pdf/VAT/Bird-Gendron.pdf](http://www.americantaxpolicyinstitute.org/pdf/VAT/Bird-Gendron.pdf)).
- Carey, D., B. Herring and P. Lenain (2009), "Health care reform in the United States", *OECD Working Papers* No. 655, February.
- Cecchetti, S. G., M. S. Mohanty and F. Zampolli (2010), “The Future of Public Debt: Prospects and Implications,” *BIS Working Papers* No. 300.
- Congressional Budget Office (2007), *The Effects of Tax Changes on Labour Supply in CBO’s Micro-simulation Tax Model*, April.
- Congressional Budget Office (2009a), *The Treatment of Federal Receipts and Expenditures in the National Income and Product Accounts*, June.
- Congressional Budget Office (2009b), *The Long-Term Budget Outlook*, July 16, Washington, D.C.  
([cbo.gov/doc.cfm?index=10455](http://cbo.gov/doc.cfm?index=10455)).
- Congressional Budget Office (2009c), *Budget Options* Vol. 2, August.
- Congressional Budget Office (2010a), *CBO’s Treatment of Fannie Mae and Freddie Mac*, January, Washington, D.C.
- Congressional Budget Office (2010b), *Report on the Troubled Asset Relief Program*, March, Washington, D.C.
- Congressional Budget Office (2010c), *The Budget and Economic Outlook: Fiscal Years 2010 to 2020*, January 2010, Washington, D.C. (<http://cbo.gov/ftpdocs/108xx/doc10871/frontmatter.shtml>).

ECO/WKP(2010)62

Congressional Budget Office (2010d), *An Analysis of the President's Budgetary Proposals for Fiscal Year 2011*, March, Washington, D.C. (<http://cbo.gov/ftpdocs/112xx/doc11231/index.cfm>).

Congressional Budget Office (2010e), *The Long-Term Budget Outlook*, June, Washington, D.C. ([www.cbo.gov/ftpdocs/115xx/doc11579/06-30-LTBO.pdf](http://www.cbo.gov/ftpdocs/115xx/doc11579/06-30-LTBO.pdf))

Congressional Budget Office (2010f), *Preliminary estimate of the direct spending and revenue effects estimate for proposed reconciliation legislation combined with H.R.3590 as passed by the Senate*, March, Washington, D.C.

Congressional Research Service (2008), *Tax Expenditures: Compendium of Background Material on Individual Provisions*, 110th Cong., 2d Session, Print #667 (Dec. 2008) ([http://taxprof.typepad.com/taxprof\\_blog/2009/02/tax-expenditures-compendium-of-background-material-on-individual-provisions.html](http://taxprof.typepad.com/taxprof_blog/2009/02/tax-expenditures-compendium-of-background-material-on-individual-provisions.html) )

Council of Economic Advisers (2010), *The Economic Report of the President*, Government Printing Office, Washington, D.C. ([www.whitehouse.gov/administration/eop/cea/economic-report-of-the-President](http://www.whitehouse.gov/administration/eop/cea/economic-report-of-the-President)).

Government Accountability Office (2010), *State and Local Governments' Fiscal Outlook: March 2010 Update*, Washington, D.C. ([www.gao.gov/special.pubs/longterm/state/](http://www.gao.gov/special.pubs/longterm/state/)).

Hussey, P. S., C. Eibner, M. S. Ridgely, and E. A. McGlynn (2009), "Controlling US Health Care Spending – Separating Promising from Unpromising Approaches", *The New England Journal of Medicine*, Vol. 361: 2109-2111.

Kleinbard, E. D. (2010), "Tax Expenditure Framework Legislation", University of Southern California Law School, *Law and Economics Working Paper Series*, Paper 109.

Laubach, T. (2009), "New evidence on the interest rate effects of budget deficits and debt", *Journal of the European Economic Association* 7(4), June.

Lenain, P., M. Bonturi and V. Koen (2002), "The economic consequences of terrorism, *OECD Economics Department Working Papers* No. 334, July.

National Conference of State Legislatures (2009), *State Budget Update: November 2009*, Washington, D.C. ([www.ncsl.org](http://www.ncsl.org)).

Novy-Marx, R. and J. Rauh (2009), "The liabilities of state-sponsored pension plans", *Journal of Economics Perspectives*, 23(4): 191-210.

Office of Management and Budget (2010a), *Analytical Perspectives*, Budget of the US Government, Fiscal Year 2011.

Office of Management and Budget (2010b), *Budget of the United States Government, Fiscal Year 2011*, Washington, D.C.

OECD (2009), *Tax Revenue Statistics, 1965-2008*, Paris.

OECD (2010), *Tax Expenditures in OECD Countries*, Paris.

OECD (2010), *Economic Survey of the United States*, Paris

- Orzag, P. (2010), *Testimony before the national commission on fiscal responsibility and reform*, 27 April 2010.
- Perotti, R. (1999), "Fiscal Policy in Good Times and Bad," *Quarterly Journal of Economics*, November, Vol. 114, No. 4.
- PEW Center on the States (2010a), *State of the States 2010: How the Recession Might Change States*," February, Washington, D.C.
- PEW Center on the States (2010b), *The Trillion Gap: Under-funded State Retirement Systems and the Roads to Reform*, February, Washington, D.C.
- President's Advisory Panel on Federal Tax Reform (2005), *Simple, Fair and Pro-Growth: Proposals to Fix America's Tax System*, Washington, D.C.
- Röhn, O. (2010), "New Evidence on the Private Saving Offset and Ricardian Equivalence", *OECD Economics Department Working Papers* No. 762, May.
- Romer, C. and D. Romer (2009), "Do Tax Cuts Starve the Beast?: The Effect of Tax Changes on Government Spending", *Brookings Papers on Economic Activity* No. 2009 (1).
- Social Security Administration (1983), *Report of the National Commission on Social Security Reform*, Washington, D.C. ([www.ssa.gov/history/reports/gspan.html](http://www.ssa.gov/history/reports/gspan.html)).
- Van den Noord, P. (2000), "The size and role of automatic fiscal stabilizers in the 1990s and beyond", *OECD Economics Department Working Papers* No. 230, Paris.

## ANNEX

## A SMALL BUDGET SIMULATION MODEL

This Annex explains the technical details of the simulation model used in this paper. The simulation is based on a modified version of the equations used in OECD (2009a). The key equation of the simulation, the reduced form of output gap equation, uses the OECD Financial Conditions Index and includes the calibrated effect of fiscal policy. A second equation, the Financial Conditions Index equation, incorporates the effect of real short-term and long-term interest rates. The long-term interest rate is determined by the expected short-term policy rates over 10 years plus a risk premium related to expected fiscal deficits over 5 years. The simulation is completed using the Taylor-rule for short-term policy rates, a Philips curve for inflation and other government finance accounting identities. A feature of the model is the limited ability of conventional monetary policy to offset tighter fiscal policy when policy rates are zero.

**The reduced form of output gap equation**

$$(1) \Delta GAP = C + \alpha_1 GAP_{-1} + \alpha_2 FCI_{-1} + \alpha_3 RPOIL_{-3} + (Multi_1 \Delta tax) + (Multi_2, \Delta E)$$

Where C	=	constant term.
GAP	=	output gap.
FCI	=	financial condition index measures the impact of monetary policy on the economy (as shown in the next equation).
RPOIL	=	real price of oil (logged level) measured as the price of Brent oil relative to the GDP deflator.
Mult <sub>1</sub> and Mult <sub>2</sub>	=	multiplier effects of changes in tax and spending, respectively, on the output gap.
Tax	=	total government revenue (in % of GDP)
E	=	total government spending (in % of GDP)
$\Delta$	=	the first difference operator.

This reduced form output gap equation is constructed by estimating a modified version of the equation used by Guichard *et al.*, (2009) with new data and adding the calibrated effect of fiscal policy. The multiplier used for fiscal policy is consistent with Appendix 3.2 of OECD (2009a). The multiplier effect is assumed to gradually phase out in the long-term.

**The Financial Conditions Index equation**

$$(2) FCI = FSHK - \delta_1 (r^s - r^{s*}) - \delta_2 (r^l - r^{l*})$$

Where FSHK	=	other components of financial conditions including real exchange rate, corporate bond spreads, credit condition and financial and housing wealth measures. This is an exogenous variable that captures the effect of the financial crisis.
$r^s$	=	$i^s - \pi$ = real short-term policy interest rate where $i^s$ is the nominal policy interest rate and $\pi$ is the inflation rate.
$r^{s*}$	=	steady state equilibrium real short-term policy rate.

$r^l = i^l - \Sigma\pi^e$  = real long-term interest rate on government bonds where  $i^l$  is the nominal interest rate on 10-year government bonds and  $\Sigma\pi^e$  is inflation expectations over the next 10 years.

$r^{l*}$  = steady state equilibrium real long-term interest rate.

The coefficients used in this equation are consistent with Guichard *et al.*, (2009). The interest rate data come from the Taylor rule policy rate equation. The effect of a given change in long-term interest rates is about 3.2 times the size of the effect of a change in the short-term interest rates

### The Phillips curve inflation equation

$$(3) \pi = \theta_1 \pi^* + (1 - \theta_1) \pi_{-1} + \theta_2 \frac{(L)GAP + GAP_{-1}}{2}$$

Where  $\pi$  = inflation.

$\pi^*$  = long-term expected inflation which is equal to the inflation target of the central bank.

If  $\theta_1=0$ , then inflation expectations are entirely backward looking. However, if  $\theta_1>0$ , then the central bank's inflation target provides an anchor for inflation expectations. In the simulations,  $\theta_1=0.2$  and  $\theta_2=1/5$ , which results in a sacrifice ratio of 5 with partly backward looking inflation expectations.

### The Taylor rule for policy interest rates

$$(4) i^s = \pi + r^{s*} + 1.5 (\pi - \pi^*) + 0.5 GAP$$
 with a lower bound of zero.

### The term structure of interest rates

$$(5) i^s = \Sigma i^s + term + risk$$

Where  $\Sigma i^s$  = the sum of expected short-term nominal interest rates over the next 10 years.

term = term premium, assumed exogenous.

risk = risk premium, assumed to be a function of the expected fiscal position.

### The risk premium on interest rates

$$(6) risk = \lambda (b_{+5} - b) / 5$$

Where  $b$  = the level of government debt as % of GDP.

$(b_{+5} - b) / 5$  is the average expected change in government debt, which proxies for the average expected fiscal balance over the next 5 years. The parameter  $\lambda$  is 0.04 in both baseline and simulation scenarios.

### Government fiscal balance (as % of GDP)

$$(7) fbal = tax - E$$

Where tax = total government tax revenue.

E = total government expenditure.

**Net interest payments on government debt (as % of GDP)**

$$(8) \textit{ipay} = \psi \textit{ipay}_{-1} + (1 - \psi) i^l * b$$

Where  $\psi$  = the proportion of the refinanced government debt stock each year.

**Government primary fiscal balance (as % of GDP)**

$$(9) \textit{pbal} = \textit{fbal} + \textit{ipay}$$

**Government bond stock (as % of GDP)**

$$(10) b = [(1 + i^l) / (1 + \pi + g)] * b_{-1} - \textit{pbal}$$

Where  $g$  = real GDP growth =  $\Delta \text{GAP} + \rho$ , where  $\rho$  is potential growth rate.

$i^l$  = Long-term interest rate paid on government debt (10-year maturity)

**Table A.1 – Key results of simulation model**

(Deviation from baseline percentage of GDP)

	2010	2011	2012	2013	2014	2015	2020	2025	2030
<b>Federal budget, key indicators</b>									
Federal budget balance	0.0	0.0	0.0	0.0	0.0	0.0	-3.0	-3.0	-3.0
Federal debt held by public	0.0	0.2	0.6	0.9	1.2	1.5	10.5	22.3	31.9
Primary budget balance	0.0	0.1	0.1	0.2	0.3	0.4	-2.2	-1.7	-1.1
<b>Macroeconomic indicators</b>									
GDP	0.0	0.0	-0.3	-0.2	-0.1	-0.1	1.6	0.1	0.1
Inflation	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.2	0.1
Short-term interest (%)	0.0	0.0	-0.1	-0.1	-0.1	-0.1	1.0	0.5	0.2
Long-term interest (%)	0.0	0.5	0.6	0.7	0.8	0.8	0.6	0.2	0.0
Financial Conditions Index	0.0	-0.2	-0.3	-0.3	-0.3	-0.4	-0.3	-0.1	0.0

Note: In the baseline simulation, the federal deficit is assumed to be eliminated in 2020, then stays unchanged. In the variant, the federal deficit is reduced to 3% of GDP in 2015, then stays unchanged.

## BIBLIOGRAPHY

OECD (2004), *Understanding Economic Growth*, Palgrave Macmillan.

OECD (2009a), “The Effectiveness and Scope of Fiscal Stimulus”, Chapter 3 in *OECD Economic Outlook, Interim Report, March*.

OECD (2009b), “Beyond the Crisis: Medium-Term Challenges Relating To Potential Output, Unemployment and Fiscal Positions”, Chapter 4 in *OECD Economic Outlook, June*.

Guichard, S., D. Haugh and D. Turner (2009), “Quantifying The Effect of Financial Conditions In The Euro Area, Japan, United Kingdom and United States”, *OECD Economics Department Working Paper*.

## WORKING PAPERS

The full series of Economics Department Working Papers can be consulted at [www.oecd.org/eco/workingpapers/](http://www.oecd.org/eco/workingpapers/)

805. *Norway: Sustainable development: climate change and fisheries policies*  
(September 2010) by Paul O'Brien
804. *How the transport system can contribute to better economic and environmental outcomes in the Netherlands*  
(September 2010) by Tomasz Koźluk
803. *Public-private partnerships and investment in infrastructure*  
(September 2010) by Sónia Araújo and Douglas Sutherland
802. *Sustaining the momentum of fiscal reform*  
(September 2010) by Colin Forthun and Robert Hagemann
801. *The consequences of banking crises for public debt*  
(September 2010) by Davide Furceri and Aleksandra Zdzienicka
800. *A simulation model of federal, provincial and territorial government accounts for the analysis of fiscal-consolidation strategies in Canada*  
(September 2010) by Yvan Guillemette
799. *Product market regulation: extending the analysis beyond OECD countries*  
(October) by Anita Wölfl, Isabelle Wanner, Oliver Röhn, Giuseppe Nicoletti
798. *Korea's green growth strategy: mitigating climate change and developing new growth engines*  
(July 2010) by Randall S. Jones and Byungseo Yoo
797. *Health-care reform in Korea*  
(July 2010) by Randall S. Jones
796. *The Korean financial system: overcoming the global financial crisis and addressing remaining problems*  
(July 2010) by Masahiko Tsutsumi, Randall S. Jones and Thomas F. Cargill
795. *Are global imbalances sustainable? Post-crisis scenarios*  
(July 2010) by Luiz de Mello and Pier Carlo Padoan
794. *Is there a case for carbon-based border tax adjustment? An applied general equilibrium analysis*  
(July 2010) by Jean-Marc Burniaux, Jean Chateau and Romain Duval
793. *Promoting potential growth: The role of structural reform*  
(July 2010) by Luiz de Mello and Pier Carlo Padoan
792. *Catching-up and inflation in Europe: Balassa-Samuelson, Engel's law and other culprits*  
(July 2010) by Balázs Égert

791. *Do product market regulations in upstream sectors curb productivity growth? Panel data evidence for OECD countries*  
(July 2010) by Renaud Bourlès, Gilbert Cette, Jimmy Lopez, Jacques Mairesse, Giuseppe Nicoletti
790. *Preparing for Euro adoption in Poland*  
(July 2010) by Rafal Kierzenkowski
789. *Gauging the impact of higher capital and oil costs on potential output*  
(June 2010) by Boris Cournède
788. *The German banking system: lessons from the financial crisis*  
(June 2010) by Felix Hübner
787. *Measuring competition in Slovenian industries - estimation of mark-ups*  
(June 2010) by Margit Molnar
786. *Enhancing financial stability through better regulation in Hungary*  
(June 2010) by Margit Molnar
785. *Chile: Boosting productivity growth by strengthening competition, entrepreneurship and innovation*  
(June 2010) by Cyrille Schweltnus
784. *Chile: Climbing on giants' shoulders: better schools for all Chilean children*  
(June 2010) by Nicola Brandt
783. *Israel: Monetary and fiscal policy*  
(June 2010) by Charlotte Moeser
782. *Policy options for reducing poverty and raising employment rates in Israel*  
(June 2010) by Philip Hemmings
781. *Israeli education policy: How to move ahead in reform*  
(June 2010) by Philip Hemmings
780. *Germany's growth potential, structural reforms and global imbalances*  
(June 2010) by Isabell Koske and Andreas Wörgötter
779. *Energy policy and the transition to a low-carbon economy*  
(June 2010) by Jeremy Lawson
778. *Making the Luxembourg labour market work better*  
(June 2010) by Jeremy Lawson
777. *Coping with the job crisis and preparing for ageing: the case of Finland*  
(June 2010) by Henrik Braconier
776. *The political economy of fiscal consolidation*  
(June 2010) by Robert Price
775. *Structural and cyclical factors behind current-account balances*  
(May 2010) by Calista Cheung, Davide Furceri and Elena Rusticelli