

Fiscal Challenges after the Global Financial Crisis

A Survey of Key Issues

Augusto Lopez-Claros

The World Bank
Development Economics
Global Indicators Group
March 2014



Abstract

The global financial crisis and the response to it have contributed to a sharp increase in public indebtedness in a large number of countries. While there have been episodes of high debt in the past, there are a number of long-term challenges today that are likely to complicate the implementation of sustainable fiscal policies in the coming years. Population aging and climate change are factors that are likely to contribute to rising fiscal pressures and the crisis has highlighted the risks and vulnerabilities stemming from reduced fiscal space. This paper argues that heightened fiscal challenges can only

be dealt with successfully by adopting a long-term fiscal planning horizon. The paper analyzes a range of available policy tools that countries have used in the past to improve fiscal management. Particular attention is paid to the role of rules-based policies, improvements in the budget process, better accounting of long-term liabilities in the government budget, the deleterious effects of unproductive expenditures, and the painful trade-offs created by the crisis and the toolkit at hand to address them.

This paper is a product of the Global Indicators Group, Development Economics. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The author may be contacted at alopezclaros@ifc.org.

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

Fiscal Challenges after the Global Financial Crisis: A Survey of Key Issues

Augusto Lopez-Claros¹

JEL Classification: G

Keywords: financial crisis, budget deficit, population aging, climate change, fiscal rules

Acknowledgements

This paper is part of a larger project looking at some of the key building blocks for the creation of the institutional underpinnings for sustainable economic development. An earlier version of this paper was prepared for the Santa Colomba seminar organized by Robert Mundell and held in Siena, Italy, during July 5-7, 2013. The author is thankful to participants at the seminar for helpful comments. He would also like to thank insightful comments by Ernesto Hernandez-Cata, Aart Kraay, Valeria Perotti and Guillermo Zoccali.

¹ The author is Director, Global Indicators Group, World Bank. The author welcomes comments on this paper (alopezclaros@ifc.org). The views expressed in this paper are the author's own and do not necessarily reflect those of the organization he is affiliated with.

Table of Contents

I. The Crisis and its Impact on the Public Finances.....	1
An economy's central nervous system	1
Unparalleled fiscal deterioration.....	2
A difficult balancing act.....	3
Budgets under stress in the EU	5
II. Long-Term Fiscal Challenges	8
Population aging	8
Budgets and climate change.....	11
Population growth.....	14
Painful tradeoffs	15
Extreme vulnerabilities	17
Geopolitical ramifications.....	18
III. Tools at Our Disposal	19
A balance sheet for the government.....	19
A fiscal implosion is not inevitable	21
Improving accountability	23
The virtues of rules-based policies	24
Unproductive expenditures	26
Better tax systems	28
IV. It Can Be Done	29
A Nordic example	29
References	31

I. The Crisis and Its Impact on Public Finances

An economy's central nervous system

The answer to the question what *really* matters for sustainable growth and successful economic development has evolved over time, reflecting a number of factors. The IMF used to be faulted for placing what appeared to be undue emphasis on macroeconomic stability but it was not so long ago that inflation was a plague in much of the developing world. In country after country it was associated with high real interest rates, capital flight, unusually low levels of foreign direct investment, the erosion of living standards for broad segments of the population, and political instability.²

Since there was solid empirical evidence that it was very difficult (if not impossible) to have sustained economic growth against the background of high and variable rates of inflation, the IMF was no doubt right in being slightly inflation-obsessed. However, as the global fight against inflation began to bear fruits the focus shifted elsewhere and by the 1990s other factors—property rights, institutions, investment in human capital, the adoption of the latest technologies as a means to boost productivity—had moved center stage. Of course, what mattered most was also a function of the local context and the circumstances surrounding the country in question. Improving the property rights framework was no doubt important everywhere, but it was relatively more important in Venezuela than it was in Sweden, a country with a long tradition of rule of law and solid institutional underpinnings. Transparency in the management of public resources was, likewise, universally important, but relatively more so in countries with widespread corruption and graft.

One factor that has remained crucially important across time and regardless of the stage of development of the country is the budget. How governments manage (or, often, mismanage) public resources is probably one of a handful of things that governments need to get right if they are going to launch the country into a process of self-sustained economic growth. In a sense, the budget and the revenue and expenditure policies that underpin it, is a bit like an economy's central nervous system—it is the primary organizing mechanism, it provides the signals that coordinate the functions of other organs in the body. Economic efficiency is fundamentally a function of the soundness of resource allocation and the budget is an economy's most important mechanism of allocation and distribution. It is the place where government priorities are ultimately reflected, it is the crossroads where political compromises get made, it is the instrument that is used to implement and support a broad range of other policies which have a direct bearing on the operation of the economy. Well-formulated and implemented, the budget can become an important promoter of economic stability and growth, providing important

² For instance, in Turkey, periodic financial crises invariably led to the “stabilization” of inflation at successively higher levels, with average annual inflation rising gradually from some 40 percent in the early 1980s, to around 60 percent in the late 1980s and early 1990s, to 80 percent in the period 1996-99. Indeed, the monetization of the government's large financing requirement through increasingly higher rates of inflation may have prevented the debt/GNP ratio from spinning out of control. Not surprisingly, the IMF had described Turkey's chronic high inflation as being “a plague.”

signals to economic agents about government priorities and allowing governments to better leverage the development process. Poorly designed and executed, the budget may become a dangerous source of financial and institutional instability.

Unparalleled fiscal deterioration

One particularly worrying feature of fiscal policies during the past 35 years is that deficits and rising public debts have been a permanent feature of the policy landscape. Whether we focus on the rich industrial countries or countries in the developing world, budget balances have been negative in every single year during the past 35 years, with an average deficit in excess of 3 percent of GDP for both groups of countries.³ Countries may run fiscal deficits for a variety of reasons. An economic recession may weaken revenues and push up certain types of expenditures (e.g., unemployment compensation), especially if governments use deficit spending as a way of stimulating the economy through fiscal multiplier effects.⁴ The prices of key export commodities in international markets may fall and this may undermine trade-related revenues. In some countries natural disasters may put pressures on budgets, as governments try to respond to emergency needs. However, as noted by Kumar and Ter-Minassian (2007), the persistence over time of deficits and the corresponding unyielding rise in public indebtedness suggest that other factors could be at work, that go beyond those identified above and that more fundamentally may reflect certain institutional weaknesses that undermine fiscal discipline and responsible management of public resources.

Perhaps nothing has underscored more the fundamental importance of the budget and the sustainability of the public finances for economic growth than the aftermath of the 2008-2009 global financial crisis and the dramatic deterioration of the fiscal accounts that has accompanied it. Indeed, it is clear that the most distinctive and worrisome feature of the current global economic situation is the huge increase in public indebtedness by the industrial countries that the crisis has brought about. In this paper this dramatic fiscal deterioration will be used as the starting point for a more detailed analysis of the various issues underlying the budget and the apparent inability of governments everywhere to show greater fiscal discipline. In particular, it will be argued that shortcomings in fiscal management pose a serious threat to the global economy at a time when, for a variety of reasons, budgets are likely to come under increasing pressure in coming years.

According to the IMF's October *World Economic Outlook* (2010, p. 18) in the major advanced economies the average fiscal deficit jumped from 2 percent of GDP in 2007 to some 9 percent of GDP in 2009, greater than any deficit seen since the end of World War II. In some countries like the United States, Japan, the United Kingdom, Greece and Spain the deficit widened to levels in excess of 10 percent of GDP. In the latest (2013) IMF medium term forecasts public debt in the advanced economies rises from some 73

³ This interesting statistic is provided by Kumar and Ter-Minassian (2007) and refers to the period 1975-2006. We can extrapolate it to 2013, confident in the assumption that the fiscal data for the past 6 years will only have worsened the average size of the deficit.

⁴ After the crisis, there has been renewed interest in the scholarly literature in trying to measure the multiplier effect of deficit-financed government expenditure. A recent review by Valerie Ramey (2011) concludes that the multiplier is likely between 0.8 and 1.5.

percent of GDP in 2007 to 104 percent of GDP in 2018. However, should economic growth be weaker, or the needs of the financial sector larger, or the losses sustained by pension funds higher, this ratio could rise above 130 percent of GDP by 2018. In reference to the period after the onset of the crisis Jean-Claude Trichet (2010), the then head of the European Central Bank said: “the fiscal deterioration we are experiencing is unprecedented in magnitude and geographical scope. By the end of this year, government debt in the euro area will have grown by more than 20 percentage points over a period of only four years, from 2007-2011. The equivalent figures for the US and Japan are between 35 and 45 percentage points.”

The financial crisis had no precedent in its intensity and forced the authorities to take extraordinary measures to stabilize markets, including: massive provision of liquidity, the takeover of several institutions perceived to be weak, the extension of deposit insurance, the introduction of legislation in the U.S. to use public funds to buy troubled assets from banks, the infusion of capital to the banking system which, de facto, turned the U.S. and other governments into major shareholders of large portions of the banking system, the announcement by the U.S. of a multibillion dollar package to directly stimulate borrowing by homebuyers and small businesses. In the United Kingdom and the United States alone, measures to support financial sector operations amounted to some US\$7 trillion (IMF, 2009).⁵ In addition, the authorities also announced large programs of fiscal stimulus to mitigate the effects of the crisis in what, in many countries, turned out to be a green light for unleashing masses of red ink, often without much regard for the efficiency of that spending. According to calculations done at the European Central Bank total taxpayer support to the financial system—in its various forms, including recapitalizations, the extension of state guarantees, purchases of toxic assets and so on—amounted to some 27 percent of GDP, on both sides of the Atlantic (Trichet, 2010).

A difficult balancing act

The onset of the financial crisis was met by calls from leading economists to respond to the contraction of demand with fiscal stimulus. It was essential to avoid repeating the mistakes of the Great Depression, the intensity of which was made worse by contractionary fiscal and monetary policies. The problem with fiscal stimulus in the middle of a crisis is that the authorities need to strike a careful balance between optimizing the benefits of increased expenditure, against the risk that too much stimulus might undermine investor confidence because the increase in public debt is perceived as potentially unsustainable.⁶ This difficult balancing act is particularly important in

⁵ For purposes of comparison, the cost of the Marshall Plan in 2008 dollars was US\$115.3 billion, the Louisiana purchase was US\$217 billion, the race to the moon US\$237 billion, the Savings & Loans bailout US\$256 billion, to take a few examples.

⁶ While the evidence on the effect of fiscal imbalances on interest rates is rather inconclusive for the US, a study based on 16 OECD countries found that a one percentage point increase of the primary deficit-to-GDP ratio is associated with a 10-basis-point rise in the nominal interest rate on 10-year government bonds (Ardagna, Caselli and Lane 2007). The paper also finds that the effect of the stock of public debt on interest rates is positive at high levels of debt. In addition, according to von Hagen, Schuknecht and Wolswijk (2011), markets penalize fiscal imbalances much more strongly after the Lehman default in September 2008 than before.

countries that already have high levels of public debt and where there is greater vulnerability to shifts in investor sentiment. If investors begin to question the solvency of the government then what started out as an exercise aimed at softening the adjustment until consumer and investor confidence picked up and improved the economy's growth prospects, can quickly turn into a vicious circle in which the increase in the cost of debt becomes rapidly prohibitive, confidence is undermined and economic revival is put off. This is what happened in Greece in the spring of 2010 and, in the context of a highly integrated region using a common currency, the Greek crisis led to contagion in Portugal and Spain, countries where the authorities were in the middle of implementing their own stimulus packages. In May of 2010 the yield on Greek 10-year eurobonds exceeded 12 percent, about the level seen in Russia in late June of 1998, less than two months before the country was forced to devalue the ruble and default on its debts.

Even the IMF, the world's traditional guardian of sound public finances, came out strongly in favor of fiscal loosening arguing, through its managing director, that "if there has ever been a time in modern economic history when fiscal policy and a fiscal stimulus should be used, it's now" and that it should take place "everywhere where it's possible. Everywhere where you have some room concerning debt sustainability. Everywhere where inflation is low enough not to risk having some kind of return of inflation, this effort has to be made."⁷ Mr. Strauss-Kahn, arguing that the fiscal multiplier was equal to one, called for a coordinated stimulus plan of "at least 2 percent of (world) GDP"—that is, 2 percent of GDP increases in spending or tax cuts would result in 2 percent additional growth. The response to the IMF call was overwhelmingly positive. In a list of 130 countries accounting for 97 percent of world GDP a total of 120 had budget deficits in 2009, many of them of historic proportions. The table below is representative of this sample. With the benefit of hindsight, it would appear that the IMF underestimated the response of the markets to double digit fiscal deficits in countries otherwise dependent on the markets to finance their growing fiscal imbalances.

Table 1. Shifts in the budget deficit and the global financial crisis
(In percent of GDP)*

	2008	2009
Algeria	9.1	-5.3
Argentina	-0.3	-3.7
Bahrain	4.9	-8.9
Chile	4.3	-4.3
Greece	-7.7	-15.4
India	-7.4	-9.6
Ireland	-7.8	-14.6
Japan	-4.1	-10.2
Jordan	-4.1	-8.1
Malaysia	-3.2	-5.5

⁷ Press briefing by Dominique Strauss-Kahn, IMF managing director, November 15, 2008, available at <http://www.imf.org/external/np/tr/2008/tr081115.htm>.

Nigeria	3.5	-10.3
Portugal	-2.8	-9.3
Russia	4.3	-6.2
Saudi Arabia	35.4	-2.4
Spain	-4.1	-11.2
Turkey	-2.4	-5.6
United Kingdom	-4.8	-10.3
United States	-5.7	-12.9

* For the general government, except for Bahrain, Russia, the U.S., and Saudi Arabia, where deficit is for federal or central government.

The problem with high public indebtedness is that it creates a terrible dilemma for governments. Scarce public resources which could be allocated to education, public health or to improve countries' infrastructure—all areas that help to improve competitiveness—have to be increasingly dedicated to debt service. The primary aims of economic policy get subverted. Instead of worrying about reforms aimed at boosting productivity, governments increasingly have to worry about keeping the markets happy, making sure that debt rollovers take place smoothly and at reasonable interest rates and so on—day-to-day cash management. Henriksson (2007, p. 11) suggests that this is equivalent to a power shift “from the open chambers of the people’s representatives to the closed rooms of the financial markets in London and New York.” In other words, highly indebted countries, de facto, lose a measure of economic sovereignty and become captives to shifts in market sentiment. In Spain, after having allowed the deficit to widen to over 11 percent of GDP in 2009 (a deficit without recent historical precedent) and having lost the confidence of investors, the government decided to negotiate an adjustment package consisting of expenditure cuts and increases in taxes. This 180 degree turn in policy created social and political tensions and undermined the credibility of the government and detracted attention from more urgent reforms, for instance in the labor market. Similar situations emerged in Greece, Portugal, Ireland—violent U-turns in the stance of fiscal policy at great cost to the credibility of governments. Thus, fiscal indiscipline turned out to be bad politics as well; the authorities were perceived not to be in control, or to have surrendered control to others (e.g. foreign bond traders) and this undermined the very basis of the relationship between voters and politicians, which presupposes that the latter will use the tools of policy to watch over the interests of the former.

Budgets under stress in the EU

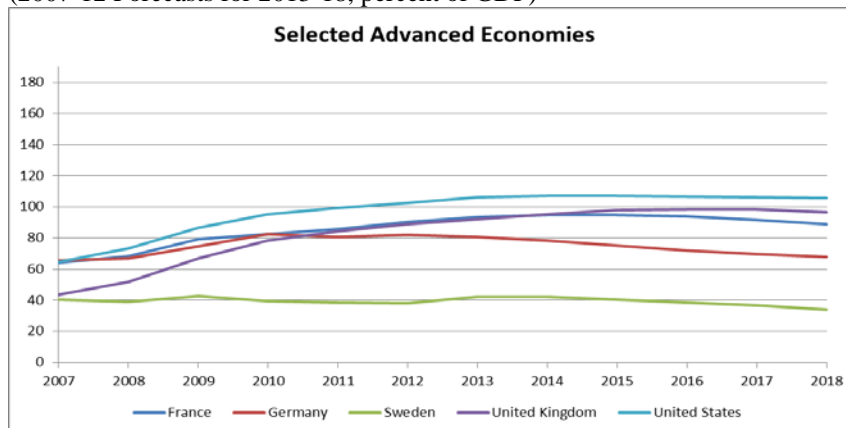
There is, in fact, another dimension to the problem of high levels of public debt and it concerns the important obligation we have to ensure that future generations are not saddled with a heavy burden of debts that greatly limit their ability to achieve high standards of living and to have the resources necessary to develop their capabilities.⁸

⁸ Auerbach, Gokhale and Kotlikoff (1991) introduced the notion of “generational accounting” as a method “to assess the fiscal burden current generations are placing on future generations. The generational accounts indicate, in present value, the net amount that current and future generations are projected to pay to the

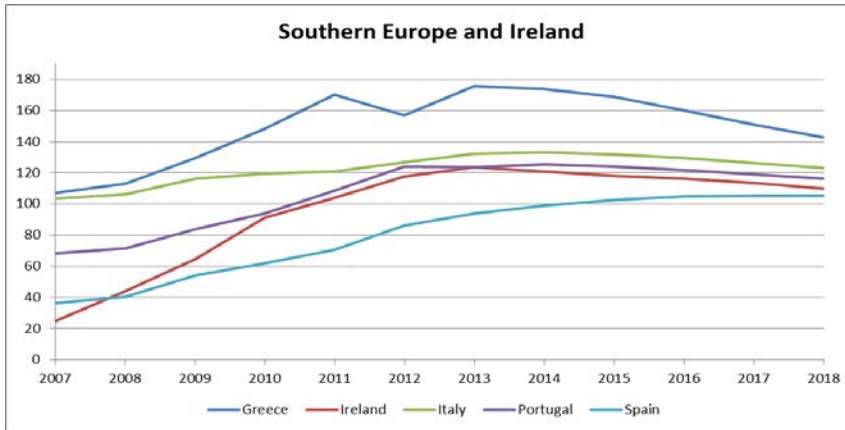
Shifting future spending to the present through government debt may be perfectly rational in the context of a fast growing economy, but it is more problematic if growth prospects are not as favorable. To the extent that governments fail to safeguard the sustainability of the public finances, not only do they lose credibility with voters but, worse, the legitimacy of the whole political process underpinning the workings of democracy is undermined—witness the generally low public regard of the political elites in countries with persistent fiscal imbalances and debt problems. Failure to act can also mean that adjustments may be forced upon governments by markets (or other circumstances beyond their control), precipitating a disorderly rearrangement of economic and political relationships and institutions.

The response to the crisis in some countries in 2009 was more muted. Sweden, for example, is as integrated to the global economy as any other country in the world but in 2009 it had a tiny budget deficit of 0.8 percent of GDP, having registered surpluses during much of the previous decade. The authorities understand that the country's demographics are leading to the aging of the Swedish population. If the country is to be able to finance future pensions and other social commitments it has to save now. This demographic reality was not altered by the global financial crisis and hence they opted for a more cautious response to it, allowing for some loosening of fiscal policies while not losing sight of medium-term fiscal consolidation objectives. Other countries in Europe—Germany, Austria, Finland, Denmark, Estonia, Luxembourg—all acted cautiously in 2009 and, not surprisingly, have had a better growth performance in the aftermath of the crisis than Greece and Spain.

Figure 1. General Government Gross Debt
(2007-12 Forecasts for 2013-18, percent of GDP)



government now and in the future. These accounts can be understood in terms of the government's intertemporal (long-run) budget constraint.” (p. 55). We come back to this issue later in this paper.

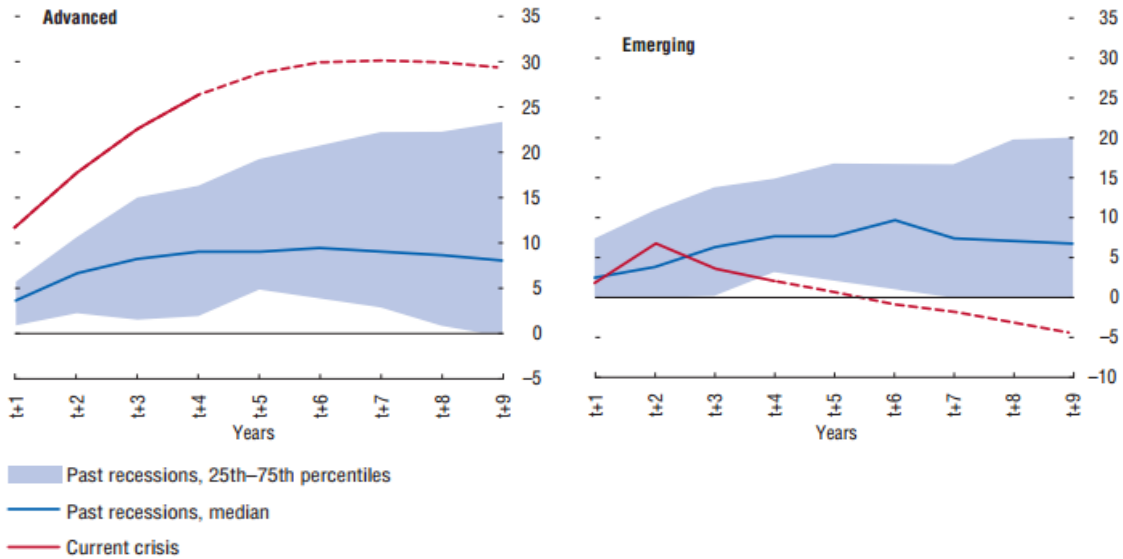


Source: IMF World Economic Outlook, October 2013.

The market tremors associated with the heightened risks of debt default precipitated in Europe feverish talk of a possible unraveling of the Euro area and the disappearance of the euro, with potentially grave consequences for the global economy. This pessimism, however, may have been overdone. The 56 years of European Union history have been characterized by severe crises followed by institutional innovations which have strengthened the Union. The current crisis has demonstrated that you cannot have a single currency without much higher levels of coordination of fiscal policies among members. This means that if crisis countries want to continue to remain in the euro area they will, in the future, have to accept a much higher level of supervision of their budgets and, inevitably, they will also have to sustain several years of austerity to undo the damage done in 2009-2010. All of these countries will also have to implement structural and institutional reforms that will reduce their vulnerability to shocks and future crisis.

The worry at the moment is not the immediate future of the euro, nor the pace of economic recovery which is likely to continue in coming years. The worry is that the response to the 2008-2009 crisis has dramatically reduced our room for maneuver in the future. With public debt levels in the advanced economies soon to exceed 100 percent of GDP, a future crisis will find us far less prepared than we were at the end of 2008, when the gates of public spending were unleashed and governments rushed to bail out their banking sectors from a combination of flawed regulation and decades of excess. This response was made possible in no small measure by the fact that levels of debt were not unsustainably high, particularly in the United States. This is no longer the case. We have used much of our ammunition and one can only hope that future shocks to the global economy will not put onerous demands on public resources since, it would appear, we no longer have them. Such hopes, however, may not be well-founded.

Figure 2. Cumulative Change in Gross Debt to GDP
(Percent of GDP)



Sources: IMF Fiscal Monitor October 2012, Kinda, Poplawski-Ribeiro, and Woo (2012); and IMF staff estimates and projections.

Note: Solid line corresponds to 2009–12, and dashed line to 2013–17.

II. Long-Term Fiscal Challenges

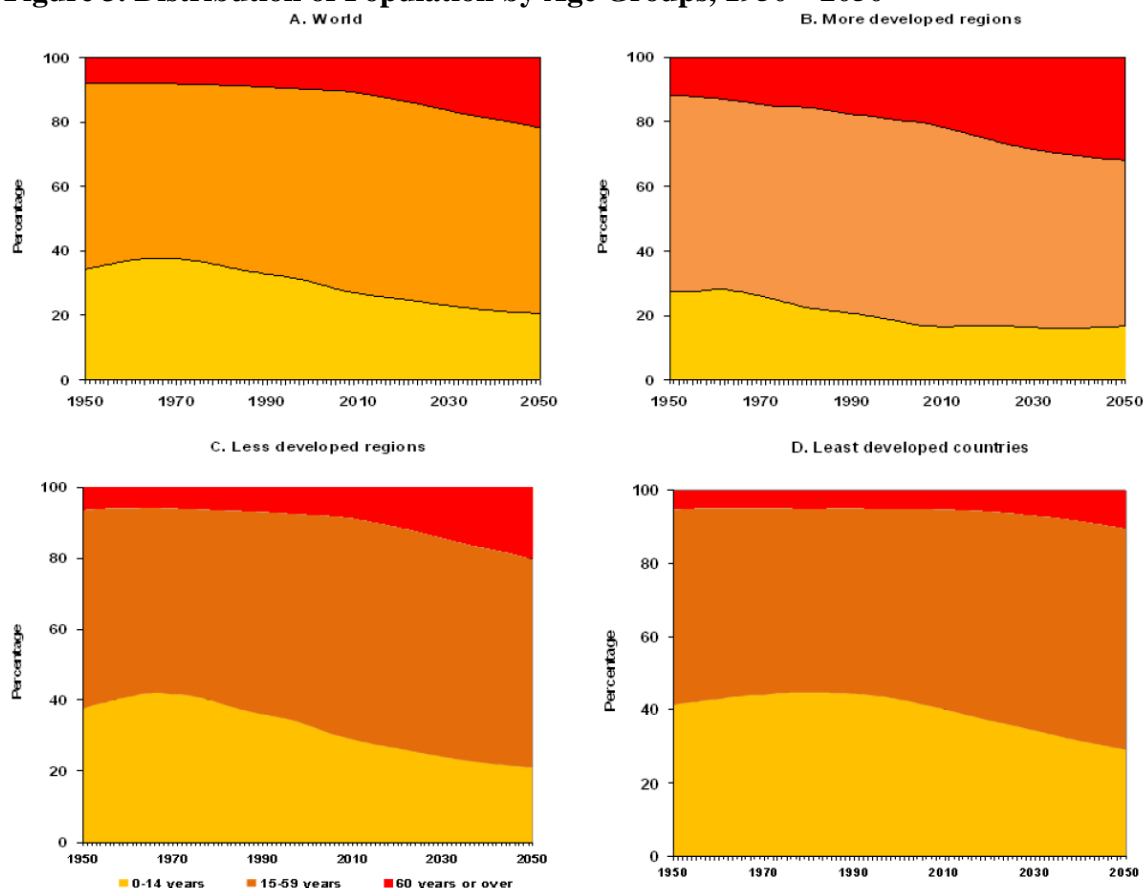
Population aging

Unfortunately, there are a number of challenges we face in coming years which are likely to put enormous pressures on the public finances of governments virtually everywhere. Some of these challenges are of a demographic nature and have to do with the aging of populations. The share of the population accounted for by the elderly will rise rapidly in most of the developed countries in the next couple of decades. The dependency ratio, or the total number of persons requiring some form of support divided by the working-age population, will increase to levels not seen before in most of these countries – except in the unlikely event of these countries accepting large inflows of young immigrants from developing countries. Indeed, this trend will not be limited to the developed countries—with a lag with respect to the rich countries of North America, Europe, and Asia emerging markets such as China, Russia, Poland, Indonesia, Turkey, and Mexico will also see the graying of their populations as a result of increases in life expectancy. The rich countries of the OECD have extensive social safety nets in place and have guaranteed public pensions, health care and other social benefits.

As is made clear in Figure 3 below, these programs are costly to run and the costs are projected to increase rapidly over the next several decades. In France and Germany, for instance, pension and health spending by 2050 is expected to be near 25 percent of GDP, compared to some 17 percent of GDP in 2000. In the United States, according to the U.S. Treasury (2009, p.11) “rising health care costs and, to a lesser extent, the aging population, are expected to cause program spending as a share of GDP to rise continuously from 19 percent in 2014 to 25 percent in 2040 and 29 percent in 2080. This

reflects the expectation that health care spending per person will continue to grow faster than will the economy as a whole and also reflects the movement of the 78 million ‘baby boomers’ (those born between 1946 and 1964) from work to retirement.”⁹ Indeed, in the absence of corrective measures, virtually all of the industrial countries will face considerably higher expenditure ratios, putting pressures on budget deficits or necessitating increases in taxes and/or potentially large increases in the retirement age.

Figure 3. Distribution of Population by Age Groups, 1950 – 2050



Source: UN World Population Ageing Report (2013).

The fiscal implications for some of these countries (e.g., Greece, Italy, Japan) are sufficiently dire as to suggest that extraordinary fiscal effort will be necessary to restore sustainability. A recent IMF study (Ostry, et. al, 2010) examines the concept of “fiscal space” for a large number of countries. Fiscal space is the difference between current debt levels and a *debt limit* above which debt grows without bound given the historical behavior of the country’s primary budget balance. The study shows that for Greece, Italy, Japan and Portugal, the debt dynamics are not on a sustainable path. Furthermore, Iceland, Ireland, Spain, the United Kingdom and the United States are “constrained in their degree of fiscal maneuver, the more so owing to the run-up in public debt projected in coming years” (p. 3).

⁹ The Federal Government’s Financial Health: A Citizen’s Guide to the 2009 Financial Report of the United States Government, Department of the Treasury, United States Government.

A particularly worrying feature of these demographic trends is that, with few exceptions, governments have typically found it extremely difficult to introduce the reforms that are needed to ensure longer-term financial sustainability. Social programs such as guaranteed pensions were introduced decades ago at a time when life expectancy was much lower and the working-age population was growing.¹⁰ In time, they have come to be accepted as permanent features of the social landscape, entitlements the value of which must be preserved at all costs or, preferably, increased. With a rise in average life expectancy at birth between 1960 and 2011 from 52 to 71 years—a 37 percent jump which is nothing short of miraculous—the long-term fiscal positions of many developed countries have been overwhelmed. To make matters worse, governments from time to time have not hesitated to expand the sphere of unfunded benefits available. For instance, the United States government in 2003 introduced a Drug Benefit Program, an extremely costly initiative with an actuarial deficit of 75 percent of GDP.

Furthermore, the political economy of reforms works in a way that rewards governments that manifest a nearly exclusive concern with the short-term. As noted by Heller (2004, p. 157) “the temptation is strong to leave tomorrow’s problems for tomorrow’s policymakers to solve, since it is they who will have to answer to tomorrow’s voters.” Or, as was once put by a senior finance official from Sweden: “the future has no lobbyists.” This, in turns, explains why only a minority of countries frame their budgets in a medium-term perspective, looking at the next 3-5 years, though future budgetary resources are precommitted to an extent likely to severely reduce in the future the room for maneuver for government fiscal policies. It requires a high degree of political maturity, the right incentive structure, and no small amounts of administrative capacity to give adequate attention to problems the full impact of which will not be felt for another decade or two. Indeed, the more serious the short-term challenges faced by governments—let us think of the 2008-2009 global financial crisis and the intimidating series of onerous problems it created for governments virtually everywhere—the less attention given to longer-term issues, such as the fiscal implications of population aging.

The increases in public debt which the response to the crisis precipitated have only worsened the nature of the longer-term fiscal challenges we face, because of the additional claims on public resources, many of them in the nature of contingent liabilities arising from various guarantees and central bank support operations. Governments provided guarantees for a broad spectrum of financial sector liabilities, from bank deposits, to interbank loans and bonds; for some countries these are huge: close to 200 percent of GDP in the case of Ireland, 50 percent of GDP in the case of the United Kingdom, to name two of the more serious cases. The aggregate amount comes to close to US\$4 trillion.

One additional worrying implication of the global financial crisis pertains to pension fund losses associated with the collapse of equity prices. According to an IMF study released in 2009, 16 of 46 countries for which data are available had pension fund investments in

¹⁰ When pensions were introduced in Australia in 1909 the age of eligibility for men was 65 years, well above the average life expectancy.

equities and mutual funds in excess of 10 percent of GDP—countries that were particularly exposed were Australia, the United States, Canada, Iceland, the Netherlands, Switzerland, Denmark, and the United Kingdom. Losses in the United States and the United Kingdom during 2008 were, respectively, 22 percent and 11 percent of GDP. While these losses will have been partly reversed in the following years with the recovery of markets, they highlight yet another source of vulnerability to the public finances. Governments have to worry not only about losses to public pension funds during periods of recession, but there may be other liabilities stemming from guarantees provided to funded schemes as well as from pressures by pensioners who sustained large losses on private pension plans. The numbers are potentially large: pension fund assets in OECD countries at the end of 2007 were some US\$27 trillion, equivalent to some 54 percent of world GDP.

There is yet another dimension to population aging that receives little attention: the international repercussions are likely to be worldwide in scope. A large number of aging rich countries, accounting for a significant share of global output, is likely to put upward pressure on global interest rates, could tempt governments to move countries to a higher tax environment and could result in higher inflation and greater vulnerability to other crisis, unrelated to population aging.

Budgets and climate change

Indeed, aging populations is not by any means the only challenge which is likely to place an onerous burden on countries' public finances. Over the past decade there has been a noticeable convergence of views within the scientific community about the expected rise in global average temperatures associated with increases in the concentration of greenhouse gases—climate change will be a feature of the global environment in the decades ahead. In the summer of 2010 we witnessed simultaneously forest fires and the hottest summer on record in Russia, floods in Pakistan which upended the lives of some 20 million people (leaving some 5 million of them homeless) and fatal mudslides in China precipitated by torrential rains. Extreme weather conditions are expected to be more frequent and governments may increasingly find themselves having to deal with the financial consequences. In Russia, the losses of millions of hectares of wheat and thousands of lives and homes required significant outlays, partly to lend assistance to those affected, but also to invest in infrastructure and equipment and to take other preventive measures to stem future damage. In Pakistan the floods submerged 7 million hectares of cropland, killing more than 200,000 head of livestock and, according to press reports, “washing away huge stores of commodities that would have fed millions.”¹¹

The impact of global warming is expected to be felt with particular intensity in the developing world, because these countries tend to be located in the tropics and equatorial regions, their economies are most heavily dependent on agriculture and many of their cities are to be found in coastal areas. Furthermore, being relatively poor, they will have fewer resources for precautionary interventions or be generally less able to respond to climate-related damage. Increases in sea levels could well require heavy investments in infrastructure (e.g. sea barriers) or, as many regions become drier, outlays for irrigation

¹¹ “Flooding in Pakistan Threatens Stability,” *International Herald Tribune*, August 17, 2010.

networks and other investments to deal with emerging water scarcity. In some cases it may be necessary to resettle populations no longer able to live in low lying areas; roughly 1.2 billion people live within 100 km of the shore.

The impact—particularly the fiscal consequences—of climate change may be subject to a larger margin of uncertainty than the consequences of population aging, the main parameters of which have been fixed for decades and are subject to relatively small margins of error. Few scientists could claim with certainty that the floods in Pakistan or the fires in Russia were *caused* by global warming, but few would question that, with global average temperatures rising—the incidence of extreme weather conditions has indeed increased. In addition to the likely pressures on public spending to deal with the consequences of climate change, one would also expect that to the extent that weather-related catastrophes put a dent on economic growth (the losses of the wheat harvest in Russia are thought to have taken at least one percentage point off economic growth in 2010), there will be adverse repercussions for government revenue as well, putting additional pressures on budget deficits. Finally, there may be other effects as well which are difficult to quantify but which could also have fiscal repercussions. One that comes to mind is rising food prices because of reductions in the area of arable land and the depletion of fish stocks, both of which put pressure on governments to sustain or increase food subsidies for vulnerable groups in the population.

In a sense the potential repercussions for the public finances of climate change are more worrying than those associated with population aging because the margins of uncertainty are that much larger. Governments are generally aware that pension and healthcare claims will rise as the baby-boom generation retires and fertility rates remain below replacement levels, and they also have a fairly good sense of what needs to be done to set the public finances on a more sustainable path. The choices may all be unpalatable and there may be little public support at the outset for such things as increasing the retirement age, as governments in Spain, France and Greece, for instance, found in 2010.¹² But at least the contours of a possible solution are identifiable, the scope of the measures necessary has been quantified and some countries (e.g. the Nordics) have shown that a combination of responsible political leadership and a well-informed public which attaches tangible value to notions of sustainability, can make a solution possible. The uncertainties associated with climate change, however, add a considerable degree of difficulty to public policy. Witness the debacle of the 2009 Copenhagen conference on climate change and the inability of the U.S. government, thus far, to persuade Congress to support a comprehensive climate change bill.

¹² In September of 2010, for instance, the French trade unions rejected government proposals to increase the retirement age from 60 to 62, even though France has one of the lowest retirement ages in the EU. Their attitude is largely one of “this is not our problem”; let others deal with it in the future. For their part, the Spanish trade unions staged a general strike on September 29, 2010 also to protest government proposals to raise the retirement age. Under intense pressure from the markets—yields on government debt had risen significantly by the end of the year and there was increasing speculation that Spain (and Portugal) might have to follow in the footsteps of Greece and Ireland and seek an IMF/EU bailout—the government announced in early 2011 plans to increase the retirement age from 65 to 67 years.

The risk, obviously, is that markets will not wait until a government is insolvent before significantly increasing the costs of borrowing. In 2010 we saw how systematically destabilizing the prospect of default by an even relatively small country such as Greece could be. Furthermore, we saw how losses of confidence in the debt-carrying capacity of the country can, through an increase in risk premia, dramatically reduce the government's room for fiscal maneuver. Greece's travails were eventually "solved" (many analysts argued at the time that a Greek default was eventually inevitable) through a combination of IMF and EU largesse but, along the way, the EU was forced to introduce a bailout facility to signal massive support to other countries in Europe as well. The point here is that the fiscal consequences of climate change and population aging could at some point interact with financial markets in highly destabilizing ways, which could significantly worsen an already difficult fiscal situation.

Of course, in addition to putting onerous pressures on public resources, climate change could also simultaneously interact with the world economy in other ways. Thomas Homer-Dixon (2010) argues that in some plausible scenarios "climate change would cause some kind of regional or continental disruption, like a major crop failure; this disruption would cascade through the world's tightly connected economic and political systems to produce a global effect. Severe floods dislocating millions of people in key poor countries—as we saw in Pakistan in 2010—could allow radicals to seize power and tip a geopolitically vital region into war. Or drought could cause an economically critical region like the North China plain to exhaust its water reserves, forcing people to leave en masse and precipitating a crisis that reverberates through the world economy."

The point of these scenarios is less to highlight the likelihood and consequences of mega-catastrophes associated with climate change but rather to make the more fundamental point that we need to be thinking about how we would respond to emerging crises. What would be the options open to us and at what cost? Some Harvard researchers (Kousky, Rostapshova, Toman and Zeckhauser, 2009) examine the pros and cons of various options, including rapid abatement of greenhouse gas emissions to reduce the risks of climate change catastrophes; geoengineering, which involves intentional manipulation of the environment aimed at either reducing the amount of solar energy that is absorbed by the planet, or removing CO₂ from the atmosphere; or other adaptation measures that might increase the planet's resilience or reduce its vulnerability to changes in climate, such as building dikes, setting aside large tracts of land for protection of ecosystems or, as in the case of the Maldives, using tourism revenue to establish a fund to buy land in other countries and eventually resettle the entire population. Mega-catastrophes associated to climate change (e.g., large rises in the global sea level, disruptions to ocean circulation, other large-scale ecosystem disruptions) are, by definition, small probability events but it would be infinitely better to face them—should they materialize—from a position of fiscal strength, not one where governments are thinly stretched because of competing claims on dwindling resources. A sharp global economic downturn associated with some climate shock would, of course, through its adverse impact on government revenues, only heighten the fiscal impact of the long-term forces which, by themselves, are already putting heavy pressures on public resources.

Population growth

But population aging and climate change and the pressures they will put on public resources are not the only challenges we will face in coming years. There are many others. According to the United Nations the world's population by 2030 is projected to be 8.4 billion, 2.3 billion more than in 2000. A full 95 percent of the increase over this 30 year period will take place in the developing world, nearly all of it concentrated in urban areas. There is a relentless process of urbanization under way all over the world which, for instance, has transformed the Chinese landscape and has contributed to that country's feverish pace of economic growth. Whereas in 1980 less than 20 percent of China's total population of close to 1 billion was living in urban areas, by 2000 this share had risen to 36 percent. The urban population during this period expanded from about 190 million to over 450 million, and is projected to reach close to 1 billion by 2045. Well before 2030 China will have several megacities, with the population of Shanghai likely to exceed 25 million.

At a dinner in Shanghai in 2004 the city's mayor turned to me and wondered out loud what a population of 25 million would mean for traffic congestion and garbage collection and how city authorities then might cope with efforts to make the city livable. An extra 2 billion people will put pressures on energy demand, for transportation, heating, lighting and to sustain the pace of economic activity. Governments will have to invest in physical infrastructure to cope with rising demand for housing, food, and assorted services. In the case of China, in particular, population aging and rapid urbanization will interact in potentially expensive ways.

Like other countries in the industrial world, China will also have to make provisions for its aging population, and more attention will have to be given, therefore, to the development of efficient and modern systems of social protection, particularly pensions, the coverage of which today is relatively low. This, in turn, will have implications for the budget. According to Eberstadt (2005, p. 167) the present net value of the unfunded liabilities of China's official pension system, covering a relatively small fractions of the workforce "is estimated to exceed current GDP, perhaps substantially." A more recent assessment by Frazier (2013) while noting that "the income gap between urban and rural households in China is one of the largest in the world" adds that China's new social policies have been formulated "in the context of two long-term demographic trends of great significance: China's high-speed urbanization and the rapid aging of its population. China's social welfare policies are in some respects responses to these trends—aimed at preventing both the formation of a vast urban underclass lacking access to basic means of social protection as well as the impoverishment of the elderly." Well before the country's urban population reaches the 1 billion mark, the need for a well-functioning and well-funded social infrastructure will have become a political necessity, especially if the current rural-urban income disparities continue to widen, as they have in recent years. Indeed, China's political stability will hinge critically on the speed with which the government is able to make progress in this area, at a time when rising protectionist

sentiment against buoyant Chinese exports begins to create a more challenging external environment for the country in coming years.¹³

Certain parts of the world—the Middle East and Africa, parts of South Asia—have exactly the reverse problem of the rich OECD countries and other aging societies like China and Russia, namely, high fertility rates and growing young populations eager to acquire skills and find a job in the increasingly interconnected global economy. In some countries, the desire to avoid rising and potentially politically destabilizing unemployment will force governments to spend more on education and training and to invest in the sort of infrastructures that will facilitate private sector development and job creation. According to the United Nations by 2050 the combined populations of Pakistan, Indonesia, Nigeria, Bangladesh and Iran will exceed 1.25 billion. The implied rate of growth of the labor force in these countries is very high and the increases in employment which would be necessary to prevent a rise in current levels of unemployment are extremely demanding.

Failure to meet the rising expectations of populations in these countries and many others in the developing world could lead to political instability and heightened security risks for the world as a whole. The rapid pace of diffusion of the latest information and communication technologies and the resulting more open access to information has made it possible for impoverished populations in the developing world—particularly the young—to aspire to the lifestyles and opportunities of the rich OECD countries and has also made them less willing to wait for “convergence” in the far distant future. One dimension of these “demonstration” effects pertains to advances in medical technology. According to Heller (2004, p. 161) “in the sphere of medical care, where governments are heavily involved as providers or insurers, technological advances also raise people’s expectations about what is possible.”

Painful tradeoffs

Population aging, climate change and some of the other processes identified above are all likely to create painful tradeoffs for governments in the future. However, we cannot exclude the possibility of another global financial crisis of similar or greater intensity to that which was precipitated by the implosion of U.S. subprime mortgage markets in 2007-2008. Governments in the developed countries may have adopted tighter regulations to ensure that mortgage markets, securitization and credit derivatives operate in more transparent settings. But if the global financial system is inherently unstable, there is no guarantee that it will not crash in the future as a result of abuse, misbehavior or other factors unrelated to those which caused the last crisis. Robert Shiller (2009), a leading observer of financial markets and one who issued repeated warnings about the real estate bubble in the United States, thinks that “capitalist economies, left to their own devices, without the balancing of governments, are essentially unstable.”

¹³ An additional benefit of an improved framework for social protection will be that the Chinese population will feel less of a compulsion to save (for old age) and this would stimulate domestic consumption, thereby contributing to reduce China’s huge trade surplus, a constant source of tension with trade partners. Better mechanisms of social protection will also encourage entrepreneurship and long-range planning, key ingredients of successful innovation.

There is nothing that, in principle, could prevent a recurrence of what we saw in 2008: huge increases in counterparty risk associated with bank write-downs and the freezing of interbank markets, a surge in market volatility and a corresponding flight to quality and the disappearance of wholesale funding leading to extremely chaotic deleveraging. The collapse of equity markets as a result of sales of liquid assets at fire-sale prices and the drying up of credit lines to leveraged institutions, all of it followed by growing unemployment, falling incomes and a widening of budget deficits. What makes this a nightmare scenario is that the ability of governments to prevent an economic depression through a variety of interventions, such as the takeover of institutions perceived to be weak, the extension of deposit insurance, the introduction of measures to use public funds to buy troubled assets from banks, the infusion of capital to the banking system, the provision of temporary income support to the unemployed and so on, will be very much a function of the health of their own finances and their being on a sustainable path. Absent this, what is left is the Latin American scenario of the 1980s: debt default and potentially very high inflation, except that this time around the impact would be global and highly destabilizing. The point here is that there is no guarantee that the financial system might not itself become a wholly independent source of pressure on government resources, increasing the vulnerability of already strained long-term budgets.

The table below highlights the great vulnerability to shifts in market sentiment of some of the world's most advanced economies. Gross financing needs for a country running a budget deficit are the sum of the debt maturing during the year in which it has to be paid if the country is to avoid default plus the new overall borrowing requirement, that is, the excess of expenditures over revenues—in this case for 2013. A country like Spain, for instance, had a deficit of 6.7 percent of GDP which it needed to finance, but also had to pay up the equivalent of 13.5 percent of GDP in debts falling due in 2013. The combination of these two sums is equivalent to about US\$272 billion—a huge amount to be raised in the markets. And Spain is not, by any means, the worst offender. Italy had gross financing needs of 28.4 percent of GDP (about US\$572 billion) and Japan an intimidating 58.4 percent of GDP (US\$3.5 trillion). Furthermore, gross financing needs in these countries are expected to remain high in coming years. It may well be that, in the context of credible programs of fiscal retrenchment and a recovering global economy, they will be able to rollover maturing debts and borrow more to fund the deficit.

Indeed, over the past several years, Japan has managed to do just that—the government has had no problems taping the large savings pool of Japanese households to rollover maturing debts without major hiccups. But not all countries have a captive savings pool and there is no reason to believe, in light of the above discussion, that the medium-term will be free of fiscal strains which could greatly complicate the funding scenarios for some of these countries. Not to sound unduly pessimistic, one cannot help note that a crisis in one country can quickly metastasize into crises in other countries, as the Greek crisis in 2010 showed with alarming clarity. Indeed, it is already the case that market concerns about the sustainability of the fiscal outlook for many of these countries has led to a shortening of average maturities on government securities and higher interest rate

spreads. Put in another way, the current fiscal outlooks for some of these countries are in the spirit of accidents waiting to happen.

Nor are emerging markets completely exempt from these risks. The levels of debt that are regarded as prudent in emerging markets—about 40 percent of GDP—is generally considerably lower than in the advanced economies, with their much deeper financial markets and better track records of debt management. Emerging markets tend to have lower revenue ratios, they sometimes are more dependent on financing by nonresidents and have a much more uneven history of debt defaults. According to the IMF, countries such as Brazil, Hungary, India, Pakistan, Poland, Egypt, and Thailand, among others, already have debt levels above 40 percent of GDP, sometimes substantially so. Poor developing countries are vulnerable as well, partly because they depend on aid provided by the rich industrial countries, both in the form of cash grants (about 4 percent of GDP on average) and others forms of concessional financing; and also because they are particularly vulnerable to capital account volatility, which complicates fiscal management.

Table 2. Advanced economies' gross financing needs, 2013

(In percent of GDP)

	Maturing debt	Budget deficit	Total financing need	Gross debt	Average maturity ^a
Australia	3.1	3.1	6.2	29.1	5.6
Belgium	15.8	2.8	18.7	100.9	7.3
Canada	13.2	3.4	16.6	87.1	5.6
France	13.4	4.0	17.4	93.5	6.7
Germany	7.9	0.4	8.3	80.4	6.4
Greece	17.0	4.1	21.1	175.7	8.2
Ireland	5.6	6.7	12.4	123.3	12.1
Italy	25.2	3.2	28.4	132.3	6.4
Japan	48.9	9.5	58.4	243.5	6.4
Portugal	17.8	5.5	23.3	123.6	4.8
Spain	13.5	6.7	20.2	93.7	5.5
Sweden	3.5	1.4	4.9	42.2	5.4
United Kingdom	5.9	6.1	12.1	92.1	14.4
United States	18.1	5.8	23.9	106.0	5.5

Source: IMF Fiscal Monitor October 2013.

^a In years.

Extreme vulnerabilities

The above discussion does not pretend to present a comprehensive listing of the many ways in which various factors are likely to put pressures on public resources over the next 10-20 years and beyond. (No effort is made, for instance, to explore the ramifications of a war in the Middle East, through its impact on oil prices, investor and consumer confidence and what, thus far anyway, remains a fragile economic recovery from the global financial crisis.) Indeed, it is not inconceivable that well before the impact of population aging and climate change kick in with all their force, there is some other

factor that precipitates a fiscal crisis—even at existing debt levels which, as noted earlier, are considerably higher than in 2007, before the onset of the global financial crisis. All that would be required is some event which depresses market confidence in the ability of highly indebted governments to sustain current debt levels, leading to a sharp increase in risk premia and, therefore, imposing literally overnight, a much tighter fiscal outlook, with sharply higher long-term interest rates and diminished growth prospects.

Greece stumbled into such a crisis in late 2009; a sudden rise in the cost of new debt precipitated a fiscal crisis, riots in the streets and, within a few weeks, a crisis in Portugal and Spain, though the latter had debt levels that were less than half those of Greece and below that of France, Germany and the United Kingdom. It stretches the powers of one's imagination to think about what might happen to the global economy if the object of negative market sentiment was not some small, fiscally irresponsible, not-always-transparent (with the budget figures) Southern European country, but the U.S. Treasury and the federal government's fiscal outlook. A sudden rise in the debt servicing costs of Greece is, in the first instance, highly problematic for the country itself, imposing painful adjustments, usually involving tax increases and expenditure retrenchment and restructuring, to make room for the higher interest bill. Greece's own brush with default had broader and deeper adverse repercussions for the euro area as well and led to fiscal pressures in other countries, as well as on the exchange rate of the euro. A sudden reassessment by the markets of potential U.S. solvency would be potentially far more destabilizing, given the preeminent position of the U.S. economy globally, the central role of the dollar in international finance and trade and the vast holdings of U.S. dollar denominated assets in the hands of its creditors.

Geopolitical ramifications

Furthermore, a sudden rise in the cost of debt-service would have unforeseen geopolitical ramifications as well. One cannot help agreeing with Ferguson (2010) when he suggests that if interest payments take up a growing share of tax revenues, what is likely to give is military spending, which, unlike mandatory entitlements, is discretionary spending. For the United States' enemies—Ferguson adds—“it must be consoling to know that U.S. fiscal policy today is programmed to reduce the resources available for all overseas military operations in the years ahead” (p. 32). The issue here is not that it would be inconvenient for the United States to be increasingly constrained militarily, but rather that resource constraints more generally might underpin the weakening of the United States globally and, de facto, imply a rise in the relative influence of other countries with questionable commitments to democracy, human rights, and the rule of law. Friedman (2010) makes this point convincingly when he says that “the most unique and important feature of U.S. foreign policy over the last century has been the degree to which America's diplomats and naval, air and ground forces provided global public goods—from open seas to open trade and from containment to counterterrorism—that benefited many others besides us. U.S. power has been the key force maintaining global stability, and providing global governance, for the last 70 years. That role will not disappear, but it will almost certainly shrink.” Mandelbaum (2010, quoted by Friedman), commenting on the nature of U.S. leadership in “a cash-strapped era” observes: “When Britain could no longer provide global governance, the United States stepped in to replace it. No country

now stands ready to replace the United States, so the loss of international peace and prosperity has the potential to be greater as America pulls back than when Britain did. Therefore, the world will be a more disorderly and dangerous place.”

III. Tools at Our Disposal

A balance sheet for the government

The above discussion raises one important question: how sustainable is the fiscal position of the United States and, therefore, how vulnerable is the global economic outlook to possible shifts in sentiment about the underlying strength of the U.S. public finances? According to the IMF the U.S. budget deficits in 2009 and 2010 have been well in the 11-13 percent of GDP range, the highest since the end of World War II. Public debt levels have been on the rise, from some 55 percent of GDP in 2000 to 103 percent of GDP in 2012 and projected to remain in excess of 105 percent of GDP through 2018, higher than the highest debt levels registered soon after the end of the war. Indeed, the *Financial Report of the United States Government* for 2012 projects public debt levels close to 300 percent of GDP by 2075 and 400 percent of GDP by 2090. Interest payments on the public debt would rise from 1.4 percent of GDP in 2012 to 5 percent in 2029 and 21 percent in 2087. No doubt in anticipation of the vertiginous rise in public debt the statutory ceiling on U.S. Federal debt was raised half a dozen times between July of 2008 and late 2013, from US\$10.6 trillion to US\$16.4 trillion.

There is a sense, however, in which the yearly budget and its financing provide only a limited perspective on the sustainability of the public finances. Economists have sought to extend their analysis by looking at the current primary fiscal balance—revenue minus expenditure, excluding interest payments—and asking whether, if maintained at that level, it would lead to an increase in the debt to GDP ratio. While this has proved useful, it remains an incomplete tool of analysis. As noted by Heller (2004), it does not say which parts of the budget are the more problematic ones, what is the fiscal balance that is best for the country in a long-run perspective and, perhaps more importantly, it does not take into account any possible future budgetary commitments that may bring pressure to bear on the budget, such as workers’ pension benefits due upon retirement. A consolidated government budget will typically record the social contributions made by workers during the current fiscal year, but the future pension liability that is attached to those contributions is not shown or otherwise recorded; often, these liabilities are much larger than existing levels of debt.

For this reason some governments have sought to prepare a balance sheet for the government, capturing past fiscal operations as reflected in the outstanding public debt as well as future liabilities reflecting binding expenditure commitments, such as pensions, health benefits, and the like. Governments have generally shied away from examining the public finances in this more comprehensive, longer-term perspective. One explanation is that they have found it difficult to make projections involving variables subject to some margins of uncertainty, such as future average life expectancies, forthcoming claims on public resources unrelated to demographic factors, as well as the likely evolution of tax policy. In addition, long-term projections are highly sensitive to alternative assumptions.

However, a more compelling explanation may be that such an exercise could show future insolvency which then could precipitate a possibly unwelcome debate on the need for painful corrective actions.

It is, however, noteworthy that most governments require companies operating within their jurisdictions to prepare both an income statement, showing revenues and expenditures over a given period and a balance sheet statement, with a more comprehensive listing of all assets and liabilities, including those falling due in future periods. The release of such information to shareholders and the public is seen as safeguarding important principles of transparency and is also seen as an important disciplining mechanism. Companies with negative net worth are not likely to survive in a competitive market in the absence of drastic corrective measures. A case might be made that a balance sheet of the government is even more important than that for an individual enterprise because the potential costs of national insolvency are much greater than the disappearance of an individual company (no matter how large) and could involve a rise in inflationary expectations, a weakening currency, an erosion of confidence and a slowdown in economic activity and possibly social and political dislocations.

Indeed, there are many different types of vulnerabilities which a balance sheet can highlight which can remain disguised in more traditional flow budget accounts. Some countries, for instance, can carry significant amounts of foreign currency denominated debt in their books and changes in the exchange rate can lead to sometimes sharp increases in the debt burden, as was the case a decade ago following the breakup of Argentina's currency board in 2001. In some cases, governments may have to absorb some of the losses sustained by the private sector if the devaluation pushes banks and enterprises into default—this happened, for instance, in Chile in the 1980s. Another important instance of the benefits of a balance sheet approach to fiscal management has to do with the depletion of non-renewable resources. Commodity exporters, for instance, may be facing a gradual erosion of the country's net worth associated with ongoing sales of oil or some other natural resource. A balance sheet which unambiguously identifies the erosion of the government's asset position may help focus the attention of policymakers and the public on the need to develop the non-oil sector or to take some other measures, perhaps involving more sustainable management of existing natural resources.

Alternatively, it may lead countries to create various savings mechanisms (e.g. Norway's and Russia's oil stabilization funds, Chile's copper fund) to cushion the impact of a sudden change in international prices or, as in Norway, to ensure that the state has sufficient resources to meet the growing claims on public funds associated with population aging. There is, indeed, no limit to the sorts of activities which could be accounted for in a government balance sheet in an effort to more accurately depict the true underlying fiscal situation. As countries have come under a variety of environmental stresses, from increasing water scarcity, soil erosion, deforestation, loss of biological diversity, excessive carbon emissions, contaminated air, and so on, it is becoming increasingly obvious that there are advantages to evaluating these dimensions, not only as a means of better assessing net worth, but also to gain a better understanding of the tradeoffs between economic growth and a sustainable environment. A proper

understanding of a country's rising environmental constraints may also point the way to possible remedial actions.

According to data released by the United States General Accountability Office and summarized in *The Financial Report of the U.S. Government*, total assets in 2012 were US\$2.75 trillion, while total liabilities (consisting mainly of debt held by the public and federal employee and veteran benefits) were US\$18.85 trillion, leading to a current net worth of negative US\$16.10 trillion, or about 118 percent of GDP. However, the actuarial balances associated with the disbursement of pension benefits through the social security system and the payment of Medicare health benefits to the elderly show a net present value (over a 75-year horizon) of negative US\$38.55 trillion. Adding this sum to the current net worth results in an intertemporal net worth of US\$54.7 trillion, equivalent to -422 percent of GDP. In a nutshell: the U.S. government is insolvent and, absent major changes in policy, is currently on an unsustainable fiscal path. Worryingly, this indicator of net worth in 2007 was US\$52 billion, equivalent to -378 percent of GDP and was around -200 percent of GDP in 2000, a dramatic worsening of the U.S. fiscal position in slightly more than a decade. As expected, the global financial crisis and the policy responses to it have greatly enhanced the unsustainable nature of the U.S. public finances. Indeed, the position of the consolidated government (federal as well as state) is actually worse since state finances are in dire shape and the financial condition of Medicaid, the States' health benefits for low-income families is actually worse than that of Medicare.

A fiscal implosion is not inevitable

None of the above is intended to suggest that a fiscal implosion of some sort in the future is all but inevitable, whether in the United States and/or many of the other countries who currently find themselves facing a heavy debt burden. Even if the outlook is unusually uncertain and there are numerous risk factors which might dampen one's optimism about the future path of the global economy, it is still the case that measures can be taken today that can greatly diminish the likelihood of a future crash. Recent economic history is full of examples of countries which were able to get out of what appeared to be unsustainable fiscal paths. Buiter (1985) shows that the time path of the United Kingdom's debt-to-GDP ratio is largely a function of whether the country is at war or not.

Governments incur obligations during or immediately after wars and use peacetime conditions to reduce their debts. The all-time high for the UK's debt-to-GDP ratio was 288 percent in 1821, following the Napoleonic Wars, but was also high at the end of both World Wars, with the ratio equal to 272 percent in 1947. A combination of solid economic growth and prudent fiscal policies, however, had brought the ratio down to 48 percent by 1975, where it remained broadly stable for the next several decades. The debt-to-GDP ratio in the United States peaked at around 110 percent immediately after the end of the Second World War but had fallen below 50 percent by the late 1950s (it also jumped by over 30 percentage points around the time of the Civil War).

Chile's debt-to-GDP ratio in the mid-1980s reached over 100 percent of GDP, soon after the collapse of its banking system (which went into default on its foreign currency debts) and its most pronounced recession in the postwar period. However, a combination of

rapid economic growth in the next two decades and the implementation of a prudent fiscal policy had brought the ratio down to under 10 percent by the mid-2000s, greatly expanding the government's ability to spend in poverty reduction, education and to build the best infrastructure in Latin America.¹⁴ Of course, that buoyant economic growth in the past allowed in many cases rapid debt reduction is no guarantee that the current spike in debt levels will similarly be inevitably followed by a benign period of debt decumulation.

In earlier episodes governments did not rely to the same extent on the willingness of private investors—including foreigners—to hold debt obligations quite in the same way that they do today, when government bonds are much more widely held. Furthermore, war-time financing may have prompted many to hold bonds out of feelings of patriotism and national solidarity; indeed, an extraordinary feature of the current situation is that we have war-time levels of debt without a war. In addition, those earlier periods coincided with favorable demographics, with any discernible pressures being put on budgets because of rapidly rising pensions or health care expenditures being more than offset by an expanding working-age population. Neither did governments face—as they do today—sizeable contingent liabilities stemming from the various guarantee schemes introduced to deal with financial sector obligations. Indeed, the history of debt management in the advanced economies over the past two hundred years suggests that relatively low debt levels can act (to use IMF terminology) as “shock absorbers” in the midst of a crisis (e.g., war, famine, a financial crisis which necessitates various interventions with tangible fiscal costs), allowing governments to cushion the social impact of the crisis. This in turn highlights the critical importance, in coming years, of bringing debt levels back to precrisis levels or, better yet, even below (particularly for the more highly indebted countries) in light of the various other pressures likely to emerge over the medium-term.

Policy options available to advanced and developing economies are clearly different: for example, in the aftermath of a global financial crisis that originated in the United States, its government was able to continue borrowing at cheap rates because the country remained a safe haven for investments, thanks to deep financial markets and good public institutions.¹⁵ There are, however, a number of things that can be done to help defuse potentially explosive fiscal paths in both advanced and developing countries.

First, governments can do more to frame budget discussions in a medium-term context, presenting projections for revenues and expenditures several years into the future. Budget discussions often fall captive to political cycles, or become battlegrounds for internecine struggles for power. In such circumstances, the focus of the government is often short-term, the goal being to get the next year's budget approved without further aggravation of

¹⁴ There are other examples: Japan in the early part of the 20th century at the time of the Japanese-Russian War, with the debt falling from 71 percent of GDP in 1910 to 23 percent by 1919; France in the aftermath of World War I, with debt reduced from 185 percent of GDP in 1922 to 100 percent in 1929. (See IMF, 2010, p. 25).

¹⁵ Eswar Prasad in *The Dollar Trap* (2014) argues that the financial crisis has even strengthened the dollar's importance as a reserve currency.

the domestic political or social situation. However, responsible governance demands that governments recognize the intertemporal dimension of economic policies. Explicitly acknowledging the pressures that could emerge in the medium-term and educating the public on the tradeoffs that these are likely to entail is a crucially important component of governing effectively.

One advantage of framing policies in a medium-to longer-term horizon is that it facilitates the identification of vulnerabilities and makes possible a debate about what actions might be needed to strengthen the credibility of budgetary targets. This would appear to be particularly important now, in the aftermath of the latest crisis, given the sizable contingent liabilities which have been assumed by governments as part of the response to the crisis. Medium-term fiscal projections will then make it possible to develop fiscal gap indicators that “can help estimate the aggregate fiscal adjustment needed to restore sustainability” (Heller, p. 165). In the absence of a meaningful debate about the long-term impact of current policies then the annual preparation and approval of the budget is a wasted opportunity, equivalent to pushing into the future—regardless of the consequences—the consideration of issues of vital importance for the sustainability of the public finances.

Improving accountability

Some countries have found it useful to have an independent office that provides its own assessment of the government’s budgetary policies and the extent to which they are consistent with a sustainable fiscal path—the United States’ Congressional Budget Office is an example. If well-protected from possible interference by the Executive, an appropriately funded and well-staffed entity could catalyze public debate on the long-term fiscal challenges facing the country. Wyplosz (2005) suggests that a “fiscal policy committee” (FPC) could be usefully modeled after the Monetary Policy Committees that operate in countries with independent central banks. In those cases the Committee is given a clear mandate for price stability and the full authority to set the short-term interest rate. There is ex post accountability to a political body (e.g. parliament) and a requirement to explain its decisions and thinking to the markets and the general public. A FPC could be set up along similar lines, with independent experts given a debt target to be achieved over a suitably long horizon that captured business cycle fluctuations.

The specifics of spending and taxation would still remain under the control of elected officials, but their proposals would eventually have to be made consistent with the deficit and debt levels called for by the FPC. Such an arrangement would aim to strike a balance between the need for long-run fiscal discipline while maintaining some short-run flexibility, to deal with shocks that might warrant some temporary shift in the fiscal stance. Governments may not wish to receive candid, independent, non-partisan scrutiny of their policies, but there is little doubt that the public interest would be well-served by such budget reviews, contributing to foster greater confidence in the integrity of the government’s steering of public resources.

The virtues of rules-based policies

A number of countries have opted for rules-based macroeconomic policies. In the monetary area many countries have abandoned the targeting of monetary aggregates or the exchange rate and have adopted inflation targeting. Others have opted for fiscal policy rules or specific constraints on fiscal policy, as captured in some particular indicator of fiscal performance, such as the government budget deficit, the levels of debt and so on. The budget is not only the main instrument of distribution in an economy but, in the final analysis, is also a mirror that reflects the myriad compromises implicit in the political process, the maturity of its leaders, the technical expertise of its bureaucrats, and even the state of the external environment.

It might make sense, therefore, to buttress its credibility—and that of the entire range of macroeconomic policies—by removing or greatly limiting the scope for discretionary intervention. Over the past several decades fiscal policy in rich industrial countries and developing economies has tended to be procyclical and exhibit a deficit bias. As a result, debt levels have risen and this has enhanced the vulnerability of countries to external shocks, shifts in market sentiment and other unforeseen factors. To move to a system that contributes to delink the stance of fiscal policies from the pressures that often are implicit in political cycles—to say nothing of the venality of politicians—may be an excellent way to strengthen the credibility and transparency of the public finances.

Fiscal policy rules have varied quite a bit in design and in effectiveness. In some the emphasis has been on transparency, in others (particularly emerging markets as well as the EU), the focus has been on particular performance indicators, such as those implicit in the European Monetary Union's Stability and Growth Pact (e.g. gross debt levels below 60 percent of GDP). Two countries for which the rules have worked well are New Zealand and Chile. New Zealand approved a Fiscal Responsibility Act in 1994, laying out several principles for responsible fiscal management. The Act seeks to reduce debt to prudent levels, "to provide a buffer against factors that may impact adversely on the level of debt in the future." It requires total operating expenses in each financial year to be less than operating revenues and explicitly seeks to ensure a "reasonable degree of predictability about the level and stability of tax rates for future years." It allows the government to temporarily depart from these principles but in a way that is transparent and that is accompanied by an indication of how and when it intends to conform to the principles. It also requires the government to ensure sustainability of the public finances by reference to the government's net worth—the balance sheet approach discussed earlier on, which incorporates consideration of future liabilities. New Zealand's debt levels are slightly below 30 percent of GDP, among the lowest in the OECD. Not surprisingly, according to the IMF, it is one of the countries with the largest "fiscal space" in the world.

Chile's institutional framework for implementing fiscal policy is unusually strong. It includes a prohibition on public sector borrowing from the central bank, in addition to a prohibition on the issuing by municipal governments of debt or borrowing. In addition, the budget process is led and effectively dominated by the Executive and, within it, by the Ministry of Finance. If a draft budget submitted by the government to Congress is not approved within 60 days, the draft automatically becomes law in the absence of

satisfactory resolution of any disagreements. In 2001 the government adopted a regime—a fiscal rule—whereby it targets the central government’s structural balance. That is, the level of government expenditure is limited to the level of structural (i.e. cyclically adjusted) revenue.

In practice, this means that pro-cyclical policies are altogether avoided. Neither government expenditures nor tax rates move to offset temporary changes in output and copper prices. What in fact does adjust is the actual government balance, for which there is a target of a surplus of 1 percent of GDP on average.¹⁶ This approach to fiscal policy has a number of distinct advantages: it depoliticizes the budget process from election cycle spending (or other politically motivated discretionary spending); it thus establishes a smoother profile for government expenditure, which, in turn, allows the government to implement a predictable public investment program and to acquire long-term fiscal credibility, which in many countries (like the United States) is undermined by a partisan approach to budgeting. By institutionalizing fiscal discipline, an environment is created in which, in the absence of an exchange rate target, monetary policy is enabled to play an effective countercyclical role.

Fiscal rules however need to be realistic in timing and scope. By adhering to realistic fiscal targets, Chile was able to foster confidence and to improve its ability to deal with volatile financial markets. One country for which the fiscal rule has not worked very well is India. In an attempt to bring about some measure of medium-term fiscal adjustment, the government brought into force in 2003 a Fiscal Responsibility Budget Management Act (FRBMA) which established a path of deficit reduction through 2009. The high economic growth rates during the period 2004–07 boosted government revenue and some progress was made in reducing the deficit, but the 2008 financial crisis and the need to respond to the weakening of economic activity through fiscal stimulus means that the deficit in 2009 was back to some 10 percent of GDP. In any case, the law has generally applied to the central government only, whereas, in fact, a large share of the deficit problem is with the states. Moreover, it does not contain a medium-term debt target that might act as a binding constraint on the public finances. The law also does not establish any penalties or sanctions for departures from the path of fiscal adjustment laid down in the FRBMA. According to the IMF (2009, p. 34), “despite the apparent consolidation, off-budget activities increased, deadlines to comply with fiscal targets were extended and the fiscal adjustment was not underpinned by expenditure reform.” India’s public debt level, at 66 percent of GDP in 2013, is already very high by international standards; indeed, it is larger than that of Brazil and Argentina, Turkey, and much larger than that of China and Russia.

The above is not to suggest that all countries should move to implement some fiscal rules or that these will, by themselves, guarantee fiscal sustainability. There are countries that have well-established traditions of cautious fiscal management and there is no reason to believe that imposing a fiscal rule would make a fundamental difference. Countries with long track records of competent fiscal management may feel that fiscal rules could be at

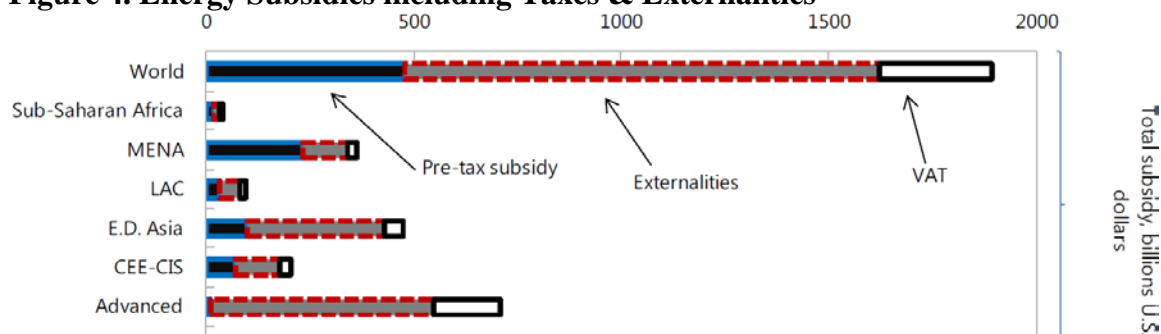
¹⁶ This was changed to 0.5 percent of GDP with the 2008 budget and temporarily to balance in January of 2009, to accommodate the effects of the global financial crisis.

times at odds with the essence of democracy, where legislators are supposed to act in the public interest, unhindered by some artificial constraint. Without entering into a debate on the merits of such arguments, it should be clear enough that in countries where there is not a solid foundation of fiscal restraint, fiscal rules could be a useful tool and contribute to stability and growth. Without doubt, in India large deficits over the past decade have been a drag on the economy. A much lower deficit would have been associated with higher growth rates and higher levels of revenue, which would have boosted the ability of the government to respond to pressing social needs. The lesson from India then is that, to be useful, fiscal rules need to be well-designed and transparent, conceptually accessible to broad segments of the population and sufficiently robust in their institutional underpinnings to buttress the credibility of fiscal policy, otherwise they are next to useless.

Unproductive expenditures

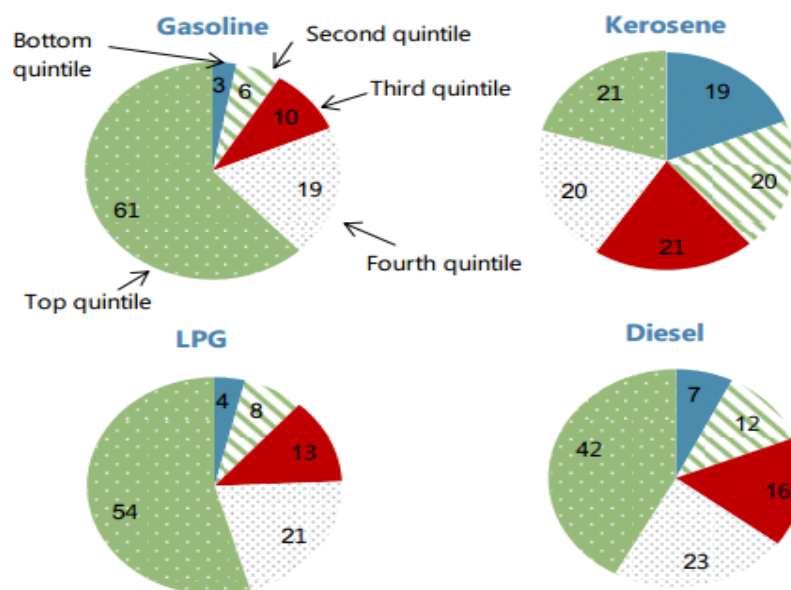
The crisis and the sorts of long-term fiscal challenges which governments will confront in coming years provide an excellent opportunity for implementing reforms that will improve resource allocation and boost countries' growth potential. The fact is that there is huge scope to reduce wasteful or otherwise unproductive expenditures. According to the IMF tax-inclusive petroleum subsidies in 2011 were about 2.5 percent of world GDP, or US\$1.9 trillion. These consumer subsidies are inefficient, their benefits go overwhelming to the higher income groups, and because they encourage excessive consumption, constitute an environmental calamity. Of 83 countries with petroleum subsidies in 2010, 69 were running budget deficits and in more than half of these the deficits were in excess of 3 percent of GDP, sometimes substantially so. "Reducing tax-inclusive subsidies by one-half in these countries would result in their average deficit falling from 4.2 percent of GDP to about 2.5 percent of GDP" (IMF, 2010, p. 71). Similarly, in countries where taxation of energy products is very low, the fiscal balance could be improved by shifting the fiscal burden towards these products.

Figure 4. Energy Subsidies including Taxes & Externalities



Source: Arze del Granado and others, 2012 and Energy Subsidy reform: Lessons and Implications, IMF

Figure 5. Distribution of Petroleum Product Subsidies by Income Groups
(% of total product subsidies)



Source: Arze del Granado and others, 2012 and Energy Subsidy reform: Lessons and Implications, IMF

Governments have often shied away from reforming subsidies because, over time, populations have become addicted to them and do not hesitate to go into the streets to vent their anger when alerted to the possibility of price rises. And yet, they imply a huge opportunity cost for societies. They represent vital resources which are not used to improve the educational system, the country's infrastructure, or the health of its citizens, all areas with a much greater potential to improve productivity. In many countries, total consumer subsidies exceed expenditure on education and health combined. And yet, many governments have managed to phase them out, replacing them with various targeted mechanisms to protect the poor and other vulnerable groups.¹⁷

According to the World Bank world military expenditure in 2013 was equal to 2.4 percent of world GDP—or close to US\$1.7 trillion. No doubt many governments feel entirely justified in sustaining high levels of military spending, reflecting real enough risks. However, there is a high price to be paid for our current global system of sovereign nations operating outside a framework of collective security. This creates numerous inefficiencies, as governments feel the need to maintain large national military establishments to guard against perceived—real or imagined, external or domestic—

¹⁷ We have focused attention on energy subsidies, but there are others (e.g., sugar, cotton, other agricultural products), often implying a heavy burden on the budget, involving distortions of various kinds and defended by powerful special interest groups.

threats. In this respect the experience of the European Union is highly instructive. As governments have strengthened mechanisms of international cooperation and have built up an impressive institutional machinery for the resolution of disputes and conflicts, they have also seen less of a need for sustaining high defense spending. Military expenditures in relation to GDP have been on a downward trend for the past two decades in every single EU member, sometimes substantially so. While some of this downward shift may reflect the end of the Cold War, it surely also points toward the virtually nil likelihood of armed conflict between EU member states. Less money allocated to military expenditures means, other things being equal, more money available for productivity-enhancing aims.¹⁸

Better tax systems

There is also much that could be done in terms of tax reform and there is considerable value in the sorts of recommendations routinely issued by the IMF to its member countries as part of the Article IV consultation process. In particular, the broadening of the tax base to allow in some cases reductions in tax rates, improving incentives to work, simplifying the tax regime to boost compliance, reducing taxes on international trade and more closely aligning the tax system to the emerging demands of environmental protection.

One important consequence of rationalizing expenditures and improving the efficiency of the tax system is that it improves the nature of the difficult tradeoff which governments face now and will continue to face for the foreseeable future: how to provide sufficient stimulus to economic activity to sustain the recovery, to alleviate poverty, to preserve the capacity to respond to critical needs as they emerge in an uncertain world, while at the same time maintaining the confidence of markets that governments are solvent, that fiscal positions are sustainable. The more energetically are governments perceived to be aware of future fiscal risks and are seen to be implementing ambitious corrective policies, the higher the probability that markets will be willing to rollover maturing debts and ensure a smooth transition to lower debt levels. Unfortunately, the reverse is equally true. Dithering or political stalemate—particularly in those countries with debt levels already in excess of 100 percent of GDP, including, most prominently, the United States—could bring about higher risk premia, increase rollover risk, a much longer period of weak economic activity. Beyond tax reform measures and a thorough examination of expenditure priorities, governments can also move to introduce reforms affecting other markets, intended mainly to enhance the efficiency of resource allocation.

The indicators put out by the World Bank's *Doing Business Report* provide, for instance, a useful benchmark for the removal of barriers to business creation and entrepreneurship. The OECD has also developed a useful set of market regulation indicators to assess the extent to which the regulatory framework promotes or slows down competition. These indicators include measures of interference with the workings of the price system, the

¹⁸ There are legitimate questions as to whether in the EU this process may have gone too far, undermining the ability of the Union to project military power in the world in defense of justice or in instances where collaborative multilateral interventions may be necessary to avoid massive violations of human rights, genocide and so on.

licensing and permit system, communication and simplification of rules and procedures, legal and regulatory barriers, discriminatory procedures, tariff policy, the degree of government control over business enterprises, among others. In other words, there is, in every country but particularly in highly indebted countries, a broad range of institutional reforms that could be put in place to boost countries' growth potential.

Because so many of the threats we face to future fiscal solvency have such a large margin of uncertainty associated to them, with potentially catastrophic downsides, it would seem that, as a minimum, we need to move quickly to address those long-term challenges that are more clearly defined and of these none is clearer than population aging, the main parameters of which are circumscribed by demographic trends. The urgency of doing this has been heightened by the latest crisis which has significantly set back whatever plans governments may have been formulating in the period leading up to the onset of the crisis, including further increases in the retirement age, seen by experts as perhaps the most effective mechanism to deal with aging populations over the longer-term.

IV. It Can Be Done

A Nordic example

In this respect the experience of Finland and Sweden in the 1990s is highly instructive. Both countries faced a sharp deterioration of their public finances in the aftermath of serious banking crises. In Finland the budget deficit in 1993 rose to over 8 percent of GDP and in Sweden it rose to 11 percent of GDP, with debt levels rising rapidly in both countries, by some 44 percentage points in Finland (a quadrupling of debt levels within a four-year period!) and by 30 percentage points in Sweden. According to the IMF (2009, p. 30), both countries moved rapidly to restore sustainability through a combination of expenditure restraint and institutional reforms. While moving to formulate fiscal policies in a medium-term framework, both countries also made important changes to entitlement programs, tightening qualification rules, temporarily lifting inflation adjustments to certain benefits, changing the mechanism for the determination of the pensionable wage, and generally imposing a more austere system for the provision of various types of transfers to households (e.g. housing grants, certain types of social benefits). By the latter part of the decade the budgets had moved into surplus, debt levels and interest rates were on a downward trend and the economies had entered a phase of sustained recovery.

The experience of these two countries in the 1990s merits study not only because they succeeded in simultaneously reducing budget deficits and public debt while stimulating a broad-based economic recovery, but also because the authorities managed the political economy of painful reforms in very sensible ways, creating a broad social consensus for the reforms. For instance, the reform measures were comprehensive in scope, ensuring a fairly equitable distribution of the burdens of adjustment. They involved expenditure cuts (the impact of which tends to fall disproportionately on the less well-off) and tax increases, broadly balanced to ensure distributional fairness. In Sweden, in particular, there was an effort to ensure that women did not have to bear an unfair share of the burden, a particularly important consideration given that many of the measures involved cuts in social benefits and transfers.

Governments in both countries went out of their way to explain in detail the reasons for the measures, their content and how these were expected to address the underlying fiscal problem. There was an understanding in both countries that transparency is essential to build up government credibility. Consistent with this, there was no attempt to minimize or trivialize the real pain brought about by many of the measures, since it was seen that this would be counterproductive; as the impact of the measures kicked in, the public would have felt that they were cheated or lied to. Whenever possible governments presented reform measures—say involving retrenchment in benefits—not simply as cuts that were necessary because they were otherwise unaffordable (which run the risk that following economic recovery people would demand their restitution), but rather as structural improvements that would be beneficial from a longer-term perspective. In this respect, both countries were greatly helped by their accession to the EU on January 1, 1995 which contributed to boost investor confidence, but also allowed governments to present the reforms as part of the overall package of reforms necessary to ensure smooth EU entry.

The ministry of finance in Sweden allocated to a senior official the task of being available at all times to meet with financial sector representatives who wanted to gain a better understanding of the content and the direction of government policy. The authorities recognized the important role played by market participants in buttressing (or derailing) government efforts to deal with the crisis. In his public pronouncements about program implementation and in making forecasts about the evolution of the economy and various underlying aggregates (e.g., interest rates, unemployment) the minister of finance was unfailingly conservative, aiming at all times not to oversell the success of the program, but rather to emphasize that much remained to be done.

In the above paragraphs we have highlighted the experience of Finland and Sweden because it shows that a combination of well-designed policies and political will can make a critical difference in allowing countries to get back to a sustainable debt path. Perhaps the painful lessons of the 1990s and the difficult choices that the crisis forced upon their governments may partly explain the more cautious response adopted by both countries to the latest global financial crisis—the budget deficits in 2009-2010 did not get out of hand and public debt levels—particularly in Sweden—remained broadly stable and are projected to decline further over the medium-term. The Nordic countries have often been taken as examples of the compatibility between extensive safety nets and high levels of productivity and competitiveness. It is often not noticed that they are also fine examples of sound fiscal management.

References

- Ardagna Silvia, Francesco Caselli, and Timothy Lane. 2007. "Fiscal Discipline and the Cost of Public Debt Service: Some Estimates for OECD Countries," *The B.E. Journal of Macroeconomics*, De Gruyter, vol. 7(1), pages 1-35, August.
- Arze del Granado, Javier, David Coady, and Robert Gillingham. 2012. "The Unequal Benefits of Fuel Subsidies: A Review of Evidence for Developing Countries," *World Development*, Volume 40 (November), 2234–48.
- Auerbach, Alan, Jagadeesh Gokale, and Laurence Kotlikoff. 1991. "Generational Accounts: A Meaningful Alternative to Deficit Accounting." in: David Bradford (ed.), *Tax Policy and the Economy*, Vol. 5, MIT Press, Cambridge (Mass.) 1991, 55–110.
- Bhattacharyya, Sambit, and Roland Hodler. 2010. "Natural Resources, Democracy and Corruption." *European Economic Review* 54(4): 608-621.
- Buiter, W. 1985. "A Guide to Public Sector Debt and Deficits," *Economic Policy*, No. 1, November, p. 13-79.
- Coady, David, Robert Gillingham, Rolando Ossowski, John Piotrowski, Shamsuddin Tareq, and Justin Tyson. 2010. "Petroleum Product Subsidies: Costly, Inequitable, and Rising", IMF Staff Position Note, International Monetary Fund, Washington, DC.
- Eberstadt, Nicholas. 2005. "Aging in Low-Income Countries: Looking to 2025," *The Global Competitiveness Report 2005-2006*, Palgrave Macmillan.
- Ferguson, Niall. 2010. "Complexity and Collapse: Empires on the Edge of Chaos," *Foreign Affairs*, Volume 89, Number 2, 18-32.
- Frazier, Mark W. 2013. "Narrowing the Gap: Rural-Urban Inequality in China." *World Politics Review*, at: <http://www.worldpoliticsreview.com/articles/13241/narrowing-the-gap-rural-urban-inequality-in-china>.
- Friedman, Thomas L. 2010. "Superbroke Superpower?," *International Herald Tribune*, September 6, 2010.
- Heller, Peter S. 2004. "Confronting Long-Term Fiscal Challenges: Why it Matters for the Global Economy," *The Global Competitiveness Report 2004-2005*, Palgrave Macmillan.
- Henriksson, Jens. 2007. "Ten Lessons About Budget Consolidation," *Bruegel Essay and Lecture Series*, Brussels, Belgium.

- Homer-Dixon, Thomas. 2010. "Disaster at the Top of the World," *International Herald Tribune*, August 24, 2010.
- International Monetary Fund. 2006. *Global Financial Stability Report: Market Developments and Issues*, April, Washington, D.C.
- International Monetary Fund. 2009. "Fiscal Implications of the Global Economic and Financial Crisis," Occasional Paper 269, Washington, D.C.
- International Monetary Fund, 2009. "Note by the Staff of the International Monetary Fund", Group of Twenty, Meeting of the Deputies, January 31-February 1, London.
- International Monetary Fund. 2010. *World Economic Outlook: Recovery, Risk, and Rebalancing*, World Economic and Financial Surveys, October, Washington, D.C.
- International Monetary Fund. 2012. *Fiscal Monitor – Taking Stock: A Progress Report on Fiscal Adjustment*, World Economic and Financial Surveys, October, Washington, D.C.
- International Monetary Fund, "Energy Subsidy Reform: Lessons and Implications", January 28, 2013, Washington DC.
- International Monetary Fund. 2013. *Fiscal Monitor – Fiscal Adjustment in an Uncertain World*, World Economic and Financial Surveys, April, Washington, D.C.
- International Monetary Fund. 2013. *World Economic Outlook: Hopes, Realities, Risks*, World Economic and Financial Surveys, April, Washington, D.C.
- Kinda, Tidiane, Woo, Jaejoon and Marcos Poplawski-Ribeiro, 2013, "Economic Recovery from Recessions: The Role of Fiscal Policy, and Structural Reforms," forthcoming International Monetary Fund Working Paper, Washington, D.C.
- Kousky, Carolyn, Olga Rostapshova, Michael Toman and Richard Zeckhauser. 2009. "Responding to Threats of Climate Change Mega-Catastrophes," Working Paper, Kennedy School of Government, Harvard University.
- Kumar, Nonmohan S. and Teresa Ter-Minassian. 2007. *Promoting Fiscal Discipline*, International Monetary Fund, Washington, D.C.
- Lopez-Claros, Augusto and Sergei Alexashenko. 1998. *Fiscal Policy Issues During the Transition in Russia*, Occasional Paper 155, International Monetary Fund, Washington DC.
- Mandelbaum, Michael. 2010. *The Frugal Superpower: America's Global Leadership in a Cash-Strapped Era*. PublicAffairs. New York.

- Ostry, Jonathan D., Atish R. Ghosh, Jun I. Kim, Mahvash S. Qureshi. 2010. “Fiscal Space”, IMF Staff Position Note, SPN/10/11, September.
- Prasad, Eswar. 2014. *The Dollar Trap: How the U.S. Dollar Tightened Its Grip on Global Finance*. Princeton University Press. Princeton.
- Ramey, Valerie. 2011. “Can Government Purchases Stimulate the Economy?” *Journal of Economic Literature*, 49:3, 673–685.
- Shiller, Robert. 2009. “A failure to control the animal spirits”, *Financial Times*, March 9.
- Trichet, Jean-Claude. 2010. “Stimulate No More—It Is Now Time For All To Tighten,” *Financial Times*, 22 July.
- United Nations, 2009. *World Population Ageing*. New York.
- United States Treasury. 2010. The Federal Government’s Financial Health: A Citizen’s Guide to the 2009 Financial Report of the United States Government.
- United States Treasury. 2012. The Federal Government’s Financial Health: A Citizen’s Guide to the 2012 Financial Report of the United States Government.
- von Hagen, Jürgen, Ludger Schuknecht, and Guido Wolswijk. 2011. “Government bond risk premiums in the EU revisited: The impact of the financial crisis,” *European Journal of Political Economy*, 27(1), 36-43.
- Wyplosz, Charles. 2005. “Fiscal Policy: Institutions Versus Rules”, *National Institute Economic Review* No. 191, 70-84.