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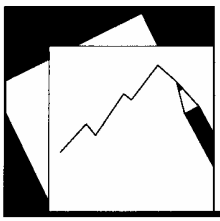

IMF Working Paper

Characterizing the Expenditure Uncertainties of Industrial Countries in the 21st Century

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Characterizing the Expenditure Uncertainties of Industrial Countries in the 21st Century [1]

Prepared by Peter S. Heller and David Hauner

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Abstract

A number of uncertainties about long-term expenditure commitments in industrial countries are examined: (i) the assumptions underlying the projections, (ii) the potential to further reduce non-age-related expenditures, (iii) the implicitly assumed absence of "shocks," and (iv) the potential for raising revenue. This paper concludes that (i) there is scope, but within narrow limits, to reduce non-age-related expenditures; (ii) fiscal policy frameworks tend to understate risks; and (iii) prevailing tax rates leave little room for increasing taxation in the countries facing the strongest aging pressures. In sum, governments will have to adopt a much more ambitious fiscal policy stance to cope with aging populations.

JEL Classification Numbers: H5, H6

Keywords: Public expenditures; fiscal sustainability; fiscal frameworks; aging

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I. INTRODUCTION

Virtually all industrial countries will confront significant aging of their populations over the next several decades. With few exceptions, pressures for rising spending on the elderly—for pensions, health care, and long-term care—are expected to strain government budgets that, in most cases, are *already* burdened with significant levels of government debt. The challenge of addressing these demographically induced pressures thus looms large on the policy agendas of most governments. Strategies for reconciling these budgetary pressures tend to be a blend of policies that encompass fiscal discipline with respect to spending programs that will be relatively unaffected by demographic trends, revenue increases, and reduced generosity in government commitments for aging-related programs. The first policies are particularly important, both because they directly allow increased fiscal space for higher spending on pensions and health care and, by facilitating a falling share in government debt ratios, indirectly create fiscal space by reducing outlays on debt service.

Yet much of the focus of analysis in the face of these demographic trends has been on the likely implications of aging populations for government spending on pensions, health care, education, and long-term care. Fiscal sustainability projections then assess how much *further* fiscal adjustment—in the form of up-front and sustained tax or other expenditure adjustments—may be needed in the face of these aging population-related pressures to hold current debt ratios constant. Increasingly, attention is also focused on the scope and potential shape of reforms to pension and health care systems to reduce the extent of government expenditure commitments over the long term. Four sets of policy issues typically remain relatively unexplored:

- The *uncertainty* associated with the *assumptions underlying the projections,* whether with respect to demographics (longevity and fertility), productivity growth, labor force participation rates, health care inflation, or interest rates;

- The *uncertainty* about the *potential* for governments *to reduce spending* further on *non-age*-related expenditure categories, consistent with a government's responsibilities for the provision of public goods;

- The appropriateness of the *implicit assumption of an absence of "shocks"* to the budget, or the economy more generally, in the face of the message of both independent "futures" scenarios exercises and past history, both of which suggest the likelihood of such shocks; and finally,

- The *extent* to which government revenue shares can be augmented in the face of aging-related pressures.

This paper provides some empirical illumination of these issues. Several broad conclusions will follow. First, there is scope, but within only narrow limits, for most governments to obtain further savings from some non-age-related expenditure categories. But two key factors suggest that this may be of limited comfort in creating fiscal space to finance age-related

expenditures. Specifically, efforts since the early 1990's to consolidate budgets (e.g., in the context of the Maastricht Treaty and the Stability and Growth Pact) have narrowed significantly the potential for further cutbacks in the most obvious expenditure categories. Moreover, and well recognized, burgeoning spending pressures in medical care that have arisen from *nondemographic* factors may swamp any such savings. Second, the underlying approach to setting the fiscal policy framework tends to understate the risks arising from the uncertainty of the policy environment facing governments. The potential cost of responding to these risks needs to be considered in assessing the scope for savings in non-age-related spending areas. Third, on the revenue side, prevailing tax rates seem to leave only little upward room in those countries facing the greatest age-related expenditure pressures. Together, these observations suggest that most governments will have to adopt both a more ambitious fiscal policy stance and introduce pension and health care policy reforms in order to cope with aging populations.

In what follows, Section II will expand further on the implications of recent fiscal sustainability assessments for the structure of needed fiscal policy adjustments. It will also illustrate the sensitivity of fiscal sustainability frameworks to variability in the underlying baseline assumptions. Section III will then examine how much scope there is in terms of non-age-related expenditures for further rationalization to accommodate aging-related expenditure pressures. It will also briefly examine the prospects for higher revenue shares. Section IV will offer some qualitative arguments as to the types of "shocks" which are typically excluded from fiscal sustainability assessments. Finally, Section V will offer some concluding observations on the challenges facing government policymakers in squaring the long-term fiscal policy circle.

II. Fiscal Sustainability Frameworks

In its recent report on *Public Finances in EMU, 2004*, the European Commission (EC) succinctly lays out the long-term fiscal position of the EU-15[2] member countries. Several measures of sustainability are provided in Tables 1.27 and 1.28 of that report, some of which are included in Table 1 below. Column 1 of Table 1 indicates the change in the tax ratio (or equivalently, primary balance ratio) that would be required, upfront and sustained through 2050, *relative to the 2003 budget position,* that would ensure a debt level in 2050 as resulting from a balanced budget position over the projection period. Explicit in this calculation is that in addition to projecting forward the underlying budget balance of 2003, the *only* additional expenditures that are changing are the increased expenditures on pensions, health care, education, and other age-related expenditures *arising from changes in the size of the elderly and youth populations*.[3] All non-age-related expenditure categories which are *not* a function

[2] The EU membership before the accession of ten Central and Eastern European countries in May 2004.

[3] In other words, changes in health expenditure reflect *only* the increase in the *size* of different demographic groups, and not any factors relating to demand or cost pressures in the health sector. Thus, policy reforms that

(continued…)

of the size of the elderly population as well as revenue are assumed to remain constant as a share of GDP for the whole projection period.

Table 1. European Commission: Fiscal Sustainability Assessment, 2003-2050
(in percent of GDP)

Country	Primary Adjustment Required w/Budget 2003 Scenario	Primary Adjustment Required w/ Stability and Growth Programme Scenario	Government Debt to GDP Ratios (2003)	Projected Evolution of Debt Levels Up to 2050					
				2003 Budget Scenario			Stability and Growth Programme Scenario		
				2010	2030	2050	2010	2030	2050
Belgium	-5.1	-0.3	102	67	-36	-114	75	12	-5
Denmark	-2.0	-0.6	43	6	-66	-132	25	-20	-35
Germany	4.4	2.2	64	74	157	337	62	87	176
Greece	2.3	1.9	102	72	52	181	75	42	151
Spain	-0.3	0.4	52	32	-21	-12	36	-2	37
France	3.6	0.7	61	72	142	288	56	52	72
Ireland	2.2	1.6	33	27	50	138	27	36	105
Italy	1.1	-0.7	106	92	83	108	87	29	-28
Luxemburg	-1.2	0.0	5	-4	-36	-48	-1	-9	1
Netherlands	2.6	2.0	54	54	89	186	49	68	140
Austria	0.2	0.1	66	55	26	18	54	24	16
Portugal	1.6	-0.8	60	61	72	128	48	5	-42
Finland	-1.1	0.2	-5	-53	-80	-89	-33	-30	6
Sweden	1.4	0.6	33	15	20	98	16	--	47
United Kingdom	2.8	2.2	39	45	90	178	43	72	139

Source: European Commission (2004), pp. 45-46

Column 2 of Table 1 provides a similar estimate, under the more optimistic assumption that governments achieve, for the period 2005-2007, their stated targets for their Stability and Convergence Programmes (SCP). Given that some further rationalization of government budgets was anticipated in the SCPs, the needed further fiscal adjustment is thus less in column 2. Column 3 indicates general government debt levels in 2003. Columns 4–6 (7–9) illustrate the projected evolution of public debt levels through 2050, using the 2003 budget (SCP) scenario exercise, in the absence of any further sustained tax or primary expenditure adjustment, and taking account of age-related expenditure pressures.[4]

This table encapsulates very clearly the fiscal policy challenges facing many of the EU-15 countries. The issues confronting most other industrial countries are analogous. First, a number of the EU-15 countries—Germany, Greece, France, Ireland, Netherlands, and the United Kingdom—confront the prospect of dramatically higher public debt levels by mid-

might reduce the magnitude of the government's obligations in relation to health care for the elderly might only capture one element of the factors that may explain spending on the elderly (and other groups as well).

[4] No endogeneity is assumed in these latter columns in terms of higher risk premia on government interest associated with rising public debt levels.

century as a consequence of aging populations under existing fiscal policy frameworks. The EC's fiscal sustainability analysis would suggest that preventing this outcome would require upfront and sustained primary balance adjustments of up to 4 percent of GDP in some cases (e.g., Germany) but generally within a range of 2–3 percent of GDP. Such adjustments would require either higher tax ratios or cutbacks in non-age-related expenditures (in the absence of reform of pension or health care policy frameworks). Implicit in the assumption of the fiscal sustainability framework is that fiscal adjustments that strengthen the fiscal balance can slow the growth or even reduce public debt levels relative to GDP, thus reducing interest payments by government, and freeing room for spending on age-related expenditures. For a country whose debt level is at 60 percent of GDP, eliminating debt can yield roughly 2–3 percent of GDP in freed up fiscal space.

Note that both the estimates of projected debt in the absence of fiscal adjustment and the presumed required fiscal adjustment rates *assume the absence of any other expenditure pressures—non-age-related health care spending pressures, the possibility of higher welfare costs, outlays related to geopolitical shocks, incidents of terrorism, climate change, etc.* Thus, squaring the fiscal circle requires that, in the absence of revenue increases and adjustments in policy frameworks related to benefits or eligibility of the elderly for health and pension benefits, all other expenditure categories must be reduced as a share of GDP by at least 2–4 percentage points *but possibly even more to the extent that other unanticipated nonage-related expenditures are taken into account.*

Also to be noted is the *deterministic* nature of the sustainability assessments and debt projections. On the aging front, what would be the consequence of greater or lesser longevity or fertility rates than currently assumed by government actuaries? Fifty years hence, errors in the assumed fertility rate can make a substantial difference in the size of the labor force, and the overall potential growth rate. Errors in the assumed prospects for longevity will be particularly relevant for estimates of the size of age-related pressures on government outlays. Assumptions on the real interest rate and the real growth rate would also influence the presumed change in debt ratios as well as the magnitude of required fiscal adjustment.

It is illuminating to examine the sensitivity of the EC projections on government debt and fiscal sustainability to the assumed underlying macroeconomic variables. Projecting the debt ratio for the EU-15 forward, based on the assumptions made by the Commission and in the latest SCPs of the individual countries, results in a median debt ratio of –26.5 percent.[5]

[5] The debt ratio *b* is projected as $b_t = \frac{1+i_t}{(1+g_t)(1+d_t)} b_{t-1} + p_t$, where *i* is the interest rate on government debt, *g* and *d* are the growth rates of real GDP and the GDP deflator, respectively, and *p* is the primary balance in percent of GDP. The 2003 debt ratios, the 2004 primary balances, and the 2004 and 2005 GDP growth rates are from European Commission (2004). The 2005–2050 primary balances are from the latest SCPs, with the value of the last available year held constant until 2050, as in European Commission (2004). Also as there, real GDP growth for 2006–2050 is from Economic Policy Committee (2001), and the GDP deflator is assumed to be 2 percent and the nominal interest rate is assumed to be 6 percent for all countries. However, given that we lack

(continued…)

Putting aside the plausibility of government debt becoming negative, as also projected by the Commission (2004) for some countries, one can observe the sensitivity of these projections (see Figure 1). Suppose, for instance that higher-than-projected age-related expenditures emerge gradually over time, building up to a deviation from the baseline of 1 percent of GDP by 2050. Given the uncertainties about age-related expenditures, a deviation from the original projections of this magnitude could be considered small.[6] All else equal, this deviation from the baseline results in a median debt ratio of almost 5 percent of GDP in 2050, not less than 31 percentage points *worse* than in the baseline!

Getting the real GDP growth rate or the interest rate wrong also results in major departures from baseline debt. A lower mean real GDP growth rate or higher mean interest rate of 0.5 percentage points over the projection period results in the debt ratio being 8 and 10 percentage points of GDP, respectively, *higher* than in the baseline.

Taking account of such uncertainties is certainly warranted, given how little confidence we can have in long-term macro forecasts. For example, with respect to long-term growth forecasts, the Philadelphia Federal Reserve Bank semi-annually polls professional forecasters for their 10-year real GDP and CPI projections for the U.S. economy. One would expect these forecasts to reflect some volatility on the short end, but to be ultimately dominated by a relatively stable perspective on long-term trends. However, as Figure 2 shows, forecasters, while being recently quite confident about their inflation forecast, seem to have a hard time making up their minds about trend growth. Even during the relatively "stable" period following a step increase during the New Economy hype, ten-year average forecasts have fluctuated between 3.2 and 3.5 percent. Now remember how much difference 0.3 percentage points in trend growth can make for debt projections.

Similarly, other factors loom large in terms of uncertainties on the potential growth rate. Besides uncertainties on the likely growth of the labor force (reflecting uncertainty both with respect to the likely labor force participation rate and fertility rates), productivity assumptions in the context of an aging population remain highly problematic. Similarly, assumptions about energy prices will potentially impact the potential real growth rate.

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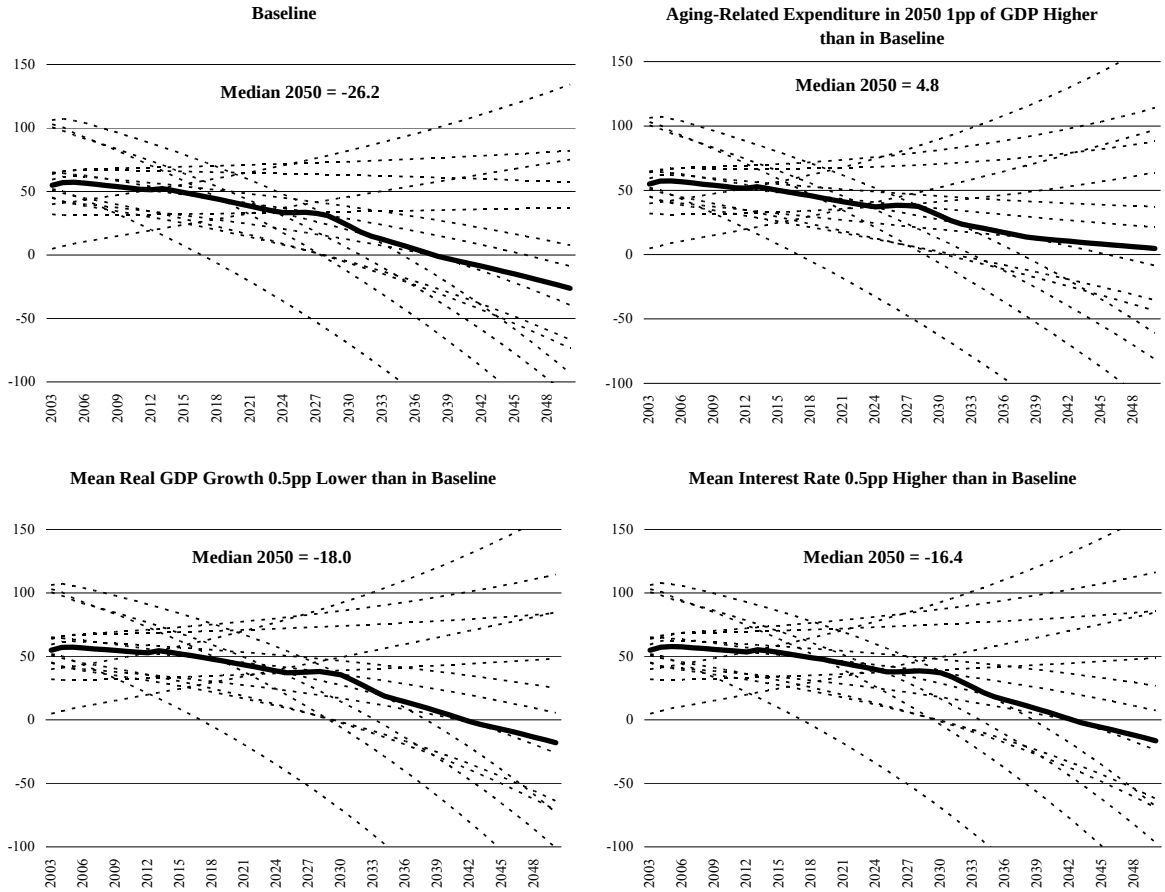
detail about some additional assumptions made in EC (2004), our projections here turn out somewhat differently than there.

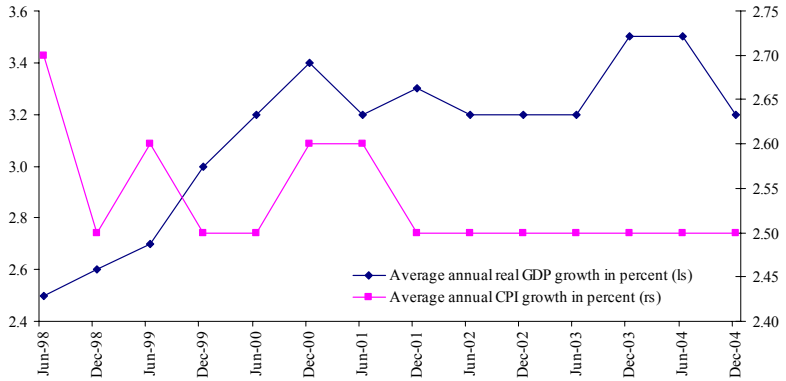
[6] Simply note the recent revision in the estimate of the cost of the U.S. Medicare Drug Benefit. The current budget projects costs of $345 billion for the period 2005-2010, whereas in late 2003, the bill was said to cost $400 billion for the period from 2006-2013. Even in January 2004, the cost estimate for the same period had risen to $534 billion. Estimates for the period 2006-2015 are now said to reach $720 billion. *New York Times*, Feb 9, 20005 "New White House Estimate Lifts Drug Benefit Cost to $720 Billion."

Figure 1. Debt Ratio Projections for EU-15



Source: Authors' calculations, based on Economic Policy Committee (2001), European Commission (2004).

Figure 2. Ten-Year Forecast for the U.S. Economy by a Panel of Professional Forecasters



Source: Federal Reserve Bank of Philadelphia.

In 2004, the assumptions of six respected institutions about crude oil prices per barrel varied between US$19.3 and US$27.7 for 2010 and US$15.1 and US$33.4 for 2020 at one point in time (Table 2). Briefly, this means that there is no way anyone can incorporate a sufficiently reliable assumption on the price of the world's most important commodity in a long-term economic model.

Table 2. Comparison of Long-Term Oil Price Assumptions
(in year-2000 dollars per barrel)

Source	2010	2020	2030
IEA	22	26	29
EIA	23.3	25.1	
EC	27.7	33.4	40.3
OPEC	19.3	19.3	
IEEJ	24.0	27.0	
CGES	20.5	15.1	

Source: International Energy Association (2004)

Furthermore, there still remains some uncertainty about the magnitude of demographic change and its repercussions for the fiscal balance in general, and expenditures in particular: In a study on the United Kingdom, for example, Sefton and Weale (2005) run numerous simulations based on different demographic assumptions. They find that the span between the lower and the upper quartiles of the results of their simulations on government expenditure reaches 2 percent of GDP in 2027 and 4 percent in 2044. Now note that in the above exercise on the sensitivity of debt projections for the United Kingdom, age-related expenditure 1 percent of GDP higher than projected in 2050 (emerging gradually over time) would entail a 2050 debt ratio 30 percent of GDP higher than in the baseline. But Sefton and Weale are talking about a span of 4 percent of GDP only between the two middle quartiles of their projections—let alone worst case scenarios!

Finally (in a still incomplete list), there is uncertainty about the impact of aging on interest rates. Theoretically, we might think that we know at least the direction—upwards, due to dissaving by retiring generations, rising government borrowing, and rising optimal capital/labor ratios as the work force declines. But empirically, we are less certain again. Savings rates do not necessarily decline with age in many industrial countries, particularly those with generous public old age pensions, such as France, Germany, and Italy. Global capital market factors—reflecting the different time sequencing of aging populations in Asia particularly, will influence the real interest rates in financial markets. And even if aging populations should really drive up interest rates through this multitude of channels, there is no way to know by how much.

In sum, in using the analytical sustainability framework as a basis for choosing the appropriate fiscal policy stance, it is important to assess the potential uncertainties associated with projections of the expenditure impact of aging populations; the size of the variance associated with the key underlying macroeconomic policy variables (growth, interest rate, and demographic variables); the prospects for other fiscal policy shocks; and the realism of the scope for securing further fiscal adjustments either from increased revenue or from non-age-related expenditure categories. The next section will deal with the last issue.

III. Uncertainties About Long-Term Expenditure Trends

Policy-makers have quite appropriately focused on the implications of aging populations for fiscal policy. The dense nature of social insurance commitments, particularly in the spheres of pensions, disabilities, and survivors benefits justifiably has fueled attention on the ramifications of an increasing share of the elderly dependent on a relatively smaller share of the population of working age, at current legislated retirement ages. The importance of state financing of medical care, combined with statistics indicating higher outlays on medical outlays for the over-65 age group, has also suggested the likelihood of rising expenditure shares on medical care with the aging of the population, even taking account of the possibility that increased longevity may be accompanied by longer periods of good health. Greater longevity also exposes citizens to the risks of long-term chronic care. Although there is far less formal insurance among governments for long-term care, governments are well aware of the various back-door routes, through welfare or medical insurance, through which governments may be exposed to the risk of absorbing some of these costs. Conversely, population aging also will result in smaller cohorts of the school-age population, providing scope for possible savings on outlays of education.

Thus, both the EC and the OECD have worked closely with governments to estimate the expected fiscal burdens associated with aging populations. As noted earlier, these underlay the fiscal sustainability assessments of the EC (2004). The projections in OECD (2001), in particular, have been referenced in numerous papers. They suggest a net total increase of age-related expenditures (comprising old-age pensions, early retirement programs, health, and education) from 2000 up to the peak year (mostly 2050) of an average 5.5 percent of GDP for 17 industrial countries, with the higher numbers close to 10 percent of GDP. Many writers, including Heller (2003), CBO (2001), Lee (2000) have also emphasized the uncertainty associated with projections of spending on pensions, medical care, and long-term care, even when the focus is strictly on the implications of demographic trends.

But the purpose of this section is to redirect the focus toward what might be termed non-age-related expenditures and to determine the prospects for creating more fiscal space for age-related expenditures by rationalizing/reducing the share of nonage-related outlays in total government expenditure and relative to total output. Conventionally, age-related spending, in the common functional classification, relates to spending on the education, health, and social protection sectors, and the rest of a government's outlays, mainly general public services, interest, defense, and economic affairs, housing and community amenities, recreation, culture

and religion, are treated as nonage-related. However, to complicate things further, *there are also non-age-related drivers at work in age-related expenditures*. We will look at this issue first, because it qualifies whatever conclusions can be drawn about non-age-related expenditures.

One final caveat is needed. The analysis in this paper is ultimately severely hampered by the continuing weak comparability across countries in the database on functional expenditures at the *general* government level before 1990. It is possible to obtain series on such expenditures at the central government level, but differences across countries in the relative balance of expenditure functions at the central as opposed to state and local level make *cross*-country comparisons of functional or economic expenditure shares more difficult.

A. Non-Age Factors Influencing Age-Related Expenditures

The dichotomy of age- and non-age-related expenditures disregards that age-related spending can be very much driven by factors which are *independent* of shifts in the age composition of the population. The most obvious of course relates to the pressures for rising outlays in the medical sector, which many argue to be largely technology-driven. But one could also mention the impact of unemployment rates in social protection, or the factors that might be inducing higher disability rates. Thus, in judging the impact of an aging population on the key social sectors, it becomes critical to provide estimates of the expenditure pressures that independently arise from demographic factors (see Table 3), recognizing that there may be a synergistic effect from the fact of a higher share of the elderly in terms of these spending pressures.[7]

[7] Thus, technology development which may, on balance, prove cost-enhancing, are likely to be directed toward disease and infirmity issues of the elderly, such that higher costs of treatment for health problems related to the elderly may receive a higher weight as a consequence of the larger number of elderly who will be demanding such treatments.

Table 3. Clarifying Concepts of Aging-Related Expenditure Pressures

Aging-Related Functional Expenditure Categories	Non-Aging-Related Factors in Age-Related Functional Expenditure Categories	Non-Aging-Related Functional Expenditure Categories
• Health • Social protection • Education	• Technological progress and price inflation in health care • Unemployment rates • Disability rates	• General public services • Interest • Defense • Economic Affairs • Environmental Protection • Housing and community affairs • Recreation, culture, and religion

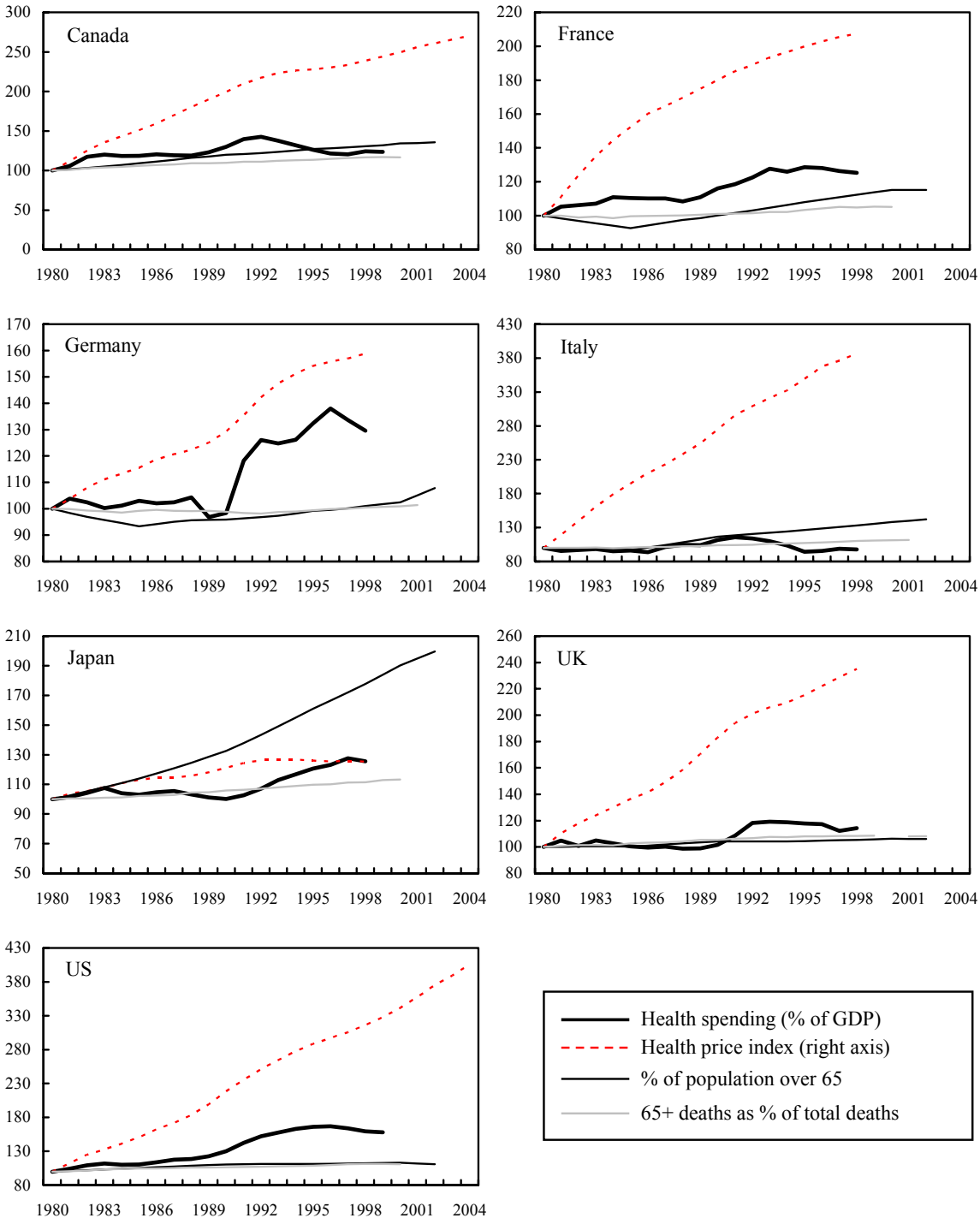
Source: Authors.

Figure 3 illustrates that health care inflation has so far been at least as much of a driver of public health spending as aging. Most impressively, this can be seen for the United States, with its largely mixed public-private health care system. But the same factors underlying rising health care costs and technology-driven demand pressures seem to be operative in most other countries as well. Only in Japan does the aging of the population seem to "outperform" the health price index. In Table 4, a simple equation seeking to explain the public health expenditure of general government suggests the powerful independent force of the health price index for the G-7 countries. While aging is clearly a driver in the countries most affected by it, health care inflation is a driver in all countries except Japan (little health price inflation) and Italy (little increase in government health expenditure).[8]

Thus, it is not surprising that the Aging Working Group of the EC and OECD, in the context of their new projections during 2005, are considering how to take account of non-aging related medical cost pressures. In the United States, such a concern emerges forcefully from a report of the Congressional Budget Office (2003) on the Long-Term Budget Outlook. The substantial cost pressures over the next several decades from Medicare and Medicaid largely arise far less from the aging of the population than from the assumed medical cost inflation factor.

[8] The regression also included the share of deaths for persons over age 65, which is often cited as a potential further driver of health expenditure. The variable, however, did not turn out as significant for any of the countries.

Figure 3. G-7—Drivers of General Government Health Expenditure
(Indexed, 1980=100)



Sources: WHO, OECD, and authors' calculations.

Table 4. Drivers of Public Health Expenditure in the G-7 Countries, 1980–1999

Country	R-Square	Share of Population Aged 65+		Share of Deaths of Persons 65+		Health Price Index	
		Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value
Canada	0.96	-3.03	0.0	-0.04	0.6	0.07	0.0
France	0.90	0.35	0.1	-0.09	0.5	0.01	0.0
Germany	0.88	0.89	0.0	-0.19	0.4	0.03	0.0
Italy	0.60	0.84	0.0	-0.59	0.0	0.00	0.5
Japan	0.92	0.62	0.0	-0.31	0.0	-0.02	0.0
UK	0.68	-1.41	0.1	-0.04	0.9	0.02	0.1
US	0.96	0.07	0.8	-0.28	0.0	0.02	0.0

Sources: OECD, WHO, and authors' calculations. Note: The share of general government health spending in GDP was regressed on the three explanatory variables and a constant. Shaded values are significant at least at the 10 percent level and have the expected sign.

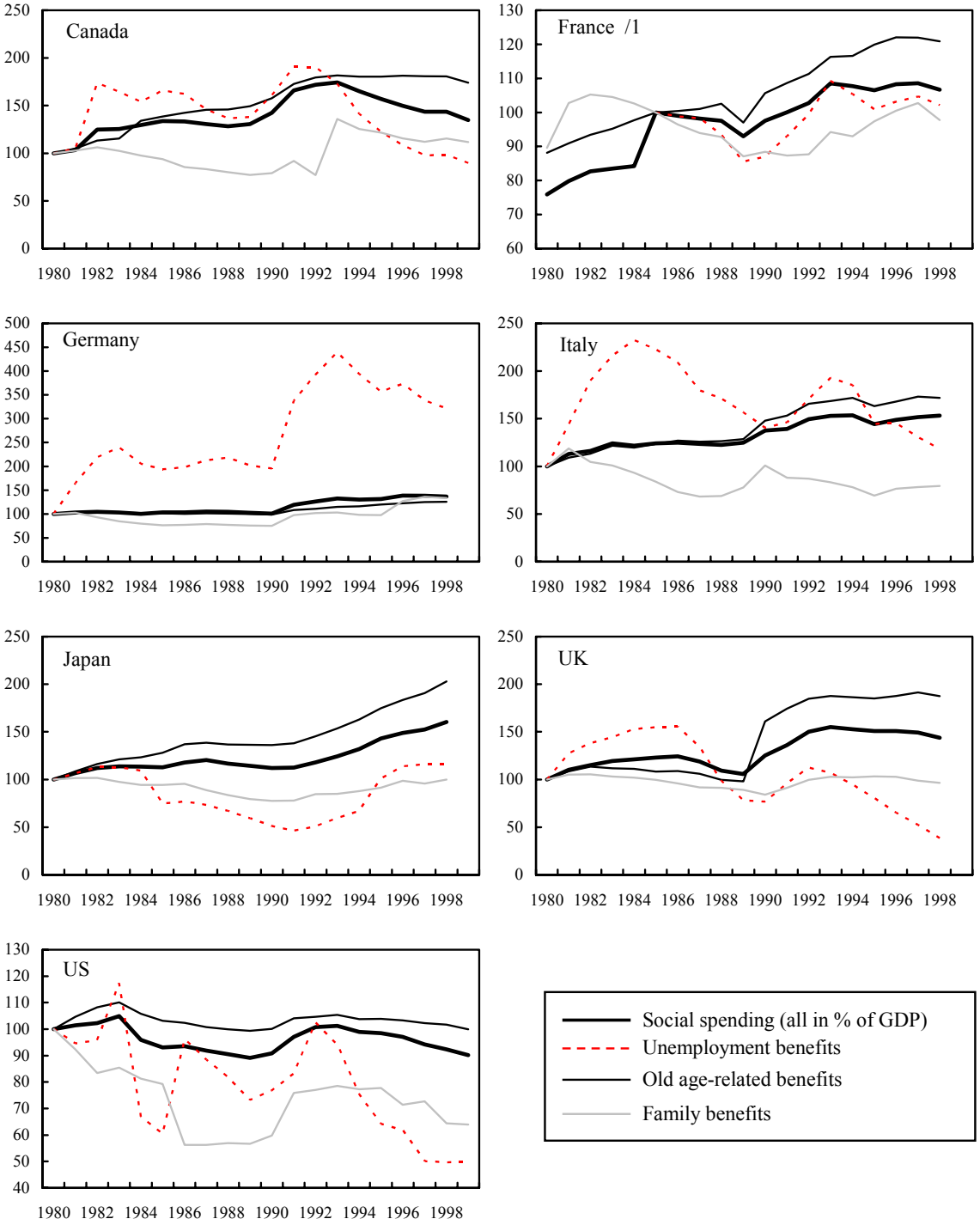
But this phenomenon is not limited strictly to the medical sector. Other areas of social protection expenditure (which, in the functional expenditure classification, is used as a surrogate for some age-related expenditure) are also not exclusively driven by aging. As Figure 4 shows, unemployment benefits (including labor-market programs) in the G-7 countries have seen the most marked changes of the three major components of social spending. This reflects less cyclicality and more changes in programs and unemployment rates. While unemployment benefits are much smaller than old-age-related spending, they are bigger than family benefits in most countries. And their relationship with long-term structural change in the economy makes them a significant driver of overall social spending that could go both ways: It could either alleviate aging-related pressures if unemployment declines due to a shrinking work force and structural labor market reforms. Or it could create additional pressures if technological change should put more people out of work.

Moreover, and as noted above, the problems of a larger share of the elderly in the population may create independent demands for government outlays which are not presently implied by existing social insurance legislation. This would give rise to expenditures that are not captured under current exercises that take account of *existing* government commitments with respect to the elderly. The costs of long-term care or the problems of the elderly indigent may force increases in welfare outlays, either as part of a coherent policy reform or on a discretionary basis.

B. Non-Age-Related Expenditures

Non-age-related expenditures also seem to receive too little attention. This is surprising. Even if all education, health, and social protection spending is generously treated as age-related, what is left still amounts to about 40 percent of total central government expenditure and about 30 percent of total general government expenditure in the median OECD member country.

Figure 4. G7—Drivers of General Government Social Protection Expenditure



Sources: OECD, and authors' calculations.

1/ France indexed to 1985=100 due to shorter unemployment benefits series.

Most studies simply assume that non-age-related expenditure will grow with GDP, thus holding their share in GDP constant, but this assumption is far from obvious. In fact, the EC (2004, p. 177) found that for the growth in EU countries' expenditures by function, GDP growth was a significant explanatory variable only for education and health. Tanzi and Schuknecht (2000, p. 23) note that most of the increase in public spending in recent decades was not due to the provision of government services, but cash transfers. "Most of this increase resulted from explicit policy decisions […]. In other words, there was nothing automatic or inevitable about it that could not have been prevented by determined governments." Picking up this point, Hauner (2005) asks how total future expenditure would turn out under alternative assumptions on long-term non-age-related expenditure growth and finds that they lead to vastly different conclusions about fiscal sustainability. He argues that the belt-tightening required to maintain fiscal sustainability under aging-related pressures could be less painful than commonly thought (though this analysis does not factor in the pressures of nonage-related factors influencing age-related expenditures).

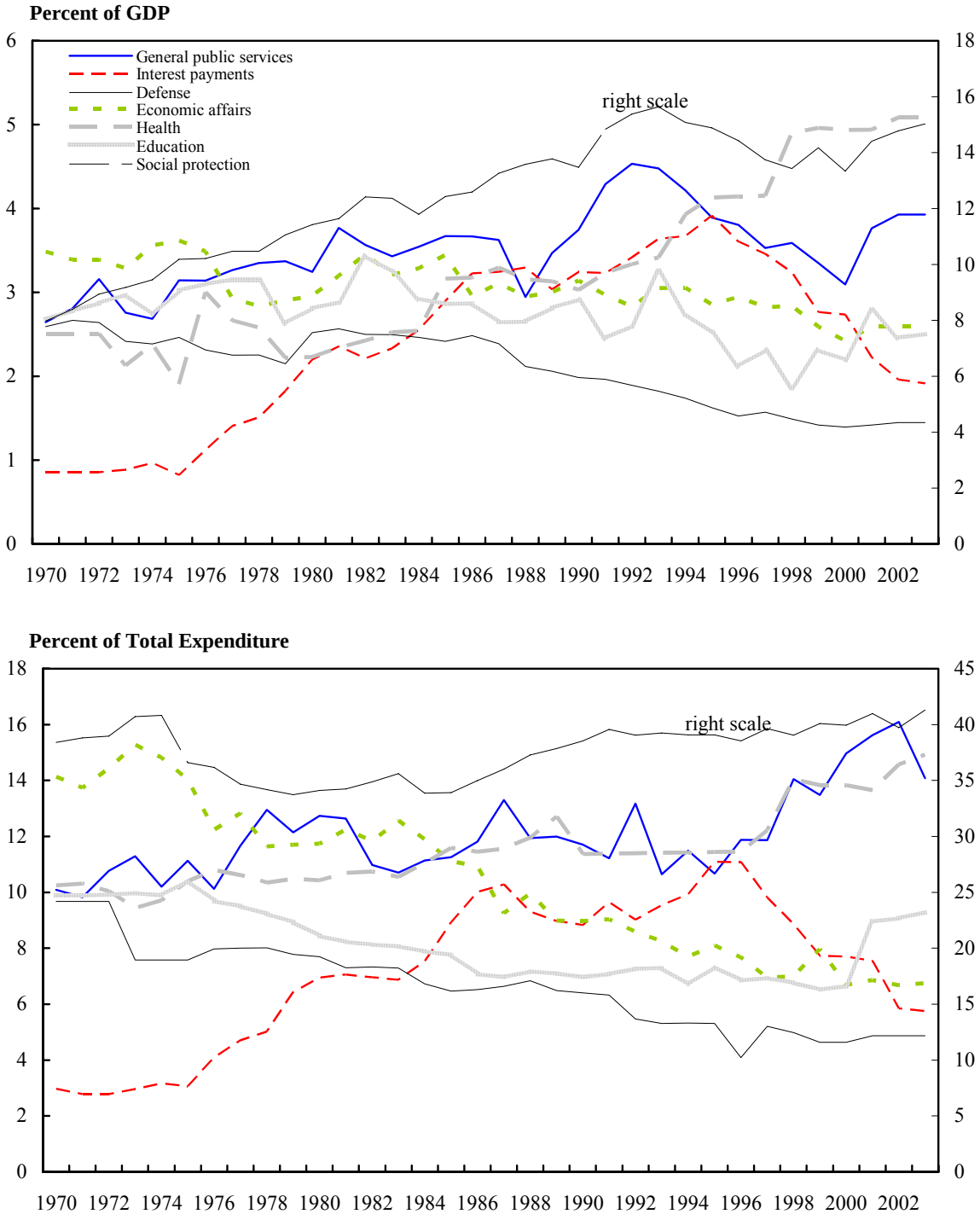
What does the data tell us about long-term expenditure trends? Figure 5 provides data on the medians[9] of the major functional spending categories of seventeen industrial countries, both relative to GDP and total expenditure. Several conclusions can be drawn. Social protection, after its rapid increase during the 1970's and 1980's, has stabilized during the 1990's. Health, however, has continued a strong upward trend, only slowed somewhat at the end of the last decade. Education, the last of the age-related categories, has been declining slowly since the 1980's. On the non-age-related side, interest payments have reversed their steep increase in the mid-1990's to an equally steep decline, reflecting both the decline in real interest rates and efforts to restrain the growth of government debt ratios in GDP. Similarly, an upward trend in general public services was markedly reversed at the beginning of the 1990's. Less markedly, but clearly visible, defense and economic affairs have been trending downward over most of the past 30 years. It is worth noting that none of these spending categories has stayed constant relative to GDP for longer periods;[10] education has been relatively the most stable. The shares of the different expenditure categories in total expenditure largely reflect the trends in the GDP ratios.[11]

[9] We use medians instead of means for aggregation to dampen the effect of outliers. The expenditure categories shown do not add up to the total due to the exclusion of smaller expenditure categories. For long-term trends, we have to look at central government data, as general government series are too short. This could introduce errors to the extent that expenditures could have been shifted between government levels.

[10] Switzerland is an interesting exception as most central government expenditure categories have been fairly stable relative to GDP for the past 30 years.

[11] The marked increase in general public services in the 1990's is due to decentralization reforms in some countries that implied a significant increase in transfers to other government levels included in this category.

Figure 5. Central Government Expenditure by Function in 17 OECD Countries, 1970-2003 1/



Sources: *IMF Government Finance Statistics* and authors' calculations.

1/ Japan is not included as the series are too short.

Charting the median changes in the expenditure categories by decade (Figure 6) confirms that there is little evidence that nominal GDP would necessarily be the main driver of expenditure. All expenditure categories except education show large changes in their median GDP ratios over the three last decades—in either direction. In the seventies and eighties, rapid growth of the state in the median OECD member country was driven nearly exclusively by interest payments and social protection. Since 1990, the size of the state has remained virtually unchanged, as growth in health and social protection has been offset by cuts in interest payments, defense, and economic affairs.

The changes in expenditure shares vividly demonstrate the restructuring of budgets over the past decades. Broadly speaking, over thirty years, it was defense and economic affairs that were to give and it was social protection that was to take. Interest, while also a "taker" in the 70's and 80's, became a "giver" in the 90's, compensating for a slowdown in the cuts in defense and a large increase in health in the last decade.

In real terms and real per capita terms,[12] only general public services, education, health, and social protection have grown since 1990 (Figure 6), while other expenditure has virtually stagnated. The increase in general public services, as mentioned before, is partly due to decentralization reforms. Education, health, and social protection have grown at a real rate of about 3–4 percent per year, translating into real per capita growth of about 2.5–3.5 percent. The other expenditure categories have grown only at a real rate of about 0–1 percent per year, translating into real per capita growth per year of 0.5 percent in defense, but even negative for economic affairs.

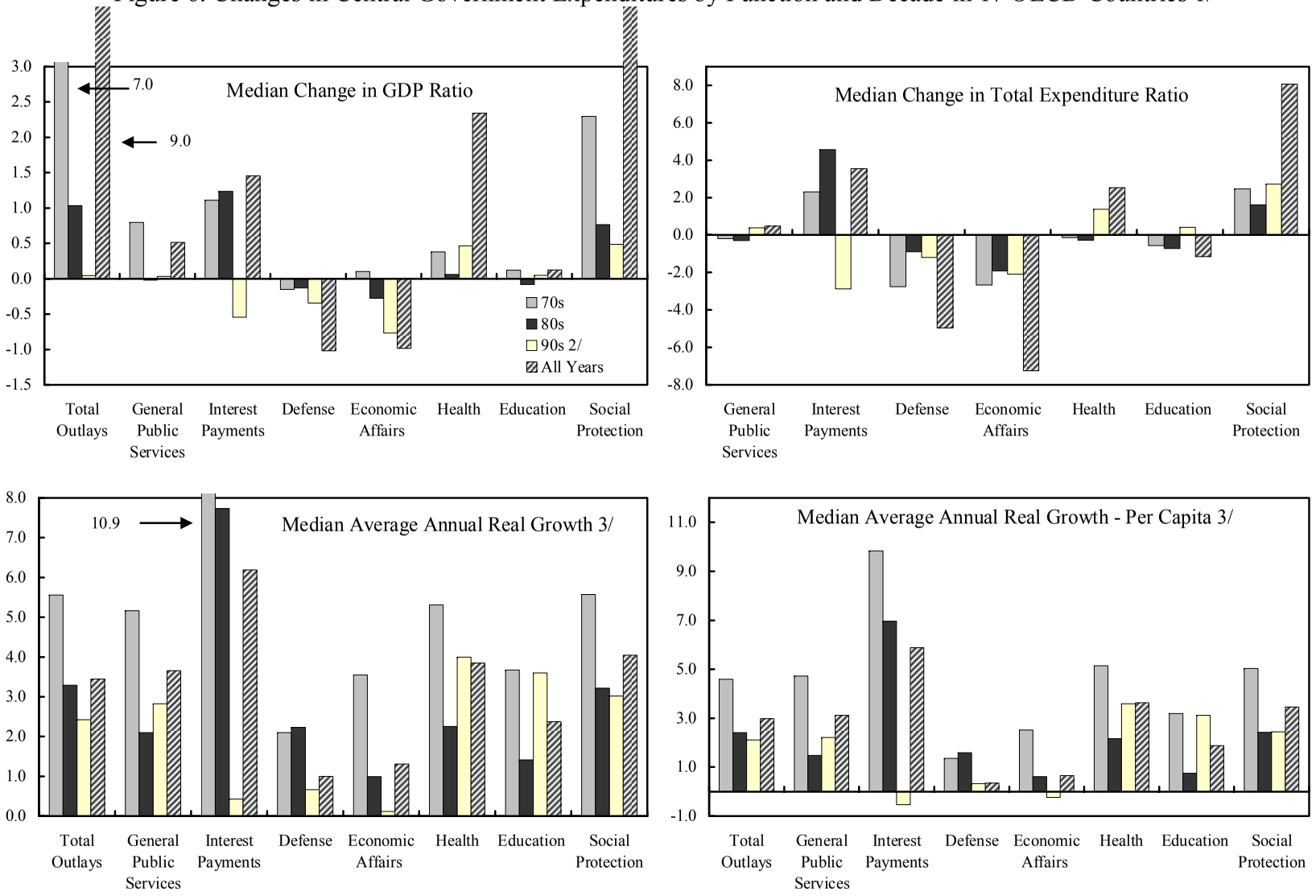
Also from the perspective of the economic classification of expenditures (Figure 7), the stagnation in the size of the median government since 1990 was principally attributable to a declining interest bill. However, cuts in subsidies, gross fixed capital formation, wages, and social benefits (excluding transfers, which explain the drop despite the observed increase in social protection) also contributed to combined savings of about 2 percent of GDP. Remarkably, at the median, all economic expenditure categories declined relative to the growth of social benefits in both the 80's and 90's (except for interest outlays in the 1980's).

Moving forward, what do past expenditure trends suggest for the ability of governments to make room for age-related spending hikes by reducing non-age-related spending? Two optimistic and two pessimistic arguments come to mind.

Optimistic Argument 1: There seems to be some scope for more expenditure reductions. Ultimately, however, the extent of possible cuts will depend on what is acceptable to the

[12] Removing general price increases, as done here due to the lack of sufficient input price data, lets changes in relative prices show up in the real changes. Changes in relative prices are, however, likely to be much smaller than general price increases. (Levitt and Joyce, 1987, p. 21)

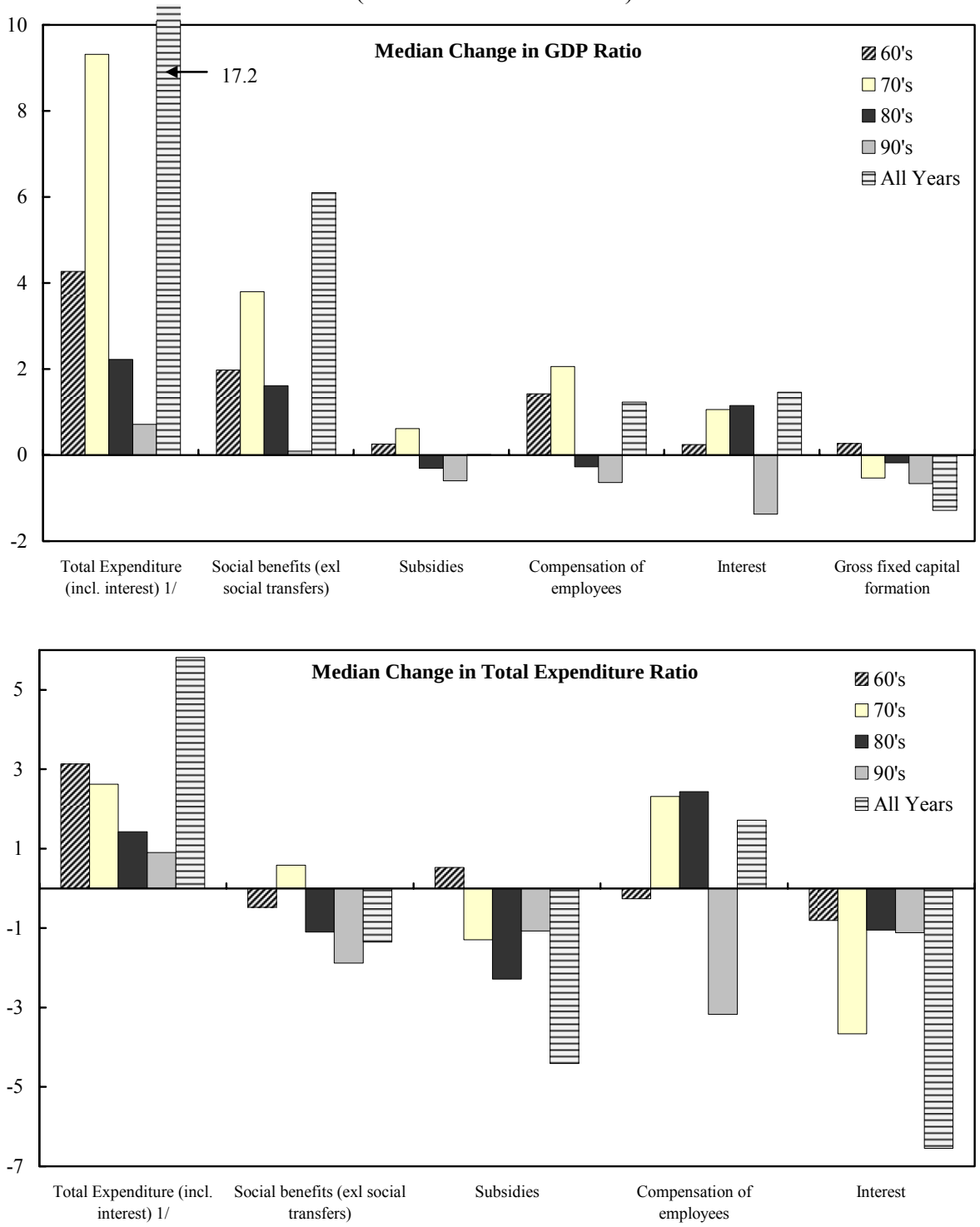
Figure 6. Changes in Central Government Expenditures by Function and Decade in 17 OECD Countries 1/



Sources: *IMF Government Finance Statistics* and authors' calculations

1/ Japan excluded as series are too short. 2/ Including available years after 1999. 3/ Price-adjusted with the GDP deflator.

Figure 7. Changes in General Government Expenditure by Decade in 18 OECD Countries (Economic Classification)



Sources: ECB and authors' calcuations.
1/ Components do not add up to total expenditure.

electorate. Two main questions emerge in the analysis of what might be acceptable in a given country.

First, what has proven acceptable in other countries? Table 5 shows the general government expenditure-to-GDP ratios and the differences to the 15-country median; the shaded areas highlight "excess" spending relative to the median. They thus provide a snapshot picture of "where the money is." The functional classification does not clarify what spending categories are discretionary or nondiscretionary, but clearly if one is focused on where there is scope, among nonage-related spending, for significant reductions, only interest outlays can be readily assumed as a spending category that can be reduced to zero or even negative, through policies that reduce or eliminate public debt or build up surpluses. For other nonage-related spending (i.e., excluding education, health, and social protection categories), the prospects for reducing spending levels further reflects complex issues related to the role and responsibilities of governments, taking account of both distributional, allocational, national security, and global responsibilities of a country. [13]

While classification issues might be behind some of the country-specific peculiarities, some functional expenditure categories seem to stand out as high in some countries, such as economic affairs in Austria or environmental protection in Japan. Adding up the shaded areas yields potential savings of 5 percent of GDP and more in most Continental European countries (mainly in social protection), but far less for Japan and the Anglo-Saxon countries except the United States. This comparison is relevant in making an argument about the level of expenditures, *including* age-related expenditures.

If one would, however, only look at *non*-age-related expenditures, potential savings come down to a maximum of 3 percent of GDP in Sweden and the US, but *close to nil* in many other countries. Little opportunities would appear likely for spending cutbacks in Australia, Canada, Germany, and Japan. However, the aggregation is a bit deceiving since some countries, such as Japan, benefit from low defense spending. In the area of defense (and excluding the one global superpower), there is at most 0.5–1.0 percent of GDP of savings which might be realized in a few countries in terms of potential cutbacks (i.e., in France, Sweden, and the UK). Some scope also exists for savings on general public services (again typically on the order of 0.5–1.0 percent of GDP—in France, Finland, Denmark, Austria, Belgium, and Sweden), and economic affairs (on the order of about 0.5–0.8 percent of GDP).

The economic classification provides further hints to potential savings: For example, subsidies in Austria, Denmark, and Sweden are still at 1 percent of GDP and more above the median. The government wage bill varies considerably. Gross fixed capital formation can

[13] Also worth noting is that the data presented relates to *general government*. Typically, central governments may have influence (through transfers) over subfederal spending levels, but institutionally, subfederal governments are not bound by central government decisions in this regard and can choose to opt for own-financed spending.

Table 5a. General Government Expenditure (2003, in percent of GDP)

	Australia 1/	Austria	Belgium	Canada 2/	Denmark	Finland	France 3/	Germany	Italy	Japan 3/	Norway 3/	Spain 3/	Sweden 2/	UK 1/	US
Functional classification															
Total expenditure	35.7	51.2	51.4	40.2	56.1	51.2	53.4	48.7	48.5	34.3	47.5	39.9	57.1	39.7	36.4
General public services	2.2	4.2	4.0	2.0	4.8	4.1	4.0	3.1	3.6	...	3.5	2.5	5.6	2.2	2.2
Interest	2.0	3.3	5.6	3.9	3.3	2.0	3.2	3.1	5.3	2.6	1.9	2.8	3.2	2.0	2.7
Defense	1.7	0.9	1.2	1.1	1.6	1.6	2.4	1.2	1.3	1.0	2.0	1.2	2.2	2.5	4.0
Public order and safety	1.7	1.4	1.7	1.9	1.0	1.5	1.0	1.6	2.0	1.4	1.1	2.1	1.4	2.1	2.1
Economic affairs	4.4	5.2	4.9	3.6	3.7	5.1	4.8	3.9	3.8	4.5	4.8	4.5	4.5	2.4	3.7
Environment Protection	0.5	0.4	0.7	0.6	...	0.3	1.2	0.6	0.8	1.6	0.6	1.0	0.3	0.6	...
Housing and community amenities	0.8	0.8	0.3	0.8	0.9	0.4	1.0	1.2	0.7	0.8	0.4	1.1	1.0	0.5	0.7
Health	6.1	6.6	7.1	7.4	5.7	6.6	8.4	6.5	6.5	6.7	7.8	5.4	6.8	6.4	7.2
Recreation, culture and religion	0.9	1.0	1.2	1.0	1.7	1.2	0.8	0.7	0.9	0.2	1.1	1.4	1.1	0.5	0.3
Education	5.3	5.9	6.3	5.6	8.4	6.7	6.0	4.1	5.0	4.1	6.2	4.4	7.3	5.0	6.2
Social protection	9.9	21.3	18.2	12.3	25.1	21.8	20.6	22.7	18.4	11.7	17.9	13.5	23.8	15.7	7.2
Economic classification 4/															
Social benefits (excl. social transfers)	9.1	19.0	16.7	10.7	18.2	17.0	18.5	19.7	17.2	11.3	15.4	12.3	19.1	13.6	12.2
Subsidies	1.1	3.0	1.7	1.5	2.2	1.3	1.2	1.4	1.1	0.6	2.6	1.1	1.5	0.7	0.4
Compensation of employees	...	9.6	11.8	11.2	17.7	13.8	13.9	7.9	11.0	...	14.7	10.3	16.4	8.2	9.7
Interest	2.1	3.3	5.6	6.7	2.8	2.0	3.1	3.1	5.4	3.0	1.8	2.5	2.4	2.0	2.9
Gross fixed capital formation	2.5	1.2	1.6	2.4	1.6	3.0	3.2	1.5	2.6	5.4	2.8	3.5	3.1	1.5	2.6

Table 5b. General Government Expenditure—Difference to 15-Country Median (2003, in percent of GDP)

	Australia 1/	Austria	Belgium	Canada 2/	Denmark	Finland	France 3/	Germany	Italy	Japan 3/	Norway 3/	Spain 3/	Sweden 2/	UK 1/	US
Functional Classification															
Total expenditure	-12.3	3.2	3.4	-7.8	8.1	3.2	5.4	0.6	0.5	-13.7	-0.5	-8.1	9.1	-8.3	-11.7
General public services	-1.3	0.7	0.5	-1.5	1.2	0.6	0.5	-0.4	0.0	...	0.0	-1.0	2.1	-1.3	-1.4
Interest	-0.9	0.3	2.7	0.9	0.3	-0.9	0.2	0.1	2.4	-0.3	-1.1	-0.1	0.2	-1.0	-0.3
Defense	0.2	-0.7	-0.4	-0.5	0.0	0.0	0.9	-0.4	-0.3	-0.6	0.5	-0.3	0.6	0.9	2.4
Public order and safety	0.1	-0.2	0.1	0.3	-0.6	-0.1	-0.6	0.0	0.4	-0.2	-0.5	0.5	-0.2	0.5	0.5
Economic affairs	0.0	0.8	0.5	-0.9	-0.8	0.6	0.3	-0.6	-0.6	0.0	0.4	0.0	0.0	-2.1	-0.8
Environment Protection	-0.1	-0.2	0.1	0.0	...	-0.3	0.6	0.0	0.2	1.0	0.0	0.4	-0.3	0.0	...
Housing and community amenities	0.0	0.0	-0.5	0.0	0.1	-0.4	0.2	0.3	-0.1	0.0	-0.4	0.3	0.2	-0.3	-0.1
Health	-0.5	0.0	0.4	0.7	-0.9	-0.1	1.7	-0.2	-0.2	0.0	1.2	-1.3	0.1	-0.3	0.6
Recreation, culture and religion	-0.1	0.1	0.2	0.0	0.7	0.3	-0.2	-0.3	-0.1	-0.8	0.1	0.4	0.1	-0.5	-0.7
Education	-0.6	0.0	0.5	-0.2	2.6	0.8	0.1	-1.8	-0.8	-1.8	0.3	-1.5	1.4	-0.9	0.4
Social protection	-8.3	3.0	0.0	-5.9	6.8	3.5	2.4	4.5	0.2	-6.6	-0.3	-4.7	5.5	-2.5	-11.0
Memorandum items:															
Potential savings from lowering "excess" spending to 15-country median	0.3	4.6	2.3	1.0	11.4	5.8	6.7	4.9	0.9	1.0	2.5	1.6	10.1	1.4	3.8
of which: non-age-related categories	0.0	1.5	1.4	0.3	2.0	1.4	2.5	0.3	0.7	0.0	1.0	1.6	3.0	1.4	2.9
Economic classification 4/															
Social benefits (excl. social transfers)	-5.4	4.4	2.2	-3.8	3.6	2.5	4.0	5.2	2.7	-3.2	0.9	-2.3	4.5	-0.9	-2.3
Subsidies	-0.2	1.8	0.4	0.2	1.0	0.1	-0.1	0.1	-0.1	-0.6	1.4	-0.2	0.3	-0.6	-0.8
Compensation of employees	...	-1.1	1.2	0.5	7.1	3.1	3.3	-2.8	0.3	...	4.0	-0.3	5.7	-2.5	-1.0
Interest	-0.7	0.5	2.8	3.8	-0.1	-0.8	0.2	0.3	2.5	0.1	-1.0	-0.3	-0.5	-0.8	0.0
Gross fixed capital formation	-0.1	-1.4	-1.0	-0.2	-0.9	0.4	0.6	-1.1	0.1	2.8	0.2	0.9	0.5	-1.1	0.0

Sources: *IMF Government Finance Statistics,* ECB, and authors' calculations.

1/ 2000 (economic classification)
2/ 2001 (only functional classification, except Canada)
3/ 2002 (functional classification)
4/ Components do not add up to total.

also be cutback potentially in a few countries (Japan still being above the median by 2.8 percent of GDP, and Spain being above the median by 0.9 percent of GDP). But the preoccupation of many governments with the need for improving infrastructure suggests, if anything, that for most, there is still a gap between desirable and current levels of infrastructural spending.

Second, what was acceptable in the past? Table 6a compares a country's sectoral expenditure-to-GDP ratios, at the *central government* level in 2003, to its 1970–2003 minimum. Shaded entries suggest where governments could choose to cut in non-age-related categories.[14] It thus answers the question of whether, within the historical bounds of a country's own perspective on a sector, there is room to retrench to an historically earlier spending regime. The sum of spending on nonage-related functional expenditure categories by central governments, as shown in Table 6a, suggests that there might be scope for cutbacks in a number of countries, with orders of magnitude of 2–5 percent of GDP for many countries. From a functional perspective, the largest bounty is again in general public services (excluding interest) and economic affairs, where the median difference between 2003 and the 1970–2003 minimum was 1.5 percent and 0.4 percent of GDP, respectively.[15]

A number of countries seem to have already hit the historic bottom in some of the expenditure categories—mostly and unsurprisingly—in defense, but also in public order and safety. Again adding up the shaded areas yields potential savings of up to about 3 percent of GDP, although the numbers for many countries are much lower, and the median comes out at 3.2 percent of GDP. To cross-reference general government data, for which a long-term functional classification is not available, Table 6a also shows the economic classification for general government. While less informative than the functional view, it does show that most countries have already trimmed subsidies (except Austria) and gross fixed capital formation (except Korea and Spain) to (close to) a historic minimum.

Optimistic Argument 2: Rising GDP could help countries to "grow out of the problem" if non-age-related expenditure growth can be kept around the rates of the 1990's. As usual in the debate, the arguments made above on the feasibility of expenditure cuts were based on GDP ratios. However, as discussed before, GDP ratios have historically not been very reliable guideposts for any of the functional expenditure categories except education.

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[14] Shaded areas show non-age-related expenditures except interest (non-discretionary) whose GDP ratio in 2003 was higher than the historic minimum. In a time-bound perspective, it does not make sense to look at the age-related categories, as they will invariably go up in net terms. Japan had to be omitted as the series were too short.

[15] The increase in general public services could be misleading indicator to the extent that it derives from shifting spending from the central to lower government levels, which would increase intergovernmental transfers included in this category. However, double-checking with the general government public sector wage bill in the same table suggests that this seems only to be a relevant issue in Belgium and Canada.

Table 6a. Difference Expenditure to 1970–2003 Minimum (in percent of GDP) 1/

	Australia 2/	Austria 3/	Belgium 3/ 4/	Canada	Denmark	Finland 3/	France 3/	Germany	Italy 2/	Korea 3/	New Zealand 5/	Norway	Spain 3/	Sweden 3/	Switzerland 3/	U. Kingdom 3/	United States 3/	Median
Central Government by Functional Classification																		
Total outlays	8.2	12.3	6.6	0.8	6.7	13.6	16.8	9.9	16.9	7.7	7.3	8.3	15.0	13.2	11.1	6.2	1.5	8.3
General public services	1.4	1.5	8.2	1.2	3.4	0.8	2.3	0.5	1.7	1.4	0.0	3.4	4.4	3.2	1.3	...	1.1	1.5
Interest	0.2	2.8	2.9	0.5	2.9	1.9	2.3	1.5	4.6	0.8	0.1	0.5	2.4	1.9	0.6	...	0.7	1.7
Defense	0.2	0.0	0.0	0.0	0.1	0.3	0.1	0.0	0.1	0.0	0.1	0.1	0.2	0.6	0.0	0.2	0.4	0.1
Public order and safety	0.2	0.3	0.2	0.0	0.9	1.1	0.3	0.0	0.0	0.0	0.1	0.4	0.3	0.2	0.0	1.5	0.2	0.2
Economic affairs	0.5	0.7	0.1	0.0	0.3	0.1	2.3	0.1	0.2	2.2	0.7	0.0	0.4	0.8	0.6	1.1	0.2	0.4
Environment Protection	0.0	0.0	0.0	0.0	...	0.0	0.0	0.0	0.0	...	...	0.0	0.1	0.2	...	...	...	0.0
Housing and community amenities	0.0	0.4	...	0.1	0.1	0.0	0.0	0.3	0.5	0.4	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Health	2.6	2.4	5.9	0.4	0.1	1.9	...	2.5	3.2	0.0	1.5	5.1	4.8	1.0	3.8	2.3	2.9	2.4
Recreation, culture and religion	0.1	0.1	0.0	0.1	0.2	0.2	0.2	0.0	0.9	0.1	0.7	0.4	0.2	0.1	0.1	0.5	0.1	0.1
Education	1.8	1.5	0.1	0.0	1.2	1.0	1.8	0.0	1.6	1.6	2.9	1.0	0.0	0.6	0.1	3.9	0.1	1.0
Social protection	5.6	5.3	0.6	2.6	2.8	10.9	...	7.3	7.2	2.2	6.1	5.8	5.1	8.2	5.5	8.6	0.4	5.5
Potential savings in non-age-related categories 6/	*2.3*	*3.1*	*8.5*	*1.4*	*5.1*	*2.5*	*5.2*	*0.8*	*3.5*	*4.2*	*2.1*	*4.3*	*5.6*	*5.1*	*2.1*	*3.2*	*2.0*	*3.2*
General Government by Economic Classification																		
Total Expenditure 7/	10.3	13.2	10.7	5.7	16.7	20.7	18.0	11.2	16.4	15.2	0.6	12.6	18.8	17.2	3.8	6.0	3.6	12.6
Social benefits (excl. social transfers)	5.4	4.1	1.4	4.1	7.3	9.0	4.2	6.9	5.7	4.0	0.9	4.7	5.2	8.0	3.2	5.7	5.2	5.2
Subsidies	0.1	1.4	0.3	0.6	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.3	0.1	0.5	0.2	0.2	0.1
Compensation of employees	...	0.0	2.1	0.0	4.4	3.7	3.5	0.0	1.4	1.8	0.0	5.0	4.1	2.5	0.7	1.1	0.5	1.6
Interest	0.0	2.4	2.6	5.6	1.6	1.4	2.3	2.2	3.7	...	0.0	0.3	2.1	0.6	0.4	0.0	0.7	1.5
Gross fixed capital formation	0.2	0.0	0.0	0.2	0.1	0.4	0.3	0.0	0.8	2.9	0.7	0.2	1.7	0.2	0.0	0.4	0.3	0.2

Table 6b. Difference Expenditure to 1970–2003 Maximum (in percent of GDP) 1/

	Australia 2/	Austria 3/	Belgium 3/ 4/	Canada	Denmark	Finland 3/	France 3/	Germany	Italy 2/	Korea 3/	New Zealand 5/	Norway	Spain 3/	Sweden 3/	Switzerland 3/	U. Kingdom 3/	United States 3/	Median
Central Government by Functional Classification																		
Total outlays	-1.2	-1.6	-11.6	-8.9	-7.0	-8.2	0.0	-0.9	-6.2	0.0	-11.6	-4.2	-5.4	-10.8	-3.5	-5.1	-3.7	-5.1
General public services	-1.6	-0.7	-1.1	-0.3	-2.1	-0.5	-1.5	-1.9	...	-0.6	-5.3	-4.7	-2.6	-2.3	0.0	...	0.0	-1.5
Interest	-1.4	-0.5	-4.8	-3.4	-4.3	-3.0	-0.1	-0.6	-5.4	0.0	-6.3	-1.9	-1.8	-5.6	-0.1	...	-1.8	-1.8
Defense	-1.4	-0.4	-1.7	-0.9	-0.9	-0.4	-0.7	-1.9	-0.7	-3.1	-1.2	-1.3	-0.9	-1.2	-1.0	-2.8	-2.7	-1.2
Public order and safety	0.0	-0.1	0.0	-0.2	0.0	0.0	0.0	0.0	0.0	-0.1	-0.2	0.0	0.0	-0.1	0.0	0.0	-0.2	0.0
Economic affairs	-1.1	-2.4	-6.8	-3.2	-2.0	-4.7	-0.2	-0.8	-3.9	-0.6	-5.1	-4.6	-1.6	-4.3	-0.6	-2.3	-1.2	-2.3
Environment Protection	0.0	-0.1	0.0	0.0	...	0.0	0.0	0.0	0.0	...	...	0.0	0.0	-0.9	...	...	...	0.0
Housing and community amenities	-0.3	-0.9	...	-0.4	-0.5	-1.1	-1.0	0.0	0.0	0.0	-0.6	-3.8	-0.4	-2.6	-0.1	-1.1	-0.4	-0.4
Health	0.0	-0.5	0.0	-1.2	-2.9	-0.4	...	0.0	0.0	-0.2	-0.2	0.0	0.0	0.0	-0.4	0.0	0.0	0.0
Recreation, culture and religion	-0.1	0.0	-0.8	-0.1	0.0	-0.2	0.0	-0.1	-0.1	0.0	0.0	-0.3	0.0	-0.1	0.0	0.0	0.0	0.0
Education	0.0	0.0	...	-0.6	-0.7	-1.0	-0.1	-0.2	-0.2	0.0	0.0	-0.7	-1.5	-1.9	-0.2	0.0	-0.3	-0.2
Social protection	-0.5	-0.1	...	-3.7	-3.5	-3.1	...	0.0	-0.5	-0.3	-2.5	0.0	-6.3	-5.2	-3.2	0.0	-2.2	-2.2
Cutbacks made in non-age-related categories 6/	*-4.6*	*-4.5*	*-10.5*	*-5.1*	*-5.5*	*-6.9*	*-3.5*	*-4.6*	*-4.6*	*-4.3*	*-12.6*	*-14.7*	*-5.5*	*-11.4*	*-1.6*	*-6.1*	*-4.5*	*-5.1*
Cutbacks made in age-related categories	*-0.5*	*-0.7*	*0.0*	*-5.5*	*-7.0*	*-4.5*	*-0.1*	*-0.2*	*-0.6*	*-0.6*	*-2.7*	*-0.7*	*-7.9*	*-7.2*	*-3.4*	*0.0*	*-2.5*	*-0.7*
General Government by Economic Classification																		
Total Expenditure 7/	-3.0	-6.1	-9.4	-11.1	-4.4	-9.8	-0.6	-1.4	-8.2	0.0	-14.7	-5.6	-8.1	-8.9	-1.4	-2.5	-2.7	-5.6
Social benefits (excl. social transfers)	0.0	-2.7	-9.2	-3.8	-3.5	-7.7	-4.7	0.0	-2.5	0.0	-2.8	-1.5	-4.0	-4.6	-0.4	-1.7	0.0	-2.7
Subsidies	-0.7	-0.1	-2.5	-1.3	-1.7	-2.4	-1.9	-1.1	-2.7	-1.5	-0.2	-3.8	-2.0	-4.0	-0.5	-3.0	-0.2	-1.7
Compensation of employees	...	-3.1	-2.1	-4.3	-1.7	-3.5	-0.5	-3.2	-1.6	-0.1	-3.4	0.0	-1.4	-3.7	-0.2	-5.8	-2.0	-2.1
Interest	-3.3	-1.1	-5.2	-3.0	-6.8	-3.0	-0.9	-0.6	-6.6	...	-6.8	-2.1	-2.8	-5.7	-0.3	-3.0	-2.4	-3.0
Gross fixed capital formation	-2.3	-4.3	-3.4	-1.9	-2.6	-1.0	-0.6	-1.5	-0.9	0.0	0.0	-2.0	-1.6	-4.7	-1.2	-3.7	-0.6	-1.6

Sources: *IMF Government Finance Statistics,* ECB, and authors' calculations.

1/ Japan is not included as the series are too short.
2/ 2000 (Australia: General government)
3/ 2001 (Switzerland: Central government)
4/ The numbers for Belgium are biased by a shift of social and education spending from the federal to the provincial level.
5/ 1997 (General government)
6/ Excluding interest, which is essentially non-discretionary.
7/ Categories do not add up to total expenditure.

Looking instead at real growth numbers yields more sanguine conclusions: Hauner (2005) calculates that a rule to freeze the ratio of total expenditure to GDP would still allow real non-age-related expenditure growth of about 1 percent per year from 2000 to the peak year of age-related expenditure in the median OECD country, despite age-related expenditure hikes. This is more growth than in the 1990's, as we just saw in Figure 6. Hauner also shows that the future real per capita spending possible under a constant total-expenditure-to-GDP ratio is likely to compare even more favorably to historical values if population growth will indeed be slowing as expected. This could have a benign effect in some population-related (as opposed to age-related) areas, such as unemployment benefits and labor market services, or some parts of the public administration. However, health care inflation (which is, remember, not wholly age-related) could eat away much of the leeway for non-age-related expenditure growth.[16]

Pessimistic Argument 1: Governments have a weak record in implementing their consolidation plans, particularly on the expenditure side. We have seen that governments indeed managed to get some of their expenditure ratios down over the 1990's. And there are examples of successful radical reforms, such as Sweden, which reduced both social protection by 3 percent and economic affairs by 5 percent of GDP during the second half of the 90's. But most governments had planned to do much more than they actually achieved. Indeed, statistical tests suggest that many governments consistently failed to stick to their expenditure plans. Mühleisen and others (2005) find that five of eleven OECD countries exceeded on average their budgeted expenditure to GDP ratio over 1995–2003, although expenditure overshooting proved statistically significant only in one country. Even more disconcerting for the long run, governments have clearly lacked success in implementing their medium-term consolidation plans on the expenditure side. The SCPs of the EU-15 countries for 2002 and 2003, for example, overestimated the fiscal consolidations that were then actually achieved by a median of not less than 1.6 percent of GDP for just two years ahead, and even more on a longer horizon (see Box 1).

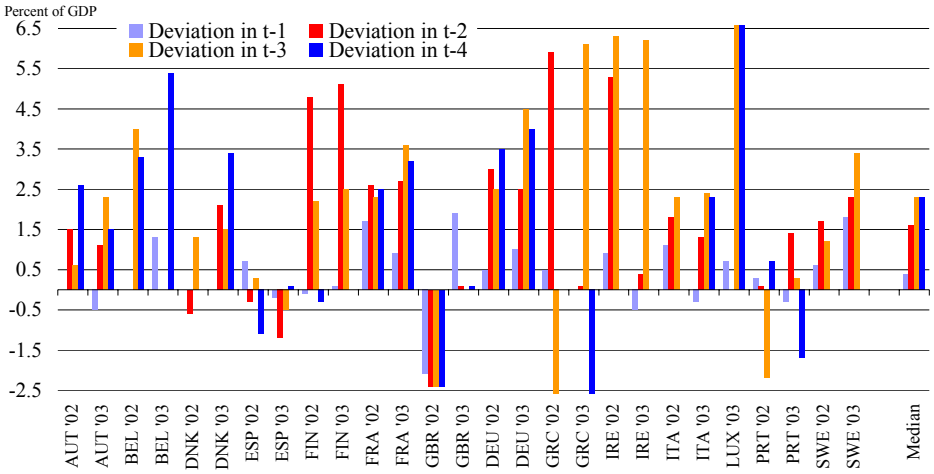
Pessimistic Argument 2: The knife could soon reach the bone, for two main reasons. First, governments have already cut a lot. Table 6b compares the difference between the central government expenditure-to-GDP ratios in 2003 to the respective 1970–2003 peak. Shaded entries show reductions relative to the peak. The median country has cut already 5.1 percent of GDP in non-age-related and 0.7 percent in age-related expenditure categories, mostly in economic affairs, social protection, general public services, and defense. One large and important set of countries has focused almost exclusively on cuts in nonage-related sectors, with only negligible cutbacks in education, pensions, and health. These include Australia,

[16] The calculation of the real expenditure growth consistent with a constant ratio of total expenditure to GDP assumes that the growth rates of the public expenditure deflator and the GDP deflator will be the same. At the same time, projections of age-related expenditure increases (as in OECD, 2001, underlying the simulations in Hauner, 2005) typically disregard health care inflation. Thus, any difference between these deflators, for example due to high health care inflation, will affect the possible real growth rate of age-related spending.

Box 1. Expenditure Reduction—Ambitions and Achievements under the EU Stability and Convergence Programmes

The EU Stability and Convergence Programmes (SCPs) are useful to compare fiscal plans and outcomes over the medium term, because they provide a relatively consistent set of multi-year fiscal forecasts for a number of countries. To assess the success EU governments had in the implementation of their expenditure reductions, we compare the projections of the total-expenditure-to-GDP ratios over the stability programs starting in 1998. The figure shows the difference between the last SCP projection of the 2002 and 2003 outturn and the projections published approximately (publications dates of the programs vary) one, two, three, and four years earlier. (We use the last projection instead of outcomes to ensure consistency in the definition of the expenditure ratio.)

As the figure shows, the original ambitions regarding expenditure reduction had to be scaled down substantially over time for most observations. Measured by the median of the deviations, the last program projected a expenditure ratio 0.4 percent of GDP higher than one year before, 1.6 percent of GDP higher than two years before, and 2.3 percent of GDP higher than three and four years before.



Sources: Stability programs and authors' calculations.

Statistical tests confirm that the earlier program projections deviate significantly from the last projection: As the table shows, almost all tests for all series reject the null of no deviation at least at the 5 percent significance level. The size of the coefficients is smallest for the one-year-ahead projection (0.38 percent of GDP) and highest for the three-year-ahead projection (2.2 percent of GDP). While deviations in the GDP projections are not accounted for, this does not affect the main conclusion here: governments find it very hard to stick to their often ambitious expenditure consolidation programs.

	P-Values of Tests of Null = No Difference Between Last Projection and SCP ... Years Before			
	1	2	3	4
Mean test 1/	0.03 (0.38)	0.00 (1.72)	0.00 (2.20)	0.04 (1.59)
Median tests				
Binomial sign 2/	0.13	0.00	0.00	0.06
Wilcoxon signed rank 3/	0.02	0.00	0.00	0.03
van der Waerden 4/	0.02	0.00	0.00	0.03

Source: Stability programs and authors' calculations.

1/ Checks whether a constant in a regression is different from zero. Size in parentheses.
2/ Checks whether the sample is split evenly above and below zero.
3/ Checks whether the sum of the ranks of the absolute value of the difference between each observation and the mean is similar for the samples above and below the median.
4/ Variant of the van der Waerden test, but with smoothed ranks.

Austria, Belgium, France, Germany, Italy, Korea, the United Kingdom, and the United States to a lesser degree (recognizing that some of these countries have made cutbacks in age-related expenditure policy regimes whose impact only will appear in future decades). In contrast, a few countries (notably Canada, Denmark, Finland, Spain, and Sweden) have made reasonably substantial cutbacks in *both* spheres of expenditure. Only Switzerland seems to have cut back more on age-related than non-age related expenditures. Most countries have already made cutbacks in most categories relative to the peak; only public order and safety, environmental protection, and health have remained mostly untouched. Second, a large share of past cuts was thanks to the end of the Cold War, a secular decline in interest rates since the 1980's, and the abandonment of subsidies to inefficient industries—factors that are as unlikely to be repeated as the motivation provided by the Maastricht criteria for EMU participation. And as the economic classification suggests, subsidies are mostly at historic lows (as mentioned before), and the compensation of employees suggests that many countries have already squeezed their public servants quite a bit.

In sum, while nonage spending could be cut more, it is doubtful that this will be enough to buffer age-related pressures, or whether governments will be determined enough to do it. Even if the more realistic of the above back-of-the-envelope estimates of potential savings were indeed realized, they would not suffice to accommodate an average increase of 5.5 percent of GDP in age-related expenditure as projected in OECD (2001), let alone the increase in health care spending due to nonage-related factors. It is also not clear whether governments will have the resolve to do it, even if the "pleasant arithmetic" of growing GDP and stagnating or declining populations (Hauner, 2005) could help a lot.

What about higher taxes? The revenue side is unlikely to provide much consolation to those governments most pressed on the expenditure side. Naturally, what one observes is that countries with least scope to raise taxes are the ones with the most potential for reducing expenditure, as the memo items in Table 7 show. But while raising taxes has in the past been politically less painful in many countries than cutting spending—particularly social spending—tax rates cannot go up much more, particularly in the Continental European countries where they are high already, and tax competition is increasing. Thus, governments in high-tax, high-(age-related-)expenditure countries, concentrated in Continental Europe, will face the toughest choices. Globalization pressures that put pressure on high tax rate countries, particularly with respect to the taxation of capital incomes, are likely to add to the difficulties faced by these countries in securing a fiscally sustainable position. In contrast, countries with low tax and expenditure shares have much more room to finance upward expenditure pressures by raising tax rates. Thus, but for political economy reasons, one would have to argue that there is room in the United States, Japan, Australia, and even the United Kingdom for some increase in the tax burden in order to meet the burden of aging populations.

Table 7. General Government Tax Revenue (2002, in percent of GDP)

	Australia	Austria	Belgium	Canada	Denmark	Finland	France	Germany	Italy	Japan	Korea	New Zealand	Norway	Spain	Sweden	Switzerland	U.K.	United States
Total tax revenue	31.5	44.0	46.4	33.9	48.9	45.9	44.0	36.0	42.6	25.8	24.4	34.9	43.5	35.6	50.2	30.3	35.8	26.4
Income & Profits	17.4	13.0	18.3	15.7	28.9	18.6	10.5	10.1	13.8	7.9	6.2	20.6	19.0	10.4	17.7	13.1	13.5	11.8
Social Security	...	14.7	14.7	5.2	1.7	12.2	16.3	14.5	12.5	9.9	4.6	...	9.9	12.6	15.1	7.8	6.1	6.9
Payroll	1.7	2.7	...	0.7	0.2	...	1.1	...	...	...	0.1	0.3	...	...	2.4	...	...	...
Property	2.8	0.6	1.5	3.3	1.7	1.1	3.3	0.8	2.2	2.8	3.1	1.8	1.0	2.4	1.6	2.6	4.3	3.2
Goods & Services	9.5	12.4	11.4	8.9	16.2	13.9	11.2	10.5	11.4	5.2	9.5	12.3	13.6	10.2	13.3	6.9	11.7	4.6
Other	...	0.5	0.0	0.2	0.0	0.0	1.6	0.0	2.6	0.1	0.9	...	0.0	0.1	0.2	0.0	...	...
Memorandum items																		
Potential new revenue by raising total tax rate to median	6.3	0.0	0.0	3.9	0.0	0.0	0.0	1.8	0.0	12.0	13.4	2.9	0.0	2.2	0.0	7.5	2.0	11.4
Potential expenditure savings according to Table 5b	0.3	4.6	2.3	1.0	11.4	5.8	6.7	4.9	0.9	1.0	0.0	0.0	2.5	1.6	10.1	0.0	1.4	3.8
o/w: non-age-related categ.	0.0	1.5	1.4	0.3	2.0	1.4	2.5	0.3	0.7	0.0	0.0	0.0	1.0	1.6	3.0	0.0	1.4	2.9

Sources: OECD and authors' calculations.

IV. POTENTIAL ADDITIONAL UPSIDE RISKS

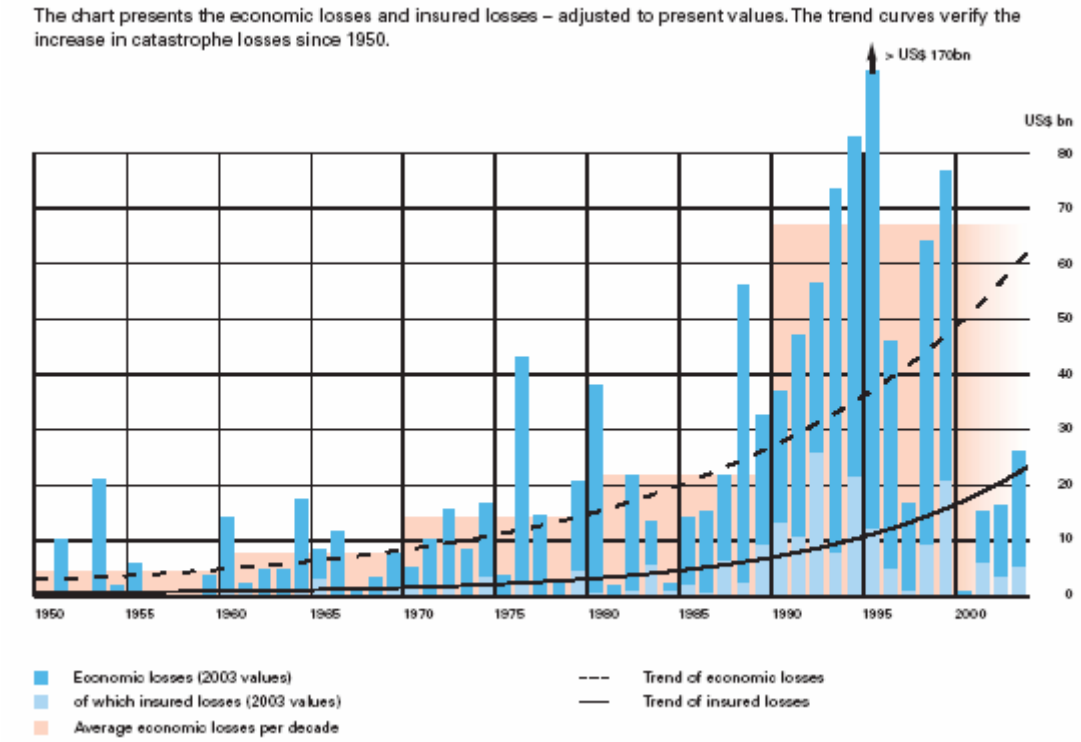
In addition to the uncertainties about the slope of long-term expenditure trends, there are numerous potential upward shifts to the trend that are difficult to integrate in fiscal planning. Budget technocrats, in carrying out long-term projections, are often constrained in a number of ways. Policymakers may dictate that revenue and expenditure projections should only be based on current legislation, thus incorporating policies that may be recognized as unsustainable or unlikely in the future. Efforts to incorporate uncertainty on the many factors that may influence key revenue or expenditure variables can quickly escalate into a multiplicity of projections and scenarios that can dwarf any effort to distill the key policy issues that will confront a government. Stochastic or VaR analytic techniques are available to weight projections according to their probability of occurrence, but these also rest on much uncertainty in terms of the choice of the underlying parameters. One can thus understand why such technocrats, in carrying out long-term projections, focus only on the few key variables that are likely to influence critically the major fiscal policy aggregates (e.g., the EC exercise, which limits its focus to the impact of aging on the fiscal position over the long term, holding nonage-related variables constant as a share of GDP).

Yet in thinking about the appropriate fiscal policy framework for the future, it is difficult to turn a blind eye to other "futures" exercises carried out by governments and corporate strategists that seek to explore possible trends and developments that will shape the world of the future. The Shell Scenario frameworks and the periodic projections carried out by the U.S. Government's National Intelligence Council (the most recent being the *Mapping the*

Global Future (NIC (2004)) are illustrative. What are some of the difficult "imponderables" most talked about as influencing the shape of the future economic and political landscape?

Natural disasters/climate change: The cost of natural disasters has risen substantially over the 1990's. Some argue that these are related to climate change (Figure 8), which is likely to force higher government spending on adaptation and mitigation measures in coming decades. Adaptation outlays will be directed at addressing the adverse effects of climate change on key economic sectors and dealing with the impact of a higher incidence of extreme weather events, changing precipitation patterns, and a rising sea level. The costs of mitigation may be reflected in

Figure 8. The Economic Cost of Natural Disasters



Source: Munich Re (2004).

higher R&D outlays, infrastructure investments associated with alternative fuel sources (nuclear energy), and approaches to carbon sequestration. The small possibility of abrupt climate change looms as a contingent fiscal risk.

The rise of China: the prospect of further rapid economic growth in China for the next several decades and the nature of that growth—both in manufacturing and in the services sector (especially in the knowledge economy) may reduce the real growth prospects for some industrial economies. Conversely, the pattern of China's growth has already provided benefits to government and industrial country consumers in the form of lower prices for

many products, a trend which may continue for many years. The latter factor may alleviate some cost pressures facing governments.

Terrorism: experts on weapons of mass destruction (WMD) are almost universally pessimistic on the prospects that industrial countries will be able to avoid a serious terrorist incident in the next decade. This could involve a low grade nuclear device set off in a major city. Equally plausible is the prospect of a bioterrorist incident, given the wide availability of multi-use laboratories and facilities that have the capacity to produce toxic biological agents. Cyber attacks could do critical damage to the financial sector. The effect of a WMD incident on the individual country in which it occurs or on the global economy is not easy to calculate, but cannot be ignored as a downside risk affecting economies in general and the public sector more specifically. Even in the absence of an incident, governments are likely to require sustained spending on preventive actions.

Pandemics: epidemiologists are equally concerned that it is not a question of if, but when there is a crossover virus, most likely from an avian source, that would engender a serious viral epidemic of global proportions. While there is heightened vigilance by international health authorities on the risks of such an outbreak, most serious experts would contend that the world's capacity to respond quickly remains extremely limited.

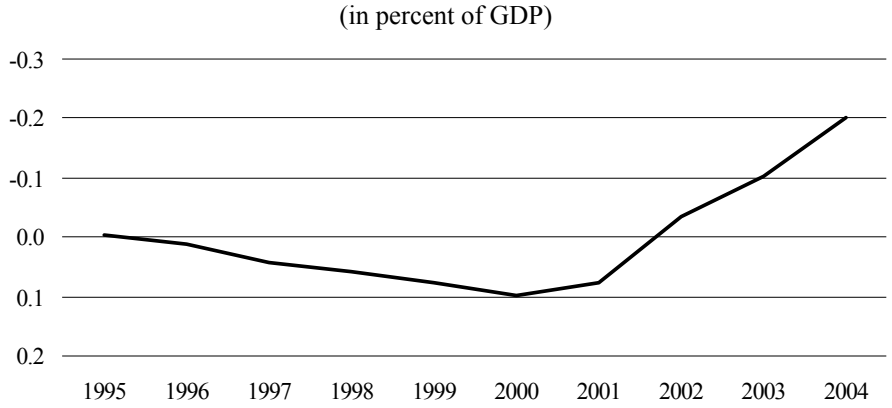
National security concerns: Recent history suggests that this factor seems to concern the United States and the United Kingdom more than other OECD countries. However, Australia has also gotten involved in major military operations in recent years. Europe was engaged in the first Persian Gulf War and has periodically provided some engagement in regional conflicts in Africa. The North Korean situation continues to be a source of significant strategic disquiet in Asia. If they occur, military interventions or wars can be very costly. Of the more recent examples, the 1990/91 Iraq War cost the US about 1 percent of US; the 2003 Iraq War again cost about 1 percent of GDP up to the end of the fiscal year 2004, according to the CBO, with costs likely to remain at this level for at least another year or so. Fragile states continue to be a source of concern in the international community, with uncertain costs to be borne by either neighboring states or by the international community.

ODA: World concern over the slow progress of meeting the Millennium Development Goals (MDGs) has made 2005 a pivotal year for mobilizing ODA resources to meet the MDGs. initiatives such as the International financing Facility, debt relief, and global tax proposals, not to mention efforts to raise ODA levels to 0.7 percent of industrial country GDP, are high on the policy agenda. While the prospects of these initiatives all bearing fruit may be limited, it would be difficult to envisage that the global community will be able to reduce the scale of its support for ODA (one component of general public services) for at least two decades.

Government contingent liabilities in the pension and welfare area: In the few countries with substantial funded defined benefit pension schemes, the risk of corporations unable to cover the costs of their pension or medical care liabilities, presents the risk of government bailouts of these schemes. This has become particularly apparent recently in the United States, where the Pension Benefit Guaranty Corporation has broken its deficit record in each

of the last couple of years; in 2004, its deficit reached approximately 0.2 percent of GDP (Figure 9). And there is no improvement in sight: actuaries at Towers Perrin estimate that the deferred pension cost for the 81 biggest defined benefit pension schemes in the United States grew to $252 billion in 2004 (FT 1/8/05). Private pension funds would get into further trouble if those observers predicting prospectively lower equity risk premia, such as Dimson and others (2002) or Fama and French (2002), turn out to be accurate.

Figure 9. Deficit of the U.S. Pension Benefit Guaranty Corporation



Source: United States, Pension Benefit Guaranty Corporation and authors' calculations.

But these risks extend further. Recent developments in the United Kingdom suggest that the inadequacy of the basic state pension will lead many elderly with inadequate private pension savings to go on the government's welfare scheme instead. In the United States, commentators on the Bush administration's recent Social Security reform proposals warn of the risk that adverse investment performance may leave many households more exposed to poverty than under Social Security. While this may force expanded government coverage under welfare for the elderly, it may also have an indirect impact on government obligations under Medicaid. Chile's much vaunted scheme of defined contributions nevertheless has not limited the government's obligations for households, whose pension accumulations have fallen below the minimum income guarantee. Rather than see a reduction over time in the government's pension payments under the previous pay-as-you-go scheme, government pension outlays have remained stubbornly constant as a share of GDP.

Other contingent risks: Recent IMF studies have highlighted the extent of a government's potential contingent risks in the area of public-private partnerships and in the financial sector.

In conclusion, the purpose of outlining these "risk factors" is not to argue for specific inclusion of any one "uncertain" expenditure risk in fiscal projections. Rather, it is to underscore that these risks caution against projections which suggest easy scope for significant reductions in many categories of government expenditure. It also argues for a more conservative stance in terms of targets for government debt reduction. This, in turn,

would require a more disciplined approach to long-term structural expenditure reduction. There is no other way to square the fiscal circle.

V. Concluding Observations

Three broad conclusions follow from the discussion in this paper. First, the underlying approach to setting the fiscal policy framework tends to understate the downside risks arising from the uncertainty of the policy environment facing governments. This suggests that governments need to provide far more leeway on the expenditure and/or revenue sides for unexpected departures from the baseline. Second, while the level of expenditure in the long run is primarily a political issue, the data reviewed in this paper suggest that there is only narrow scope for most governments to obtain further savings from non-age-related expenditure categories. Efforts since the early 1990's to consolidate budgets (e.g., in the context of the Maastricht criteria and the Stability and Growth Pact) have narrowed significantly the potential for further cutbacks in the most obvious expenditure categories. Third, on the revenue side, only a few countries would appear to have room to augment tax shares in response to potential expenditure pressures; most governments, in contrast, may find that globalization pressures may force cutbacks in their tax shares that will only add to the challenges associated with containing government expenditure pressures.

Together, this means that most governments will have to adopt a more ambitious fiscal policy stance cum policy reform framework aiming at a rebalancing of the role of the state and the private sector in the face of aging populations. With little scope left for tinkering with the existing expenditure framework, the focus must now be on long-term structural reform programs that achieve a steady and sustainable decline in expenditure commitments arising from aging populations and in the extent of the state's obligations in the medical care sphere.

The challenges associated with rationalizing such programs go far beyond the scope of this paper, which focuses more on the overall fiscal structure and the way in which governments take account of uncertainty in assessing their long-term fiscal position. Current medium-term fiscal projections, including those in the EU Stability Programs, are often weakened by overly optimistic underlying assumptions. This suggests that, as a first step, governments of countries facing severe fiscal challenges from aging should be attuned to potential vulnerabilities in making long-term expenditure forecasts of economic and functional expenditure categories. Such vulnerabilities should be reflected in some way in the framing of annual budgets. Certainly, long-term projections should be informed by scenario analyses. Most importantly, such scenario analyses can serve to focus the public debate on the key long term policy challenges and provide a continuous reality check of current expenditure trends relative to the long-term goals.

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