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Global Aging 2016: 58 Shades Of Gray

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Table Of Contents

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Sovereigns worldwide appear to be making steady progress in containing age-related spending. Since March 2013, when we published our last update on the implications of population aging on sovereign credit ratings, many sovereigns have implemented further structural changes to their social safety nets. Coupled with simultaneous budgetary improvements since the onset of the economic and financial crisis in 2008/2009, our latest analysis of 58 sovereigns from across the world suggests that, if maintained, these reforms should gradually contribute to improved prospects for long-term fiscal sustainability.

Complicating these efforts, however, is the relatively fragile economic recovery of advanced sovereigns, especially in Europe. On the one hand, sovereigns need to curb public spending on pensions and health care to contain the financial risks posed by the coming wave of seniors. On the other, they need to sustain adequate pension benefit levels to prevent an increase in poverty risk for retirees. Otherwise, substantial rises in health care and long-term care costs, together with eroding purchasing power of pension benefits could widen income inequality, which, in turn, risks impairing long-term economic growth prospects.

Overview

- We believe structural changes that many sovereigns have implemented in recent years to contain age-related spending, particularly to stabilize future pension costs, will help sustain long-term public finances, if kept in place.
- Sovereigns nevertheless face a difficult balancing act between curbing public spending and ensuring the adequacy of benefits to prevent otherwise growing risks of poverty and inequality, in our view.
- We think further policy actions will likely be necessary, particularly to curb the rising costs of health and long-term care. In this context, we observe that rationalizing social security systems can, if embraced early on, spread the impact and the burden of unpopular policy measures.
- Our analysis suggests that the need to alter demographically driven budget trajectories is as pressing for some emerging market sovereigns as it is for sovereigns with advanced economies. In the absence of policy action, the median net general government debt in advanced economies will rise by 2050 to 134% of GDP, and for emerging markets sovereigns to 136%.
- According to our simulation of hypothetical long-term sovereign ratings and credit metrics in a no-policy-change scenario, by 2050 more than a quarter of the 58 sovereigns we've analyzed would have credit metrics that we currently associate with speculative-grade sovereign credit ratings.

In general, our long-term debt projections for sovereigns are now lower than they were in 2013. Despite this, we believe that nearly all countries will face a steep, demographically driven deterioration in public finances in the absence of adjustments in social safety net costs combined with policies that boost growth. Our updated study shows that despite the substantial progress made to date, the projected magnitude of the future fiscal burden will require additional measures.

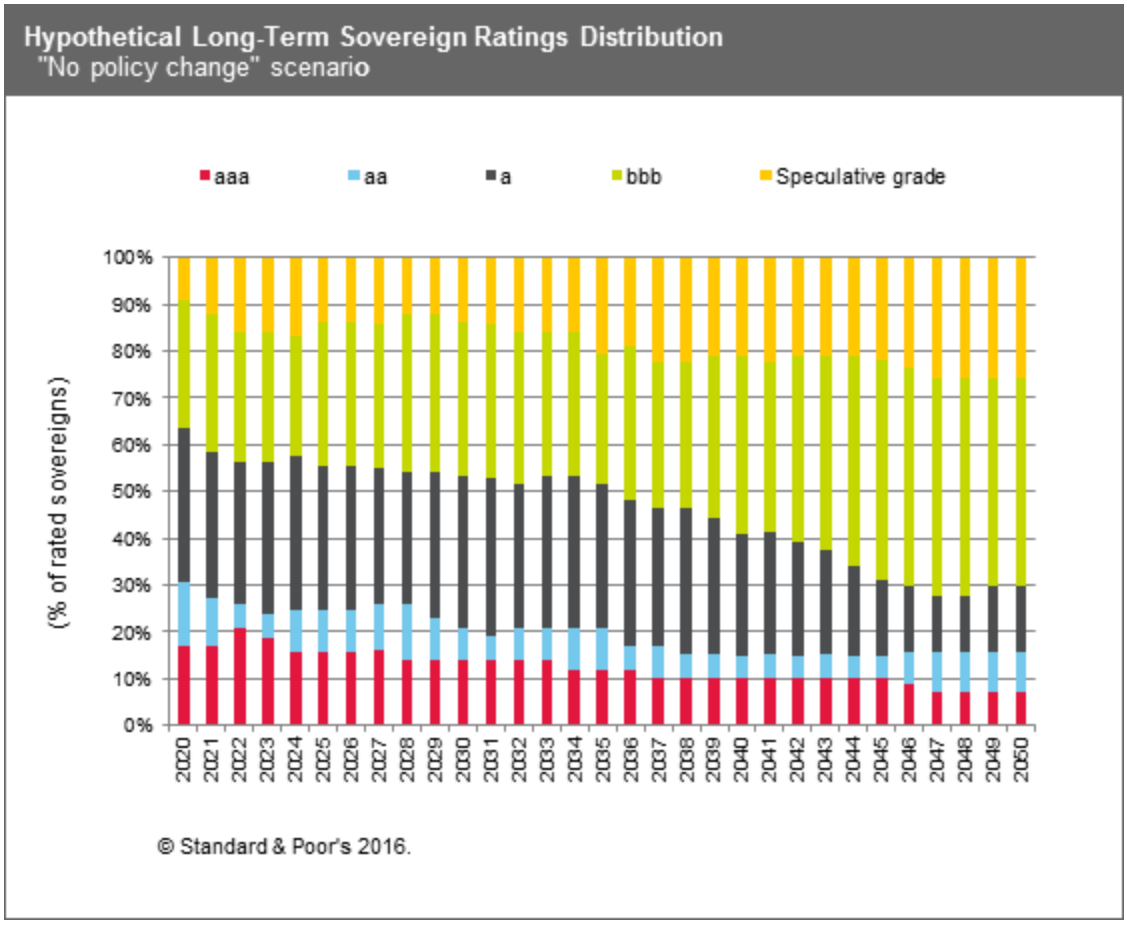
According to our simulated hypothetical scenario in which nations take no further measures to plan for aging populations, and incorporating the dynamics of aging-dependent public expenditure programs and interest payments,

the financial burden on most sovereigns will gradually increase, leading to deteriorating fiscal indicators as of the mid-2020s, with significant differences among sovereigns. These estimates include:

- A typical sovereign's government spending may increase significantly, and as a result, a typical country's deficits will be relatively stable until the early 2020s at around 2.2% of GDP (advanced sovereigns 1.4% of GDP; emerging market sovereigns 3.4%) on the back of budget cutting. But by the middle of the century, these deficits will rise to 9.2% (8% for advanced and 11% for emerging market sovereigns). This is because, according to our projections, the interest cost of the increasing debt burden exacerbates the budgetary impact of demographic spending.
- This would lead to the median general government net debt burden as a percentage of GDP increasing to 50% for all sovereigns by early 2020s--and then likely accelerating to about 134% (134%; 136%) of GDP by 2050.

Taking into account these expected future budgetary imbalances and projected economic growth dynamics, we calculate that more than one-quarter of the 58 sovereigns we've analyzed would have credit metrics that we currently associate with speculative-grade sovereign credit ratings, against less than 10% of this sample in 2020 (see chart 1).

Chart 1



To arrive at this calculation, we introduced a simplified analytical model to simulate the impact on sovereign credit metrics (as explained in detail in "Global Aging 2010: An Irreversible Truth--Methodological And Data Supplement," published on Oct. 7, 2010). The model is based on a very limited number of variables compared with those in our

sovereign rating criteria (see "Sovereign Government Rating Methodology And Assumptions," published on December 23, 2014) and as such is not as comprehensive as the methodology underlying our current sovereign ratings. The hypothetical ratings this simplified model generates are not to be misunderstood as Standard & Poor's view on likely future ratings trajectory. Instead, they only illustrate the intensity and the profile over time of the challenge that demographic change poses for sovereign solvency, assuming no mitigating policy action were to be undertaken. Since the results of this simulation are not sovereign ratings derived by applying our current criteria, we present them in lower case ('aaa', 'aa', etc.).

On the basis of the simulation results, we anticipate that our hypothetical future credit ratings for our entire sovereign universe would generally be below their present levels. Under the no-policy-change scenario, which assumes no further policy actions to counter demographic fiscal pressures, we see a gradual downward slide in investment-grade sovereign ratings from the mid-2020s, accelerating through 2030 and thereafter. However, improved prospects for the long-term sustainability of public finances following general reduction in budget deficits since 2010, accompanied by a major acceleration in pension and health-care system reforms have improved long-term prospects for creditworthiness compared to our previous Global Aging analyses.

Our projections show that on the whole, the median advanced sovereign would hypothetically retain investment-grade ratings throughout the period, due to improved budget balances at the beginning of the simulation period and more moderate projected increases in age-related costs due to reform implementation than projected previously. By contrast, we believe the median emerging markets sovereign would be less likely to retain investment-grade ratings, despite of relatively higher long-term economic growth prospects. Indeed, higher projected increases in age-related spending over the long-term horizon significantly affect their long-term creditworthiness prospects.

We emphasize that these scenarios do not represent a Standard & Poor's prediction that the sovereign ratings of many governments will inevitably fall because of demographically-related fiscal pressures. In our view, it's unlikely that governments will allow debt and deficit burdens to spiral out of control in the manner outlined above--even if creditors would be willing to underwrite such huge debt. Nevertheless, the scenarios do indicate the scale of the task that governments face in pruning benefits granted by unfunded, state-run social security systems and achieving further budgetary consolidation as well as growth-enhancing policies.

Our Global Aging Study Now Covers 58 Rated Sovereigns

Standard & Poor's began analyzing the implications of shifting demographics for sovereign ratings in 2002, starting with advanced sovereigns. In May 2006, we published simulations that projected an almost universal deterioration of sovereign creditworthiness in a sample of 32 such sovereigns (see "Global Graying: Aging Societies And Sovereign Ratings," published on June 27, 2006 on RatingsDirect on the Global Credit Portal). We updated this study in 2007 (see "What A Change A Year Makes: Standard & Poor's 2007 Global Graying Progress Report," published on Sept. 19, 2007).

In our 2010 report ("Global Aging 2010: An Irreversible Truth," published on Oct. 7, 2010), we widened the geographic coverage of the analysis by adding information on long-term trends in age-related spending in 17 other sovereigns,

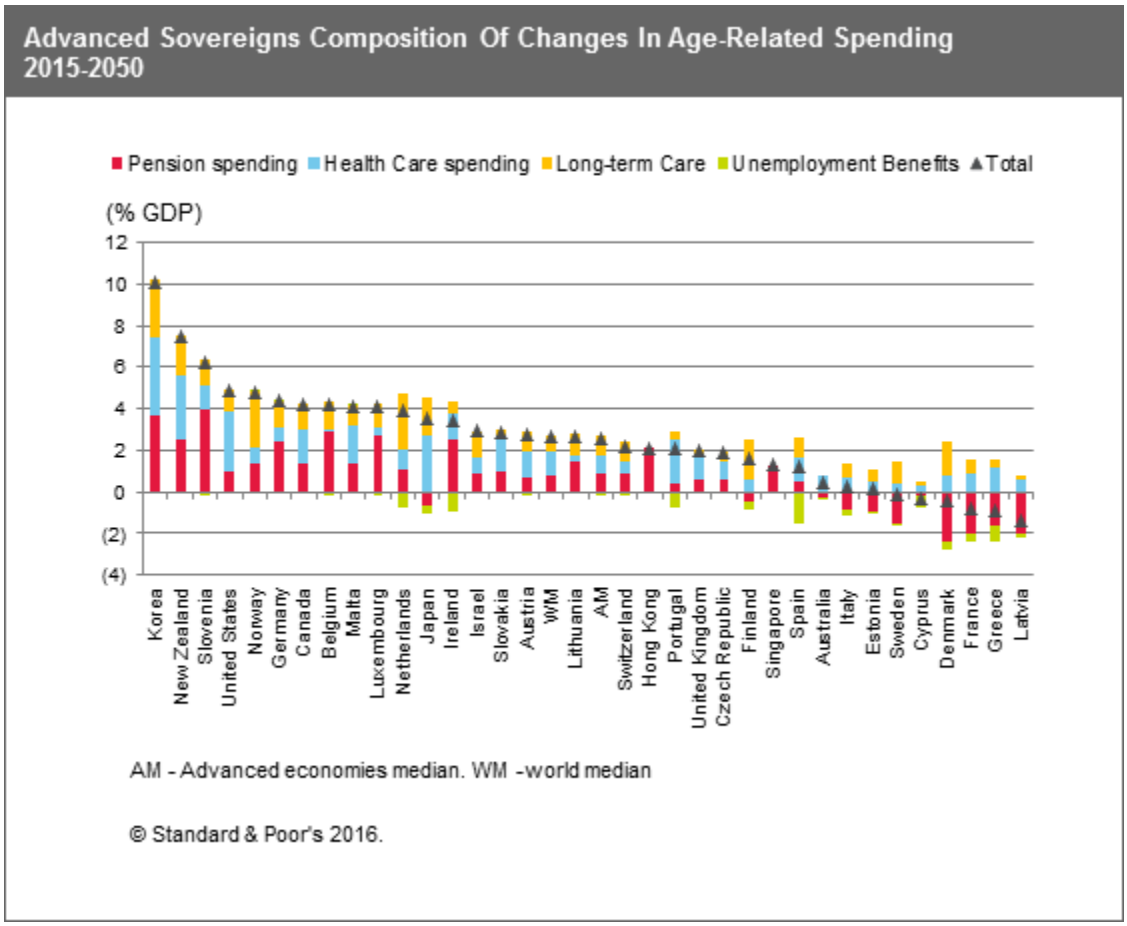
mainly in emerging markets. Our 2013 report ("Global Aging 2013: Rising To The Challenge" published on March 20, 2013) expanded the geographic coverage to 50 sovereigns. In this report, we are widening the coverage to 58 rated sovereigns, including for the first time Colombia, Croatia, Egypt, Hong Kong, Israel, Peru, Singapore, Thailand, and Uruguay--thus covering in total 70% of the world's population.

The report also incorporates updated, internationally consistent estimates on the future costs of aging that take into account several pension and health care reforms enacted since 2012. In general, we've identified changes--mostly improvements--in the budgetary positions of the sovereigns we've had under review since 2010, and updated our macroeconomic forecasts for those.

Future Trends In Age-Related Public Spending

In the absence of further policy measures, we generally expect that population aging will lead to increases in overall expenditures that are sensitive to demographic change. Our estimates nevertheless suggest that the impact will differ significantly among the countries in our sample as well as among the individual age-related factors we considered in this study: old-age pensions, health care, and, where data is available, long-term care for the frail, plus unemployment benefits. We didn't include education as an age-related spending category. Although the number of pupils and students will likely decline in most countries, it's also likely that spending per student will rise to help ensure satisfactory productivity growth by investing in human capital. We believe this is the case for emerging market sovereigns, as they develop their education systems, as well as for advanced economies, especially where education spending was severely curtailed during the economic crisis. We also excluded child benefits due to the lack of information. Although shrinking child-age cohorts could have a dampening effect on public spending thanks to lower benefit outlays, comprehensive data is unavailable. Moreover, the cohort effect may be offset by more generous benefits to encourage the dual objectives of boosting labor market participation and fertility. Overall, pensions remain the biggest spending item, followed by health care and long-term care (see table 4). Projected declines in unemployment benefits are typically very small and, we believe, will not produce significant relief for government spending.

Chart 2



Pension spending to rise to nearly 9% of GDP on average by 2050

Pensions (including early retirement, surviving relative, and disability pensions) are expected to rise on average by almost 1% of GDP by 2050, in our estimation, to just below 9% of GDP. However, the differences among countries could be large. Intuitively, the more distorted a country's demographic profile, the higher the increase in age-related spending is likely to be. This is, however, not always the case, because a country can significantly cushion the budgetary effects of aging by restructuring the revenue and spending side of a pension system. In other words, such pressure will more likely arise in sovereigns with growing financial imbalances in social programs, where changes to pay-as-you-go pension or health care systems are still pending, or where the demographic profiles appear to be the most unfavorable.

For most sovereigns, demographers expect the old-age dependency ratio (the number of over-65s relative to the population aged 15-64) to double by 2050. In Eastern Europe, Asia, and Latin America, demographic dynamics appear to be particularly affected by what has been a steadily rising old-age dependency ratio. However, the projected dynamics don't fully illustrate the variations in the ratio, which for Eastern European sovereigns by 2050 is projected by Eurostat to be substantially higher than in other regions, due to more pronounced declines in fertility rates plus increases in life expectancy as well as emigration of younger workers. In general, the strongest pressure on government budgets due to the projected increase in pension spending is expected in Ukraine, Brazil, China, and Saudi

Arabia.

Pension reforms accelerated among advanced sovereigns

Numerous changes in pension systems implemented in the advanced economies have contributed to an overall significantly smaller projected increase in future pension entitlements than in our 2010 and 2013 analysis. In addition, the most recent set of demographic projections for the EU by Eurostat (EUROPOP2013) compared with its previous projections indicates a lower increase in the old-age dependency ratio in all the member sovereign states except Greece, Portugal, Slovakia, and U.K. and the related positive impact on labor market, implying a lower pressure on pension spending in the long term (see European Commission, 2015). As already indicated in our 2013 report, advanced sovereigns have since 2010 accelerated implementation of pension reforms aimed by and large at improving the financial sustainability of pension systems, a trend which has continued also over the past few years.

More systemic measures since 2013 have included reductions in income replacement rates (e.g. in Austria, Belgium, Canada, Finland, France, Greece, Italy, Portugal, Slovenia, and Spain), tightening eligibility rules (e.g. in Australia, Austria, Belgium, Canada, Denmark, France, Finland, Ireland, Germany, Hungary, Portugal, the Netherlands, Slovenia, Spain, and U.K.), or increasing incentives for older workers to remain in the labor force (e.g. Australia, Austria, Canada, France, Germany, Norway, Spain, Switzerland, and Sweden). Several sovereigns adopted measures that support pension adequacy, either by enhancing the coverage of pension schemes or supporting the benefits, typically of the more vulnerable groups (e.g. Australia, Canada, France, Germany, Israel, Japan, Korea, Portugal, and the U.K.). The overall impact, however, appears to be that of a relative stabilization in the long-term trajectory of pension spending, with some exceptions. This bodes well for financial sustainability of the pension systems, while at the same time it creates concerns about pension adequacy, especially as significant reductions in pension benefits without the appropriate measures may increase the risk of poverty among the beneficiaries, leading to increased social and political pressures. The concern for pension adequacy is already directing future retirees toward alternative sources of retirement income, a trend we expect will expand (see S&P Capital IQ Global Aging Demographics And The Global Capital Markets, 2016).

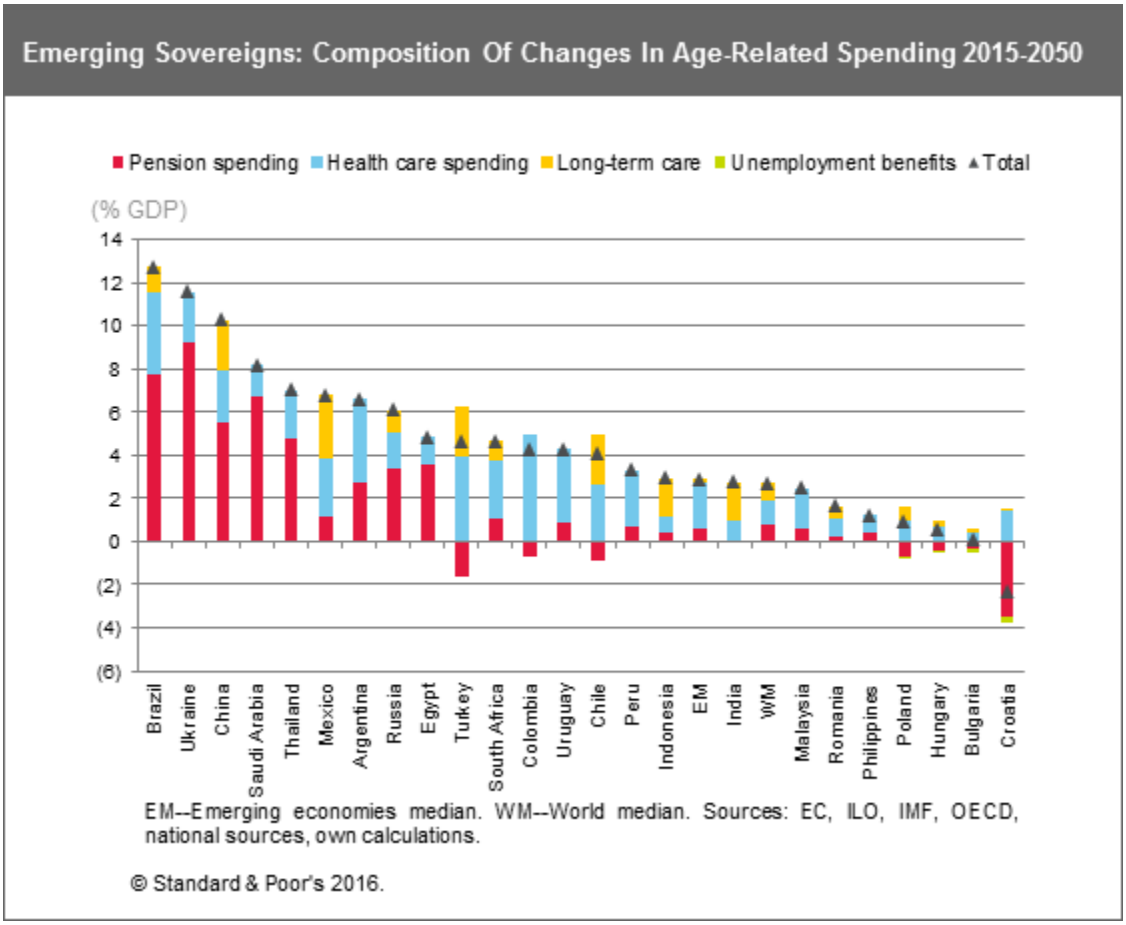
Emerging market sovereigns face rising pension pressures

Given the past reform effort among advanced sovereigns, emerging market sovereigns on average appear in our view to be in a relatively worse position for now. This is because of the projected significant shift in their demographic structure, although they are currently typically characterized by relatively lower publicly funded pension system coverage. With a few exceptions, these sovereigns have significantly lower pension spending to GDP than advanced economies. Nevertheless, in our view they still face a number of future pension risks. Given their currently generally younger populations and falling fertility rates, their old-age dependency ratio is likely to rise even faster than for a typical advanced economy--even though by 2050 they may still have relatively lower old-age dependency ratios than developed economies. It's important to note, however, that these long-term pension projections are based on the assumption that pension coverage and adequacy won't change through the period. Eventual broadening of the coverage of the pension system is thus not incorporated in the projections. Yet as these economies develop and their social fabrics change, government welfare spending may grow faster than GDP--as happened in advanced economies during the last half of the 20th century. If this occurs, we believe the current projections are likely to be proven optimistic. In this context, China offers a good example. During 2008 and 2013, it expanded the coverage of its old-age

schemes to 850 million people or nearly 75% of the population above 15 years, from about 250 million or about 23% of population above 15 years in 2008 (ILO, 2014).

In Chile, Croatia, Latvia as well as other sovereigns in Latin America, the projections of a fall in future pension costs, relying on the establishment of a practically mandatory private funded pension pillar, may be both optimistic and politically unsustainable if based on significant reductions in income replacement rates--which would in turn increase the risk of poverty among the older population. At the other end of the spectrum, Brazil, China, and Ukraine could post the highest increases in pension costs among all sovereigns, because their pension systems remain unchanged for now, and because they also have particularly rapidly deteriorating demographic profiles. Certainly, the recent shift from the one-child- to two-child policy in China earlier this year could have an impact, partly offsetting the currently projected demographic shift. However, the long-term effects are uncertain (Basten and Jiang, 2015).

Chart 3



While some sovereigns have accelerated pension reforms, others have reversed them due to the financial crisis and its impact on government finances. Before the crisis, a number of sovereigns, especially in Central and Eastern Europe established the mandatory private pension pillar. However, in order to narrow their budget deficits following the onset of the crisis, Hungary, Slovakia, and Poland decided to shift a significant portion of the private schemes back to the public domain, with the former two sovereigns making participation on the private pension pillar voluntary. On the

whole, while these decisions improve the near-term position of public finances, they interrupt the process of reducing the long-term impact of pension outlays on the government's financial position and signal risks of policy reversals in this area.

Median public health care spending will peak at 6.7% of GDP in 2050

While the focus of long-term challenges for pension systems is gradually shifting from sustainability toward adequacy of pension benefits, we expect age-related health-care spending will grow faster than retirement costs by 2050. The combination of these two trends is crucial when considering the risk of poverty at old age due to eroded purchasing power, access to health-care services, and their affordability and preventing widening of income inequality which would in turn be negative for economic growth prospects (see "How Increasing Income Inequality Is Dampening U.S. Economic Growth, And Possible Ways To Change The Tide," published Aug. 5, 2014, on RatingsDirect). According to our analysis, we estimate the median increase in public health care spending in our entire sample will be 2.3 percentage points between 2015 and 2050, when it will peak at 6.7% of GDP. New medical technologies and forms of health care delivery will account for much of this increase.

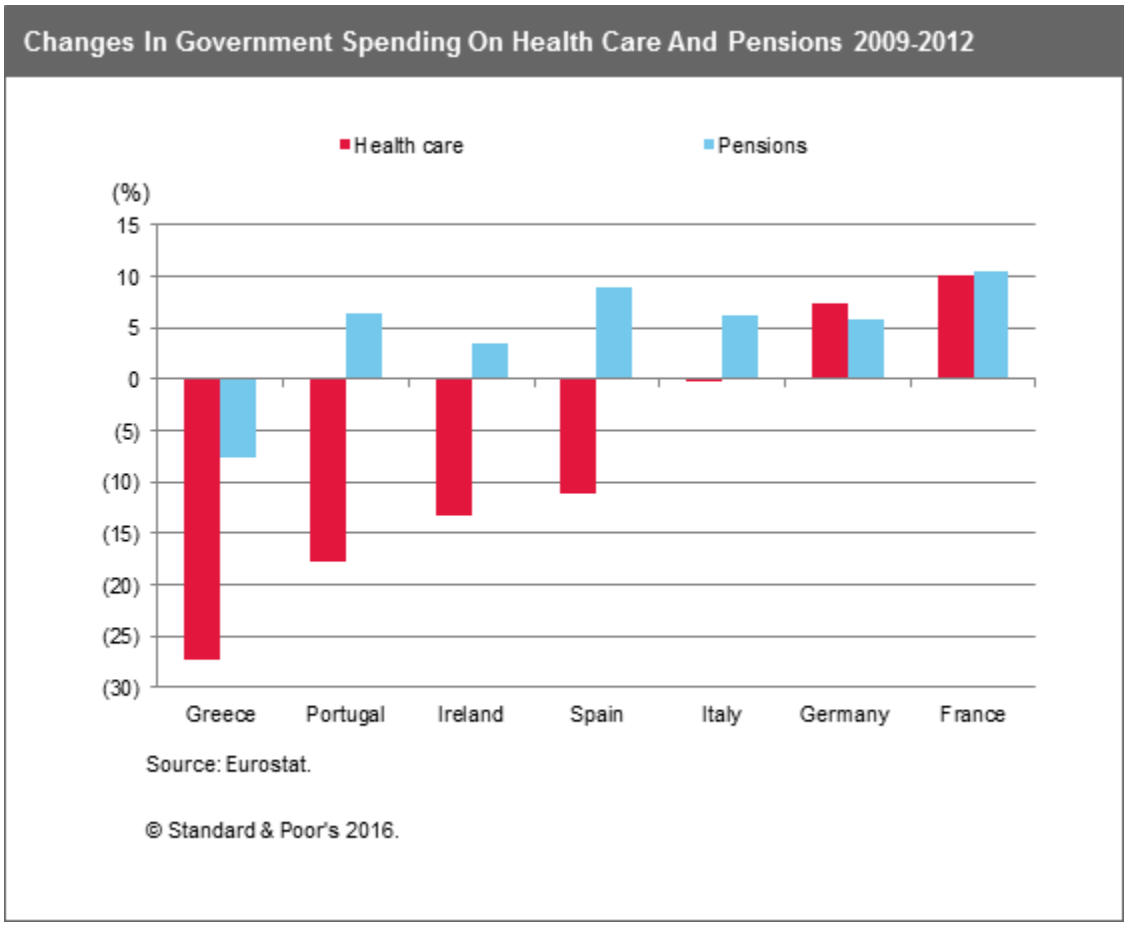
For the EU sovereigns and Norway, we applied the EU Ageing Working Group (AWG) risk scenario projections that include excess cost growth through technological and institutional changes. As indicated by alternative long-term projections of health care spending (less-favorable AWG projections for non-demographic drivers as well as the long-term health care spending projections by the International Monetary Fund or IMF, and S&P's own calculations), there are real risks that non-demographic drivers could lead to further increases in health care outlays, beyond the AWG risk scenario. This confirms the idea that health care costs will likely be the biggest driver of higher age-related spending in coming decades.

Population aging implies that in the future there will be more recipients of the health-care services and fewer contributors to fund the system. Health care spending already represents the majority of the increase in age-related spending in numerous sovereigns we've reviewed. To us this is yet another indicator that, in general, policymakers have focused more on other areas of age-related spending--particularly pensions--while the focus should be now shifting toward improving the design of health care systems and containing health care spending. In our view, this is explained by the fact that it is technically easier to strengthen pension systems by modifying one or two key parameters, among others because the underlying demographic developments appear rather predictable. Politically it is also more attractive, as the sacrifices for the population are usually many years away and myopic voters can often can disregard this impact far into the future or do not fully comprehend it to begin with. In contrast, health- sector reform tends to be technically much more complex, involves ethically highly charged trade-offs, and the reduction of service levels can be immediately witnessed by voters.

Indeed, across the most crisis-affected eurozone sovereigns, such as Greece, Ireland, Spain, or Portugal, the available data show a significant reduction in health care spending since the beginning of the crisis, which contrasts with the developments in other eurozone peers. At the same time, spending on public pensions in these sovereigns has not declined (except in Greece), partly because it has become a crucial element of social security assistance during the protracted economic recession, supporting not only the directly eligible beneficiaries but also their immediate family members that were made redundant or were unable to find a job in the first place. Instead, health care systems suffered severe cuts in their infrastructure, headcount, and coverage, offset by an increase in required out-of-pocket

spending by the households that could no longer benefit from previously available and affordable health care services or medical products. In our view, this also contributed to popular discontent against the incumbent governments and subsequent electoral changes (see "European Sovereign Creditworthiness Might Diminish If Eurosceptics Take Power," published Jan. 2, 2015).

Chart 4



We project that a typical advanced economy's health-care costs will likely rise by about 1.3% of GDP by 2050. A number of advanced sovereigns have taken steps to contain health-care spending. These include constraining pharmaceutical expenses, centralizing procurement, raising health care contributions, cutting public health care sector wage bills, or changing the balance between public- and private-sector financing and delivery of services. On the other hand, the 2010 Affordable Care and Patient Protection Act expanded the health care system's coverage nationwide in the U.S.

In emerging market sovereigns the challenge of containing future health care costs will be made more daunting by the likely expansion of health care coverage to a wider section of the population in light of the emerging market sovereigns' growing income levels and increasing demand for wider health care coverage to replace out-of-pocket spending by households. Indeed, International Labor Organization data indicate that nearly 40% of the world's population is without any form of legal health coverage. In India, for example, more than 80% of the population is not

legally covered while authorities in China, Philippines, and Uruguay have since 2010 increased the system's coverage (ILO 2014).

Long-term care costs are also a growing burden

By 2050, we also project that the median cost of long-term care for the frail and elderly will increase by another 1.2% of GDP to 2.4% of GDP for a typical advanced economy. As in the case of health care projections, for the EU sovereigns and Norway we applied the AWG risk scenario for long-term care, which in addition to demographics and health status, includes the impact of additional costs, and, among other things, the implications of growing income levels. In addition to the AWG projections, long-term care spending projections are available for some national sources and OECD sovereigns (De la Maisonneuve and Oliveira Martins, 2013). Projections of long-term care dynamics aren't available for all emerging market sovereigns. Currently, in many of those, long-term care depends on informal family networks, rather than formal assistance. Still, the increase in median long-term care costs for advanced countries constitutes an upside risk for emerging economies as they expand and as demand for government-financed support grows. At the same time, potential savings from lower spending on education, given the shrinking younger segment of the population pyramid, are likely to be negligible. And the median decline in unemployment benefits, anticipated by experts in advanced sovereigns as a consequence of tightening labor markets, could be on the whole only 0.3% of GDP by 2050, while slightly higher in countries with very high unemployment at the moment--Ireland, Greece, Portugal, and Spain.

Assumptions In Our Simulations

Our spending projections for this study are based on national estimates, on multilateral research projects conducted by the European Commission, the Organization for Economic Cooperation and Development, the IMF and Standard & Poor's own calculations. When interpreting the data and the fiscal consequences simulated below, it's important to keep in mind that they may not be perfectly comparable from one country to another. Although these international organizations and Standard & Poor's aim to correct for undue optimism or pessimism in nationally compiled figures, the success of these harmonization attempts can only be partial (see the 2010 "Methodological And Data Supplement" for further details). Nevertheless, we believe the methodologies underpinning the national and multilateral projections are sufficiently consistent for our analytical purposes, especially over longer timeframes. Where differences exist between international organizations' projections of trends for the same spending item (e.g. health care), these ranges can quantify upside or downside risks to the projections.

Based on the 2015-2050 country-specific profiles of age-related government spending (see chart 5), including all the intermediate years not presented, we calculated various scenarios to assess the importance of demography on government budgets, debt burdens, and sovereign credit ratings.

The simulations share two assumptions, unless stated otherwise:

The "fiscal autopilot"

In this scenario, we assume that government primary balance positions in 2017, as currently forecast by Standard & Poor's (see "Sovereign Risk Indicators," published April 12, 2016, and at http://www.spratings.com/sri/), are maintained every year throughout the simulation period, excluding the effect of incremental future age-related

expenditures after 2017 and changes to interest payments originating from fluctuating government debt levels relative to 2017. In other words, the primary balance of 2017 sets the level of total revenues and non-age-related expenditure as constant throughout the projection period. We selected the 2017 cut-off because we believe it provides an appropriate starting point for simulations of long-term budgetary trends, considering the budgetary consolidation underway among most sovereigns currently.

The "surplus ceiling"

We base this assumption on our expectation that, at least for the majority of sovereigns, maintaining a large budget surplus (defined as more than 2% of GDP) on a sustained basis would be politically unfeasible in the countries covered in the sample. If a higher surplus appeared likely, we assume that taxes would be cut to bring the budget back toward the 2% ceiling. We have made an exception to this rule of politically unsustainable surpluses for Norway, where we believe that more substantial surpluses, driven by revenues from oil and gas, will continue to be realistic policy options.

Unless adjusted specifically for a scenario analysis, the sovereigns' converge to real interest rates that we've set at 3% as of 2025 and that apply to all sovereign debtors. Similarly, we assume 2% annual inflation over the projection period, starting in 2025.

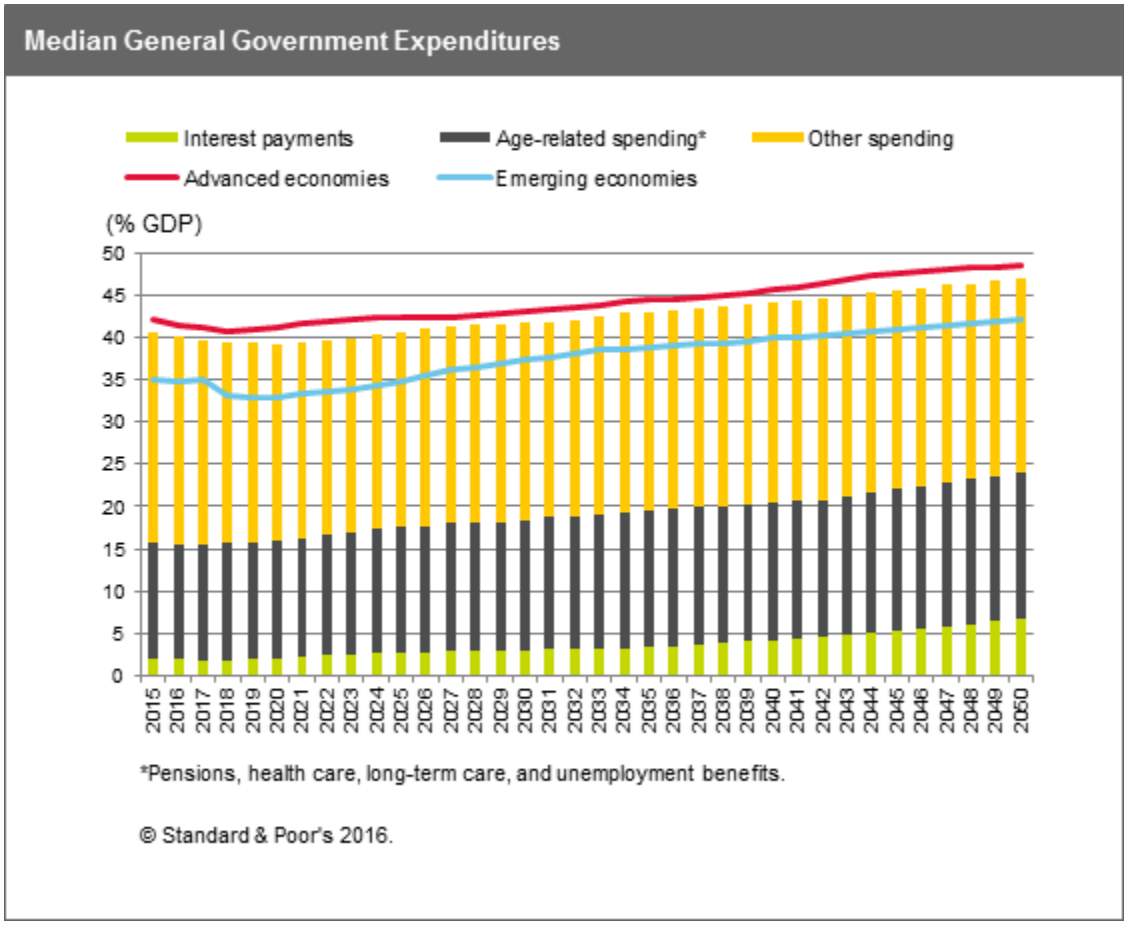
From these assumptions, we then simulate debt and deficit trajectories for all sovereigns under a variety of scenarios. Based on the fiscal outcomes, we derive a "hypothetical sovereign rating." In practice, we take a larger number of factors into consideration when deriving our actual sovereign credit ratings (see "Sovereign Rating Methodology," published on December 23, 2014). Over the very long term, however, prolonged fiscal imbalances, together with economic growth trends, tend to become dominant factors, which we have captured in our simplified hypothetical sovereign ratings model. As we expanded the scope of our study to include more rated sovereigns, which makes the sample more heterogeneous, we included GDP per capita as a variable in the hypothetical sovereign rating simulations. To arrive at our anticipated direction of sovereign ratings, we believe it's appropriate to consider each country's simulated general government balance alongside the median budget balance for each rating category, averaged over the 2000-2009 period, together with the level of outstanding debt and the GDP per capita on an annual basis (see the 2010 "Methodological And Data Supplement" for details).

No-Policy-Change Scenario

Under our no-policy-change scenario, the government refrains from adjusting either its fiscal stance as described above or any policies governing age-related spending. In other words, the government takes no additional steps after 2017, which is our cut-off year, except for borrowing for any budget shortfall that may materialize. We selected 2017 because we believe that the size of current budget deficits in many countries will gradually improve and an earlier year could in many cases imply a much higher deficit, which would overstate the magnitude of the long-term challenge. As age-related outlays creep upward, followed by the additional interest costs of rising national debt, total government expenditures gradually increase. Currently, the median of the sample for general government spending to GDP is about 38%. Following the fiscal consolidation we expect spending to GDP will remain fairly stable until the mid-2020s, reflecting moderate age-related spending increases. This delicate balance will, by our projections, break down in the

2030s, however, as age-related spending starts to accelerate, leading to higher deficits and interest payments. By 2050, we anticipate that total government spending would account about 47% of GDP for a median sovereign (see chart 5).

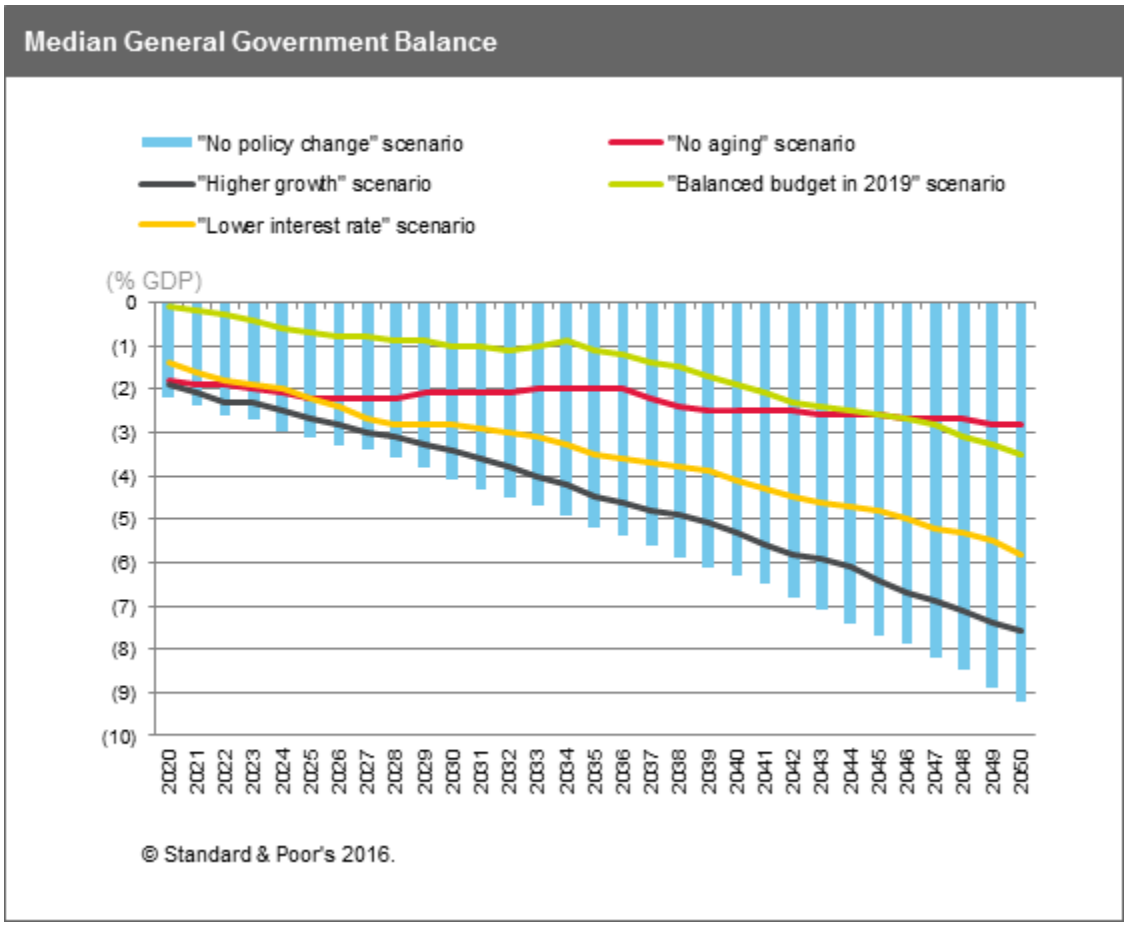
Chart 5



As a result of the higher costs in age-related spending by advanced sovereigns than for emerging market sovereigns, on the basis of our current projections and assumptions the difference in government spending profiles between the two groups is significant. The ratio of government spending to GDP for the advanced sovereigns bottoms out at above 41% in 2020, hitting 48% by 2050. For emerging market sovereigns, this ratio steadily increases from the 2020s and reaches 42.1% in 2050. In a number of advanced economies, under our no-policy-change scenario, we project the state sector will consume more than 55% of GDP in Austria, Belgium, Denmark, Finland, France, Japan, the Netherlands, Slovenia, and Sweden.

Based on the assumptions of unchanged revenues and the dynamics in age-related spending above, a typical advanced sovereign would likely reduce annual deficits until 2020 (see chart 6). Thereafter, we project that deficits will start rising gradually at first, and then, as interest payments increase due to higher debt levels, accelerate to 8% of GDP in 2050. For emerging market sovereigns, we expect deficits will grow steadily over the projection period, partly due to our future interest rate assumption, which for some governments is lower than current borrowing costs, thus offsetting the growing budgetary burden of population aging, reaching 11% of GDP in 2050.

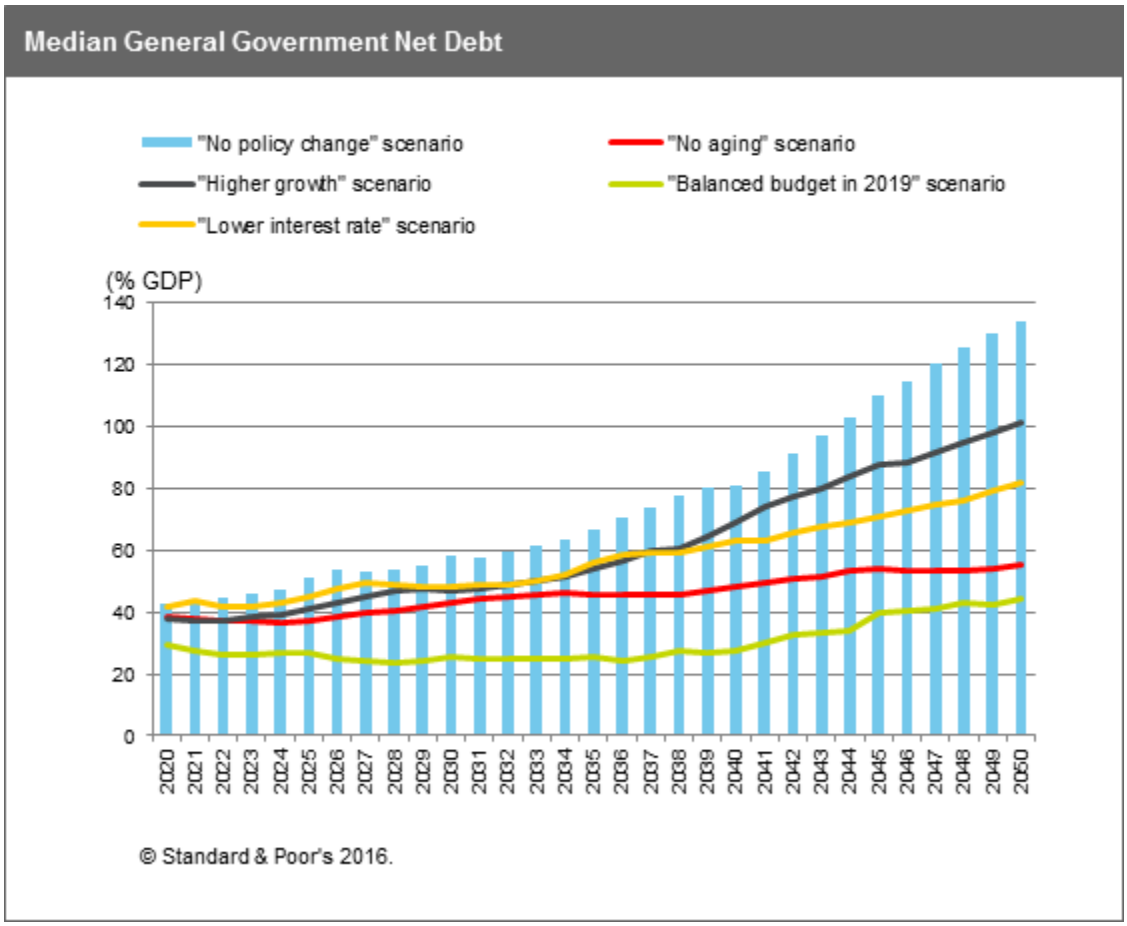
Chart 6



For all sovereigns in the study, we project that burgeoning deficit ratios will push the median net debt ratio to above 130% of GDP in 2050, from about 43% of GDP currently, as the snowball effect of rising interest payments accelerates the negative budgetary impact (see chart 7). This is a reflection of similar trends for advanced and emerging market sovereigns as their respective median debt-to-GDP ratios under the no-policy-change scenario increase more than two-fold to 134% and 136% of GDP. In 2050, we project that six sovereigns will have net debt levels above 250%--Brazil, China, Japan, Russia, Saudi Arabia, and the U.S.

Putting these high debt ratios into perspective, both New Zealand and Australia had government debt burdens in excess of 150% of GDP on the brink of World War II, while the U.K.'s debt reached 252% in 1946, up from 30% in 1913. Of course, these were isolated instances related to sudden shocks such as war and the Great Depression and were often mitigated in the aftermath through high levels of growth due to positive demographic trends or rising inflation. More recently, in 2016, the net general government debt ratio in Greece is expected at more than 190% of GDP, while net government debt in Japan and Italy are projected at respectively 130% and 125% of GDP. Our current projections, in contrast, suggest a generalized and sustained fiscal deterioration due to a well-understood and predictable phenomenon: population aging, albeit at a typically much slower pace than projected in our 2010 and 2013 vintages of the Global Aging report series.

Chart 7



Trends in hypothetical long-term creditworthiness

Gradually rising deficits would likely lead to downward pressure on our hypothetical sovereign ratings. Although the downward drift is significant, it is much less than projections in our 2010 and 2013 Global Aging reports. Hypothetical ratings would weaken somewhat as of 2020, especially at the upper end of the rating scale, while the number of sovereigns with speculative-grade ratings would, after initial stable trend, start increasing as of 2030. From that moment onward, the full budgetary impact of population aging would kick in and the projected downward transition in sovereign ratings would become predominant. A comparison with our 2010 and 2013 simulations of hypothetical sovereign ratings shows that the budgetary consolidation and structural reform efforts made since then have positive implications for future creditworthiness, since the projected deterioration in our hypothetical sovereign credit ratings is much slower and rather contained. This despite the general decline in creditworthiness we have seen since 2010, reflected in a larger number of negative versus positive sovereign rating actions.

We derived the hypothetical ratings evolution shown here by taking into account GDP per capita, general government balances, and net debt levels. We don't intend them to serve as a prediction of actual outcomes (see chart 1). In practice, the hypothetical ratings may overstate the changes in creditworthiness. They are benchmarked against budget balances, net debt, and GDP per capita levels today, whereas it is of course possible that the medians

themselves could worsen as more and more rated sovereigns are squeezed by the costs of their aging populations. Moreover, Standard & Poor's may give more credence to mitigating credit strengths than we've assumed in this simplified model for simulation of sovereign credit ratings. As mentioned above, the methodology underlying the simulation of hypothetical long-term sovereign credit ratings cannot be directly compared with our methodology for assigning sovereign credit ratings, on which current ratings are based. The hypothetical ratings should therefore be regarded as a mere illustration of the credit dimension and profile of the demographic challenge that governments face and not as an indication of expected credit performance.

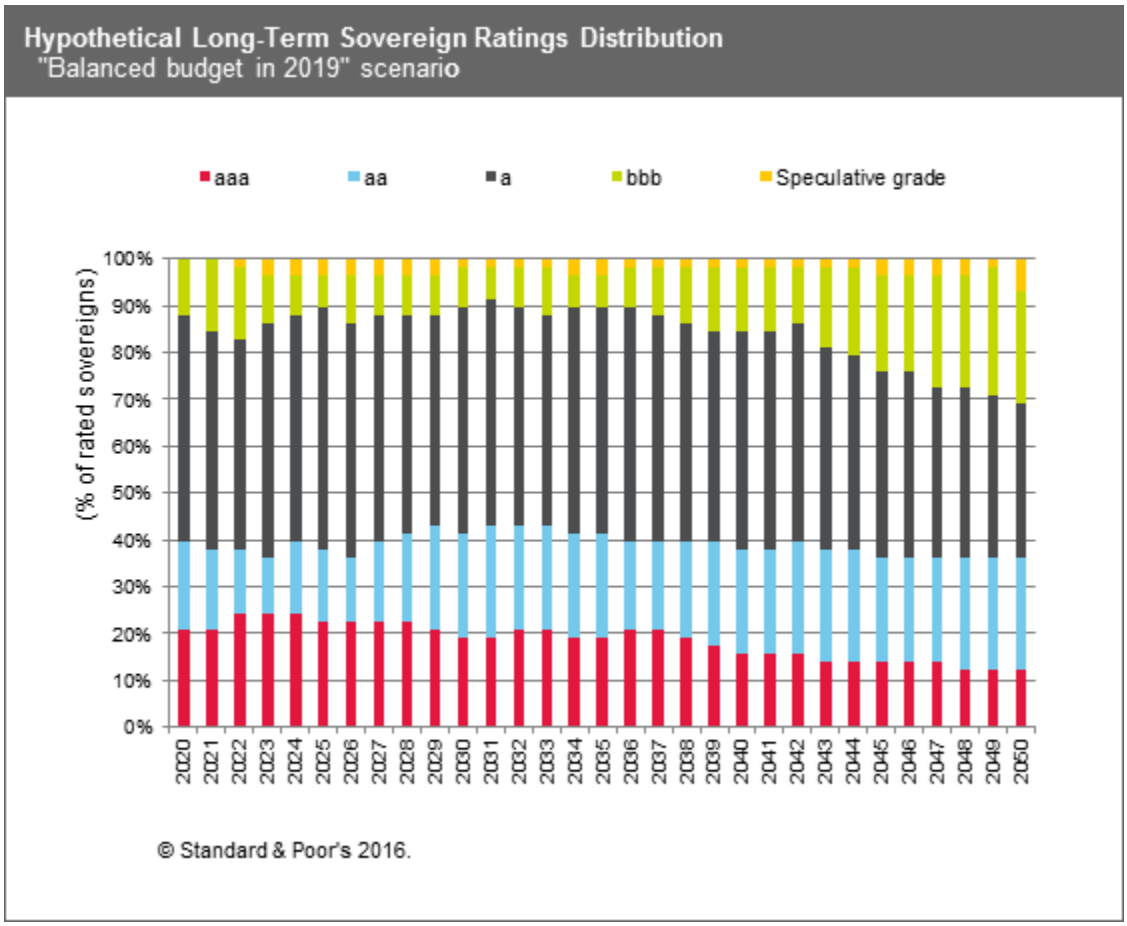
Alternative Scenarios

Analysis of variations from our base-case scenario is helpful in assessing the relative power of the multiple forces at work that determine future fiscal performance and hypothetical rating trends. The first two scenarios deviate from our "fiscal autopilot" assumption and illustrate the importance of policy strategies, resulting either from budgetary consolidation or implementation of structural reforms, in dealing with the budgetary impact of population aging. The other scenarios gauge the impact of external influences.

The "balanced budget" scenario

In this scenario we assume that budgetary adjustments lead to a balanced budget in 2019 for all sovereigns. Once this is achieved, the governments revert to "fiscal autopilot" as of 2020 and take no further action, except for borrowing to pay for incremental age-related (and interest) expenditures as they occur. Deficits and debt will be much more contained, but, for some of the sovereigns, the containment is insufficient to prevent unsustainable results later on. The improvement compared to the base-case scenario is particularly notable in sovereigns that currently have large general government imbalances, since the main assumption requires these sovereigns to take relatively larger budgetary steps by 2019. Overall, this scenario illustrates the power that budgetary consolidation has in offsetting the projected adverse effects of age-related spending (see chart 8).

Chart 8

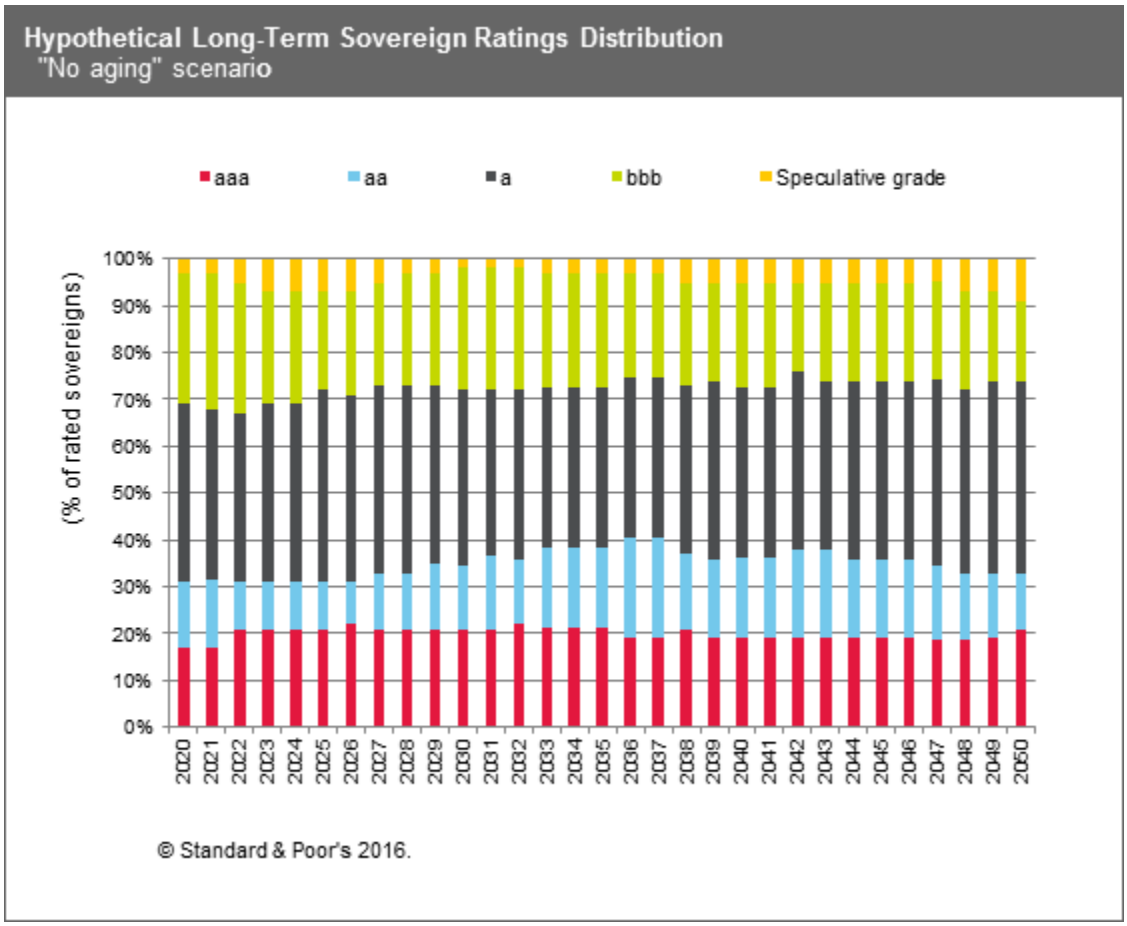


For governments generating surpluses, this scenario is equivalent to a loosening of fiscal policy and therefore has a negative budgetary impact. For those running deficits up to 1% of GDP, the difference in results from the base-case scenario is relatively small. The hypothetical credit metrics initially hold up better than in the base case and despite the overwhelming age-related spending pressures kicking in after 2020, such a policy scenario eventually leads to a higher share of hypothetical ratings in the investment-grade category by 2050. The results show that, despite balancing their budgets by 2019, many governments with significant increases in age-related costs would still end up with very high net debt. Nevertheless, the situation is much better than in our no-policy-change scenario.

"No aging" scenario

In this scenario we assume that governments enact legislation to fully contain future increases in age-related spending over the projection period, illustrating the benefits of related restructuring measures. As such, the scenario captures in isolation the effect of the sovereigns' starting budgetary positions. Besides the effect of the current outstanding stock of government net debt on future budgets, the government primary balance is of particular relevance because it's assumed unchanged from 2017 onward. Thus, while overall debt at the end of this scenario will be lower, sovereigns with relatively high expected government deficits in 2017 will see their debt burden grow faster than those of their peers with more balanced budgets, despite having eliminated future increases in age-related spending (see chart 9).

Chart 9



Unsurprisingly, given the magnitude of the projected increase in age-related spending over the next 40 years, the median in the "no-aging" scenario compares favorably with that in the no-policy-change or "balanced budget" scenario. Deficits and debt would in our view remain well contained under such a robust policy approach, despite budget deficits at the beginning of the projection period, and would in most cases effectively underpin the maintenance of the sovereigns' hypothetical ratings or even lead to hypothetical upgrades. Given the lower projected increase in age-related spending by advanced sovereigns compared with the emerging markets group, this scenario implies a more substantial and positive impact for a sustaining the high levels of creditworthiness in the higher rated advanced sovereigns than for emerging market sovereigns.

"Lower interest rate" scenario

Instead of assuming a 3% real interest rate, we substitute a rate of 2%, which is more in line with that observed during the period of ample global liquidity in the first decade of this century as well as over the past few years in the light of expansionary monetary policies conducted by world's most important central banks. This benign interest rate environment would by 2050 likely lead to lower median net debt for the whole sample--82% of GDP (advanced economies 78%; emerging market economies 89%) compared with 134% (134%; 136%) in the base case. The ratings distribution (not shown) at the end of the simulation is somewhat more favorable than in the base-case scenario, with a lower share of the analyzed sovereign in the so-called speculative category.

"Higher GDP growth" scenario

In this scenario, projected GDP growth is 1 percentage point higher across the projection period. A more buoyant growth environment would by 2050 lead to a lower median net debt for the whole sample--101% of GDP (advanced sovereigns, 99%; emerging market sovereigns, 104%) compared with 189% (216%; 153%) in the base case. The ratings distribution (not shown) is somewhat better than in the base-case scenario, illustrating the benefit of higher economic growth for the long-term sustainability of public finances.

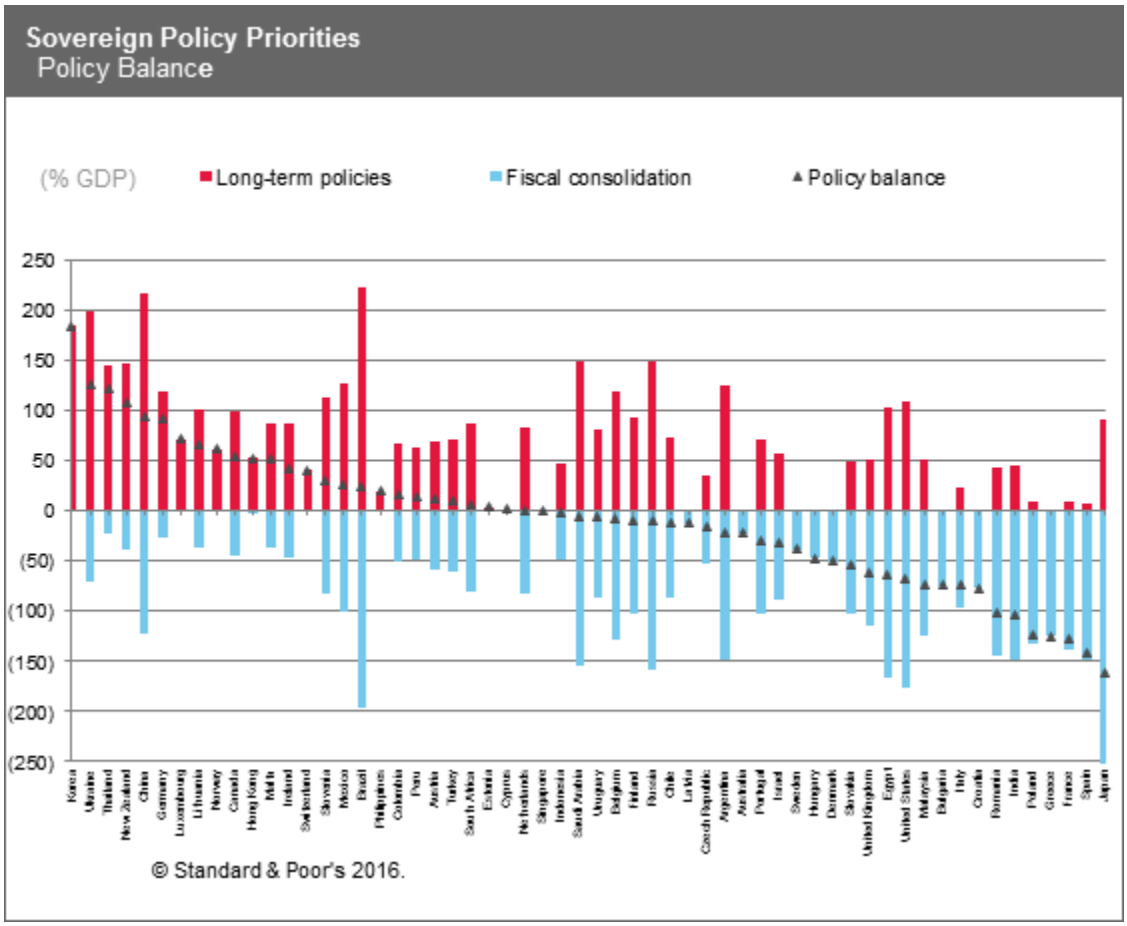
The Policy Implications

Based on our framework, we believe that governments can deal with the future imbalances in two main ways, besides structural reforms aimed at raising employment for older workers and boosting economic growth. First, through a sustained consolidation in budgetary positions; second, through changes to social security and publicly-funded health care systems.

Given the growing urgency of tackling the budgetary implications of population aging and the capacity of governments to influence the outcomes of policy, these two options have been deployed by policy makers in recent years. Chart 10 below show the difference, in percentage of GDP, the reduction in projected net general government debt in 2050 through stabilizing age-related spending as a percentage of GDP in 2018 ("long-term policies") and through achieving a balanced budget in 2019 ("fiscal consolidation"), the absolute difference between the two expressed as the "policy balance".

At one end of the spectrum, for sovereigns which we expect in 2018 to be relatively close to fiscal balance or even in surplus--such as Luxembourg, Korea, Norway, and Switzerland--the marginal extra consolidation would have a very limited effect on the future trajectory of the debt burden. On the other hand, if they were successful in preventing age-related spending from rising in the future they would effectively improve the sustainability of their debt. Conversely, Japan, France, Spain, Italy, and the U.S. have more to gain for fiscal sustainability from focusing on consolidating their budgets. For most countries, a combination of the two directions is likely to be effective, but the relative mix is likely to differ. The absolute length of the bars in the chart is also important, indicating both the magnitude of the problem and suggesting the extent to which a sovereign likely can deal with stabilizing the government debt through either policy option. For example, even if Brazil fully contained the projected increase in its aging costs, it could still face a sustainability gap without further consolidation. A combination of the two policy options of course unleashes a much more powerful effect.

Chart 10



Political Hostility Poses A Threat Governments' Reform Strategies

Despite significant progress governments have already made in reforming social security systems, especially among advanced sovereigns, many potential political stumbling blocks lie ahead. Total age-related spending in a typical advanced sovereign today represents about 55% of a government's total primary spending (total government expenditure without interest payments, including spending on education). This implies that the related spending items will be an important part of any government's budgetary strategy, especially if--as is currently the case--it is aimed at reducing budget deficits in the aftermath of the economic and financial crisis. The longer advanced sovereigns in particular delay steps to boost the relatively fragile economic recovery, especially in Europe, the wider opposition to pension and health care entitlement reductions will become, which may prove socially and politically costly. Given the political dimension that any changes to social spending entitlements entail, we see a risk of policy reversals that, in turn, reinforce opposition to future adjustments. This risk could, among others, result from the projected increase in the median voting age. For example, in Germany the median voting age is projected to increase from 49.8 years in 2010 to between 56 and 57.2 in 2030.

Moreover, implementing such reforms in the near term risks introducing a potentially negative pro-cyclical effect on

economic growth, as demonstrated by most crisis-affected eurozone sovereigns. Given the political dimension that any changes to social spending entitlements entail, we see a risk of policy reversals that, in turn, reinforce opposition to future adjustments. In this context, we observe that rationalizing public pension and health care systems can, if embraced early on, help spread the impact of such unpopular policy measures over an extended period, with the consequently lower burden of adjustment shared across generations of taxpayers and voters. We have seen that such policy behavior is important for managing the expectations of economic agents, thus avoiding sudden policy shifts that could alienate electorates or undermine economic growth performance.

Besides the need to ensure adequate social transfers to reduce the risk of poverty, the ongoing demographic shift will affect the age structure of electorates, which could make the political climate for pension and health care reform more difficult. The current low-growth, low-inflation environment contributes to this challenge, even if recent research suggest that more numerous exits from the labor market and into retirement will support inflationary pressures in the future (Juselius and Takats, 2015). In the meantime, the macroeconomic environment characterized by low yields, appears to be particularly challenging for defined benefit pension systems that are supported by privately funded pillars, which could increase contingent risks for the government.

For emerging market sovereigns, the policy issues are also complex. In these countries, population aging will likely take place against a background of relatively high rates of economic growth. This growth, coupled with greater economic convergence with today's more prosperous sovereigns, should in our view make the social and fiscal pressures arising from population aging relatively more manageable. These governments may have more time to consider their policy options than today's more economically advanced sovereigns, but we expect they will still need to design programs that are fiscally sustainable as their populations continue to age, especially given the ongoing widening of pension- and health-care system coverage in several sovereigns discussed in the current report. Already, following the substantial policy activity among the advanced sovereigns, our analysis suggests that the need to tackle the outstanding challenges is as pressing for many emerging market sovereigns as it is for the sovereigns in advanced economies.

Related Criteria And Research

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Appendix 1

On The Right Track: Comparison With Previous Standard & Poor's Global Aging Reports

For the sovereigns covered in our previous reports, the difference between this year's results and those published in 2010 and 2013 appears sizable (see charts 11 and 12 below). First and foremost, there appears to be a gradual ongoing improvement in general government balances due to budgetary consolidation in most sovereigns following the economic and financial crisis, especially since 2010. While the budgetary situation actually improved between 2006 and 2007, we observed a widening of fiscal gaps and substantial rises in debt outstanding in the aftermath of the global crisis.

In general, our analysis indicates improvement in long-term projections of hypothetical trends in the long-term sustainability of public finances in several sovereigns. This is particularly true among the advanced sovereigns in Cyprus and the Netherlands, and among the emerging market sovereigns in Russia and Turkey. In part, this can be ascribed to an improved budgetary position compared to what was expected in our 2013 Global Aging report, an element which is relevant in particular for Cyprus, the Netherlands, Russia, and Turkey among the above mentioned countries. This trend was, however, widespread across our sample, with only a few exceptions. Given the long-term budgetary projections' substantial sensitivity to the sovereigns' gradually improved budgetary position in this report compared with 2010, even a small reduction in budget deficit at the beginning of the projection period has a significant amplifying impact on the long-term government debt trajectory.

This report also includes updated long-term projections on real GDP and individual age-related spending items. In this context, there is a substantial change in the long-term projection of pension spending and to a lesser extent health care spending in the EU sovereigns. Changes to the revised underlying pension spending projections, in particular in Cyprus, Luxembourg, Slovakia, and Spain, reflect adjustments to these sovereigns' pension systems and in some countries also lower old-age dependency ratios. Compared to the 2013 report, the lower increase in future pension spending in Korea and Turkey on the basis of the IMF projections and our own calculations has a positive impact on their long-term credit metrics, although the underlying challenge remains a significant one, especially in Korea.

The health care and long-term care spending projections by the EU Ageing Working Group for the EU sovereigns and Norway, incorporated in this analysis, have also improved compared to our 2013 report. The most recent set of available projections, incorporating the policy action since 2013 as well as a more favorable demographic scenario, lower GDP growth rates per capita, age-cost profiles, and the lower starting level of spending, imply a relatively more benign future dynamic in health care and a more adverse trend in long-term care outlays, as indicated by the "AWG risk scenario" projections for both items. These elements contributed significantly to lower growth in overall age-related spending than we anticipated in 2013. This, in turn, implies a lower government debt burden throughout the projection period compared with our 2013 results for a large number of sovereigns.

As illustrated by the 2016 median general government balance and debt trajectories, efforts undertaken by governments in recent years have contributed significantly to containing the future challenges to the long-term sustainability of public finances. As of mid-2030s, however, the 2013 median approaches our 2006 and 2007 estimates as the modifications to the social security system adopted over recent years improve the time profile of age-related spending.

Chart 11

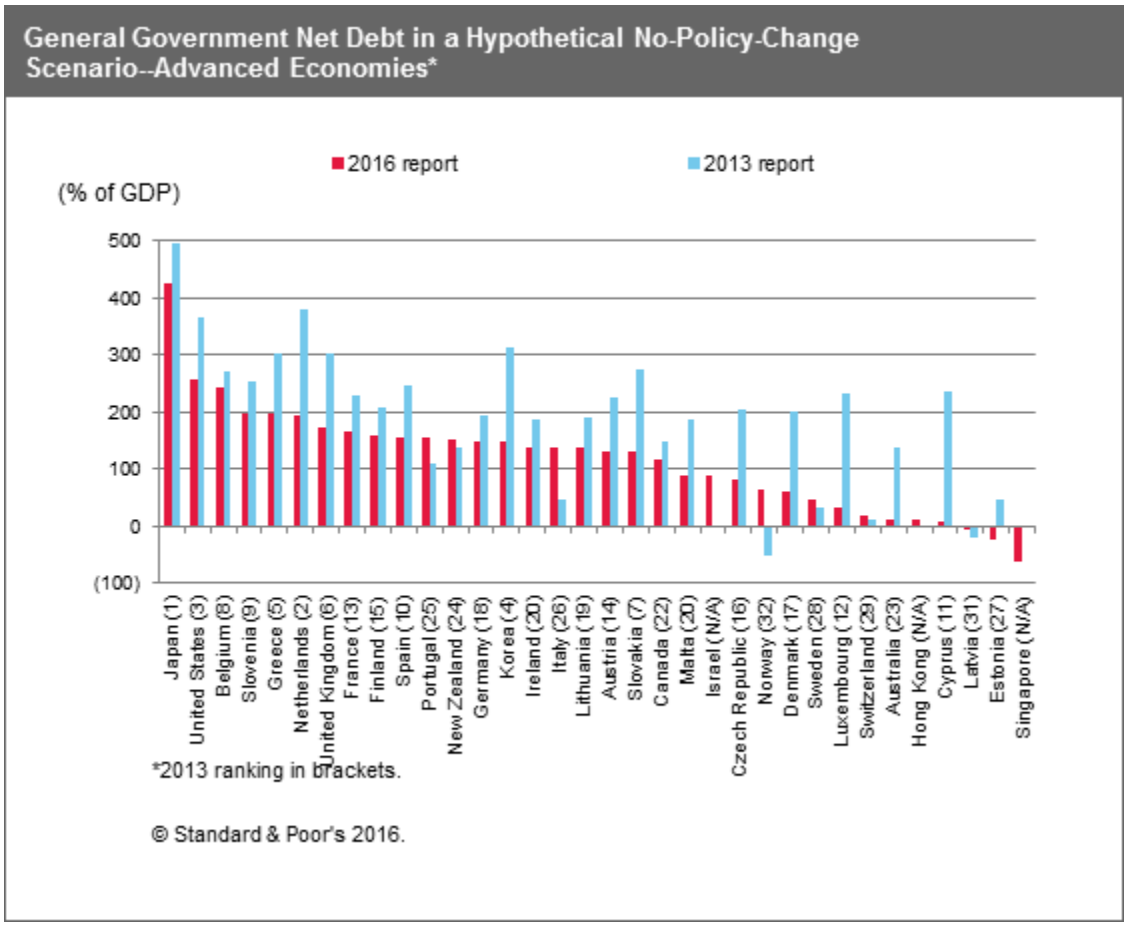
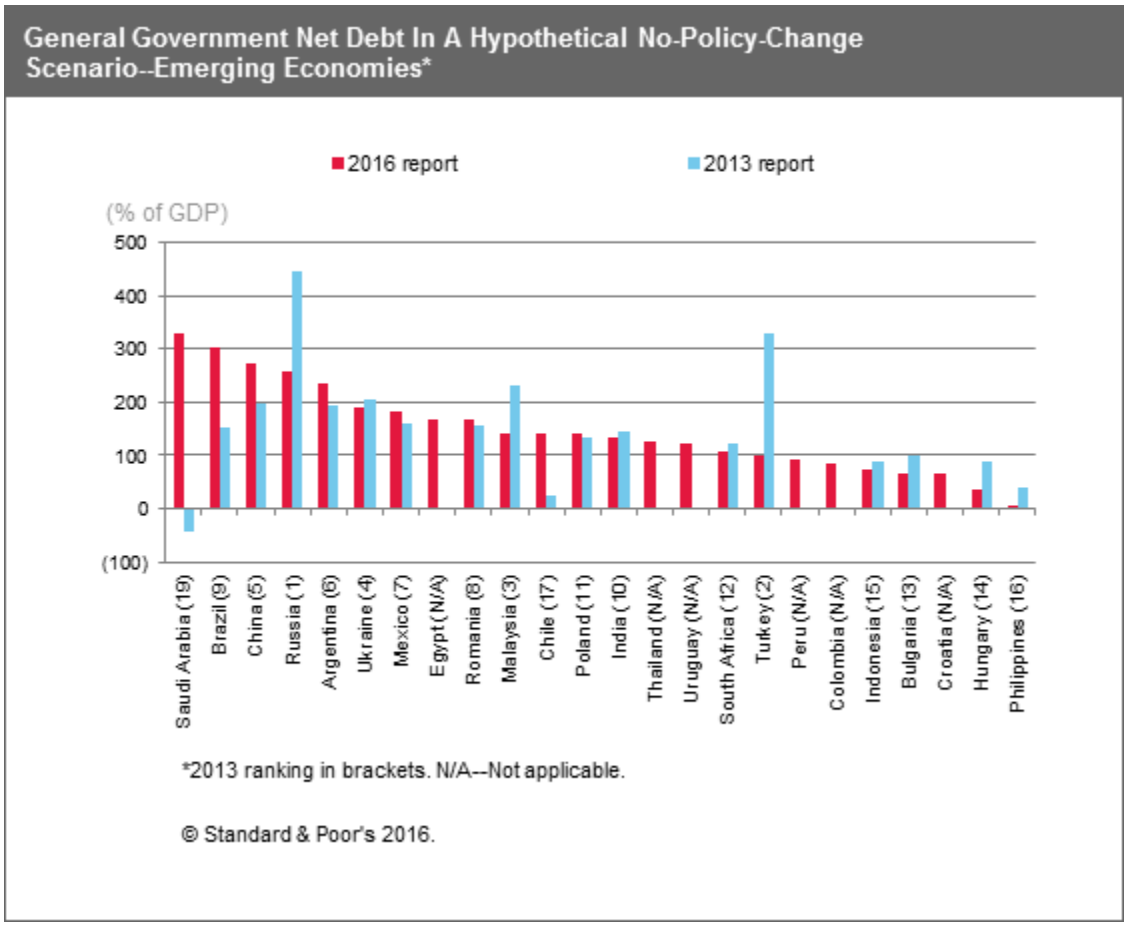

General Government Net Debt in a Hypothetical No-Policy-Change Scenario--Advanced Economies*
2016 report
2013 report
(% of GDP)
500
400
300
200
100
0
(100)
Japan (1)
United States (3)
Belgium (8)
Slovenia (9)
Greece (5)
Netherlands (2)
United Kingdom (6)
France (13)
Finland (15)
Spain (10)
Portugal (25)
New Zealand (24)
Germany (18)
Korea (4)
Ireland (20)
Italy (26)
Lithuania (19)
Austria (14)
Slovakia (7)
Canada (22)
Malta (20)
Israel (N/A)
Czech Republic (16)
Norway (32)
Denmark (17)
Sweden (28)
Luxembourg (12)
Switzerland (29)
Australia (23)
Hong Kong (N/A)
Cyprus (11)
Latvia (31)
Estonia (27)
Singapore (N/A)
*2013 ranking in brackets.
© Standard & Poor's 2016.

Chart 12



Appendix 2: Data And Scenario Results

Table 1

Population And Old-Age Dependency

	--Population (mil.)--								--Old-age dependency ratio (%)--							
	2015	2020	2025	2030	2035	2040	2045	2050	2015*	2020	2025	2030	2035	2040	2045	2050
Argentina	43	46	48	49	51	53	54	55	17.1	18.2	19.3	20.3	21.5	23.2	26.3	28.8
Australia	24	26	27	29	30	31	32	34	22.7	25.3	28.3	31.3	32.8	34.8	35.3	37.3
Austria	9	9	9	9	9	10	10	10	27.0	29.5	32.9	37.9	42.4	44.4	45.1	46.8
Belgium	11	11	12	12	13	14	14	14	27.1	29.7	32.0	34.7	36.5	37.2	37.5	37.9
Brazil	208	210	216	221	223	224	224	223	11.3	13.5	16.3	19.9	23.3	26.8	31.3	36.6
Bulgaria	7	7	7	7	7	6	6	6	28.9	33.9	36.7	39.1	41.7	45.8	50.6	54.3
Canada	36	38	39	40	42	43	43	44	23.8	27.9	33.2	38.5	40.9	42.2	43.3	44.9
Chile	18	19	20	20	21	21	21	22	16.0	18.8	22.4	27.0	32.0	36.2	39.9	44.0
China	1,376	1,403	1,415	1,416	1,408	1,395	1,375	1,348	13.0	17.1	20.4	25.3	32.7	39.6	43.0	46.7
Colombia	48	50	52	53	54	55	55	55	10.2	12.6	15.4	18.8	22.7	25.6	29.2	33.4
Croatia	4	4	4	4	4	4	4	4	27.3	32.1	36.1	39.5	42.0	43.9	46.5	49.3

Table 1

Population And Old-Age Dependency (cont.)

	--Population (mil.)--								--Old-age dependency ratio (%)--							
	2015	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2015***	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Cyprus	1	1	1	1	1	1	1	1	19.1	24.3	28.4	32.1	34.4	36.6	39.1	42.6
Czech Republic	11	11	11	11	11	11	11	11	25.1	31.7	33.7	35.3	36.6	40.8	46.0	48.4
Denmark	6	6	6	6	6	6	6	6	27.9	31.6	33.8	36.9	39.4	40.7	40.5	39.4
Egypt	92	101	109	117	126	134	143	151	8.5	9.0	9.8	10.5	11.2	12.2	13.9	16.3
Estonia	1	1	1	1	1	1	1	1	27.5	32.8	36.5	39.8	42.2	45.5	48.4	51.7
Finland	6	5	6	6	6	6	6	6	29.6	36.1	39.1	41.5	42.3	41.1	41.1	42.0
France	64	66	68	69	71	72	73	74	27.9	33.0	36.1	39.4	42.1	44.1	44.0	43.7
Germany	81	81	81	80	80	79	78	76	31.8	36.2	40.7	47.6	53.9	55.6	56.2	57.4
Greece	11	11	11	10	10	10	10	9	31.2	34.6	37.7	41.6	47.7	53.8	59.9	63.7
Hong Kong	7	8	8	8	8	8	8	8	20.6	26.5	35.1	43.7	50.1	55.6	60.3	64.6
Hungary	10	10	10	9	9	9	9	8	25.4	31.0	33.7	34.4	36.7	40.5	45.6	47.5
India	1,311	1,389	1,462	1,528	1,585	1,634	1,674	1,705	8.6	9.8	11.1	12.5	14.0	15.8	17.8	20.5
Indonesia	258	272	285	296	305	312	318	322	7.7	8.6	10.4	12.4	14.7	17.0	19.2	21.3
Israel	8	9	9	10	11	11	12	13	18.4	20.9	22.1	22.9	23.9	25.6	27.5	29.0
Ireland	5	5	5	5	5	5	5	5	18.9	23.6	27.0	30.7	34.5	39.0	43.2	44.7
Italy	60	60	62	63	64	65	66	67	32.8	35.1	37.3	41.3	45.9	50.2	52.5	52.9
Japan	127	125	123	120	117	114	111	107	43.3	48.3	50.6	53.1	57.0	63.8	68.1	70.9
Korea	25	51	52	53	53	52	52	51	18.0	22.2	29.4	37.6	46.1	54.4	60.7	65.8
Latvia	2	2	2	2	2	2	2	2	28.3	32.5	37.2	42.2	45.3	47.8	49.0	50.7
Lithuania	3	3	3	2	2	2	2	2	27.4	32.3	39.5	48.0	53.5	55.7	54.6	51.6
Luxembourg	1	1	1	1	1	1	1	1	20.3	21.7	23.4	25.8	28.0	29.3	30.4	31.7
Malaysia	30	32	34	36	38	39	40	41	8.4	10.0	12.2	14.5	16.7	18.7	21.0	25.3
Malta	0	0	0	0	1	1	1	1	25.8	33.2	38.0	40.5	40.4	40.9	42.5	45.0
Mexico	127	135	142	148	153	158	161	164	9.8	11.3	13.1	15.4	18.4	22.0	25.7	29.4
Netherlands	17	17	17	17	18	18	18	18	25.9	31.2	35.5	40.6	45.1	47.1	46.8	46.4
Norway	5	5	6	6	6	7	7	7	23.9	26.5	28.3	30.2	32.3	33.7	34.2	35.1
New Zealand	5	5	5	5	5	5	6	6	22.9	26.2	30.2	34.9	38.0	40.6	40.5	40.7
Peru	31	33	35	37	38	40	41	42	10.5	11.8	13.4	15.5	18.0	20.7	23.9	27.2
Philippines	101	108	116	124	131	137	143	148	7.2	8.0	9.1	10.3	11.5	12.5	13.5	14.5
Poland	39	39	38	38	38	37	36	36	20.5	27.7	32.9	35.6	37.3	40.4	45.7	52.6
Portugal	10	11	10	10	10	10	9	9	29.8	34.7	38.5	43.6	49.0	55.7	61.8	64.3
Romania	20	20	20	19	19	19	18	18	24.1	28.8	32.0	32.7	37.6	41.8	46.5	48.7
Russia	144	143	141	139	136	133	131	129	19.1	22.8	26.7	29.5	28.8	29.5	31.0	34.1
Saudi Arabia	32	34	37	39	41	43	45	46	4.2	5.3	7.1	9.5	12.4	16.4	20.1	23.2
South Africa	55	57	58	60	62	63	64	66	7.7	8.3	9.2	10.5	11.4	12.2	12.9	14.9
Singapore	6	6	6	6	7	7	7	7	16.1	21.3	28.6	36.5	43.7	51.1	57.2	61.6
Slovakia	5	5	5	5	5	5	5	5	18.7	24.8	29.3	32.9	35.8	40.6	47.7	54.9
Slovenia	2	2	2	2	2	2	2	2	25.4	32.2	36.8	41.0	44.6	47.7	51.5	54.1
Spain	46	47	46	45	45	44	45	45	26.8	30.7	34.7	40.2	46.8	54.3	61.1	62.3
Sweden	10	10	10	11	11	11	12	12	30.2	33.1	34.3	35.7	36.9	37.4	37.2	37.6

Table 1

Population And Old-Age Dependency (cont.)

	--Population (mil.)--								--Old-age dependency ratio (%)--							
	2015	2020	2025	2030	2035	2040	2045	2050	2015*	2020	2025	2030	2035	2040	2045	2050
Switzerland	8	9	9	9	10	10	10	10	26.9	29.1	32.9	38.3	43.5	46.1	47.6	49.8
Thailand	68	69	69	68	67	66	65	63	14.6	18.4	23.4	29.2	35.8	42.3	48.2	52.5
Turkey	79	82	85	88	91	93	95	96	11.3	13.1	15.4	18.0	20.9	24.4	28.6	32.8
U.K.	65	64	67	69	71	72	74	76	26.6	29.6	31.9	35.2	37.9	39.1	39.6	40.7
Ukraine	45	44	42	41	39	38	36	35	21.9	26.0	28.1	30.8	30.8	32.1	34.4	38.4
Uruguay	3	4	4	4	4	4	4	4	22.5	23.4	25.0	26.8	28.2	30.5	33.2	35.0
U.S.	322	334	345	356	365	374	382	389	22.3	25.8	30.0	33.8	35.3	36.2	36.0	36.9

*2013 for EU members. Sources: Eurostat, UN.

Table 2

Real GDP Growth

(%)	--2016 Global Aging Report--			--2013 Global Aging Report--		
	2015	2050	2015-2050 average	2015	2050	2015-2050 average
Argentina	2.1	2.6	2.9	2.2	2.9	3.1
Australia	2.2	2.5	2.7	3.1	2.3	2.6
Austria	0.9	1.3	1.5	2.0	1.3	1.5
Belgium	1.4	1.9	1.8	1.0	1.7	1.6
Brazil	(3.9)	2.1	2.1	4.0	2.0	2.9
Bulgaria	3.0	0.9	1.5	1.9	0.8	1.3
Canada	1.2	1.8	2.0	1.4	1.9	1.6
Chile	2.1	2.0	3.0	5.0	1.9	3.2
China	6.9	1.8	3.7	8.6	2.2	4.5
Colombia	3.1	3.8	4.3	N.A.	N.A.	N.A.
Croatia	1.6	1.4	1.6	N.A.	N.A.	N.A.
Cyprus	1.6	2.2	2.2	(0.5)	1.6	1.7
Czech Republic	4.3	1.5	1.8	2.0	1.1	1.6
Denmark	1.2	1.9	1.8	1.2	1.7	1.5
Egypt	4.2	3.8	4.2	N.A.	N.A.	N.A.
Estonia	1.1	0.9	1.5	3.2	0.9	1.9
Finland	0.6	1.5	1.5	1.5	1.4	1.5
France	1.2	1.8	1.6	1.4	1.6	1.6
Germany	1.7	0.9	1.0	1.5	0.8	0.8
Greece	(0.2)	0.9	1.2	0.0	1.3	1.0
Hong Kong	2.4	1.4	1.9	N.A.	N.A.	N.A.
Hungary	2.9	1.4	1.7	1.5	0.9	1.4
India	7.6	3.9	5.5	5.8	3.2	4.6
Indonesia	4.8	3.7	4.5	4.6	3.4	3.9
Israel	2.6	2.5	2.7	N.A.	N.A.	N.A.
Ireland	7.8	1.9	1.9	2.4	2.0	2.4
Italy	0.8	1.6	1.4	1.1	1.5	1.4

Table 2

Real GDP Growth (cont.)

(%)	--2016 Global Aging Report--			--2013 Global Aging Report--		
	2015	2050	2015-2050 average	2015	2050	2015-2050 average
Japan	0.7	1.2	1.1	1.0	2.0	1.7
Korea	2.6	1.4	2.2	3.0	1.4	1.9
Latvia	2.7	0.9	1.6	3.7	0.3	1.7
Lithuania	1.6	1.2	1.2	3.6	0.7	1.8
Luxembourg	4.9	2.2	2.8	1.4	1.7	1.7
Malaysia	5.0	2.6	3.7	4.9	3.0	4.0
Malta	6.3	1.4	2.1	2.0	0.8	1.6
Mexico	2.5	3.0	3.2	2.2	2.5	2.6
Netherlands	1.9	1.5	1.3	1.2	1.4	1.2
Norway	1.6	2.1	2.3	2.0	1.8	1.9
New Zealand	3.3	2.1	2.4	3.1	1.7	2.0
Peru	3.3	3.2	3.6	N.A.	N.A.	N.A.
Philippines	5.8	4.3	5.1	5.1	4.8	5.3
Poland	3.6	0.6	1.9	2.4	0.5	1.4
Portugal	1.5	0.7	1.1	1.5	1.1	1.5
Romania	3.7	1.4	1.8	3.1	0.5	1.3
Russia	(3.8)	1.1	1.4	4.5	1.5	2.3
Saudi Arabia	3.4	2.8	3.1	N.A.	N.A.	N.A.
South Africa	1.3	2.1	3.3	4.3	2.0	3.0
Singapore	2.0	1.6	2.1	N.A.	N.A.	N.A.
Slovakia	3.6	0.5	1.8	2.6	0.6	1.6
Slovenia	2.9	1.3	1.5	1.7	0.9	1.3
Spain	3.2	1.5	1.6	1.0	1.2	1.7
Sweden	4.1	1.9	2.2	2.8	1.6	1.9
Switzerland	0.9	1.6	1.6	1.7	1.6	1.7
Thailand	2.8	3.1	3.4	N.A.	N.A.	N.A.
Turkey	4.0	1.8	3.2	5.0	1.5	2.8
U.K.	2.3	1.8	1.8	1.7	1.8	1.9
Ukraine	(9.9)	3.4	3.4	3.5	2.2	3.3
Uruguay	1.0	2.7	3.0	N.A.	N.A.	N.A.
U.S.	2.4	2.3	2.2	4.2	2.1	2.4

N.A.--Not available. Sources: EC, OECD, national sources, own calculations.

Table 3

Total Age-Related Spending (% GDP)

(%)	Foreign currency rating	2015	2020f	2025f	2030f	2035f	2040f	2045f	2050f
Argentina	SD/NM/SD	13.2	13.9	14.7	15.5	16.5	17.6	18.7	19.8
Australia	AAA/Stable/A-1+	8.7	8.2	7.7	7.8	7.9	8.3	8.6	9.1
Austria	AA+/Stable/A-1+	23.1	23.2	23.7	24.3	25.0	25.3	25.6	25.9
Belgium	AA/Stable/A-1+	22.0	22.6	23.7	24.9	25.6	25.9	26.1	26.2

Table 3

Total Age-Related Spending (% GDP) (cont.)

(%)	Foreign currency rating	2015	2020f	2025f	2030f	2035f	2040f	2045f	2050f
Brazil	BB/Negative/B	13.0	14.2	15.5	16.8	19.0	21.2	23.4	25.6
Bulgaria	BB+/Stable/B	14.4	13.5	13.2	13.3	13.4	13.6	14.0	14.5
Canada	AAA/Stable/A-1+	15.4	16.2	17.0	17.9	18.3	18.7	19.1	19.5
Chile	AA-/Stable/A-1+	9.2	9.6	10.1	10.6	11.2	11.9	12.6	13.2
China	AA-/Negative/A-1+	6.3	7.7	9.2	10.7	12.1	13.6	15.1	16.5
Colombia	BBB/Negative/A-2	5.7	6.2	6.6	7.1	7.8	8.6	9.3	10.0
Croatia	BB/Negative/B	17.6	17.9	17.8	17.3	16.5	15.8	15.5	15.3
Cyprus	BB-/Positive/B	13.4	13.2	13.3	13.6	13.6	13.3	13.3	13.2
Czech Republic	AA-/Stable/A-1+	15.8	15.9	16.3	16.4	16.5	16.8	17.2	17.7
Denmark	AAA/Stable/A-1+	21.9	20.9	20.9	21.3	21.7	21.7	21.5	21.5
Egypt	B-/Stable/B	4.4	5.4	6.4	7.4	7.9	8.3	8.8	9.2
Estonia	AA-/Stable/A-1+	12.8	13.1	12.9	12.9	12.9	13.0	13.0	13.0
Finland	AA+/Negative/A-1+	25.5	26.7	27.8	28.4	28.3	27.8	27.4	27.2
France	AA/Negative/A-1+	26.1	26.2	26.6	26.5	26.3	26.1	25.7	25.3
Germany	AAA/Stable/A-1+	20.1	20.7	21.6	22.5	23.2	23.7	24.1	24.5
Greece	B-/Stable/B	24.2	23.5	23.0	22.5	22.3	22.6	22.7	23.3
Hong Kong	AAA/Negative/A-1+	5.7	6.2	6.6	7.1	7.3	7.5	7.7	7.8
Hungary	BB+/Stable/B	16.8	15.7	15.2	15.1	15.4	16.0	16.9	17.3
India	BBB-/Stable/A-3	2.3	2.5	2.8	3.0	3.5	4.0	4.5	5.1
Indonesia	BB+/Positive/B	2.2	2.5	2.8	3.1	3.6	4.2	4.7	5.2
Israel	A+/Stable/A-1	10.1	10.5	10.8	11.2	11.7	12.1	12.6	13.0
Ireland	A+/Stable/A-1	16.2	16.5	17.4	18.1	18.8	19.3	19.7	19.6
Italy	BBB-/Stable/A-3	24.4	24.2	24.4	24.8	25.1	25.2	25.1	24.7
Japan	A+/Stable/A-1	18.7	19.1	19.6	20.2	20.6	21.1	21.6	22.1
Korea	AA-/Stable/A-1+	7.7	9.3	11.0	12.8	14.0	15.3	16.5	17.8
Latvia	A-/Stable/A-2	12.0	10.8	10.6	10.6	10.7	10.7	10.6	10.5
Lithuania	A-/Stable/A-2	13.0	12.9	14.0	15.4	16.3	16.4	16.1	15.6
Luxembourg	AAA/Stable/A-1+	16.5	17.4	18.1	18.9	19.6	20.1	20.5	20.6
Malaysia	A-/Stable/A-2	5.6	6.0	6.3	6.7	7.0	7.4	7.7	8.1
Malta	BBB+/Positive/A-2	17.0	17.7	18.2	18.6	19.1	19.6	20.3	21.1
Mexico	BBB+/Stable/A-2	4.7	5.7	6.7	7.7	8.6	9.6	10.5	11.4
Netherlands	AAA/Stable/A-1+	20.2	20.3	20.5	21.5	22.6	23.5	23.9	24.2
Norway	AAA/Stable/A-1+	23.9	24.7	25.6	26.4	27.2	27.7	28.1	28.8
New Zealand	AA/Stable/A-1+	13.2	13.7	15.0	16.2	17.5	18.8	19.7	20.6
Peru	BBB+/Stable/A-2	4.1	4.6	5.2	5.7	6.2	6.6	7.0	7.4
Philippines	BBB/Stable/A-2	3.4	3.5	3.7	3.9	4.1	4.3	4.4	4.6
Poland	BBB+/Negative/A-2	16.4	16.1	16.3	16.4	16.4	16.4	16.8	17.3
Portugal	BB+/Stable/B	22.0	22.5	22.9	23.3	23.7	23.9	24.0	24.1
Romania	BBB-/Stable/A-3	12.9	13.2	13.3	13.5	14.0	14.3	14.5	14.6
Russia	BB+/Negative/B	13.1	14.0	15.0	16.0	16.7	17.5	18.3	19.1
Saudi Arabia	A-/Stable/A-2	5.7	6.8	7.9	9.0	10.2	11.5	12.7	13.9

Table 3

Total Age-Related Spending (% GDP) (cont.)

(%)	Foreign currency rating	2015	2020f	2025f	2030f	2035f	2040f	2045f	2050f
South Africa	BBB-/Negative/A-3	6.3	6.8	7.4	8.0	8.7	9.5	10.2	10.9
Singapore	AAA/Stable/A-1+	1.9	2.1	2.4	2.6	2.7	2.9	3.0	3.2
Slovakia	A+/Stable/A-1	14.4	14.7	14.8	14.8	15.1	15.8	16.5	17.3
Slovenia	A-/Positive/A-2	19.4	19.3	19.8	21.0	22.5	23.8	24.9	25.6
Spain	BBB+/Stable/A-2	20.8	20.7	20.2	20.1	20.4	21.0	21.9	22.0
Sweden	AAA/Stable/A-1+	19.7	19.5	19.5	19.7	19.8	19.7	19.5	19.5
Switzerland	AAA/Stable/A-1+	13.7	14.0	14.2	14.6	14.9	15.3	15.6	16.0
Thailand	BBB+/Stable/A-2	6.5	7.9	9.2	10.6	11.3	12.1	12.8	13.6
Turkey	BB+/Negative/B	10.9	11.1	11.3	11.6	12.5	13.5	14.5	15.5
U.K.	AAA/Negative/A-1+	16.9	16.9	17.6	17.9	18.5	18.9	18.8	18.9
Ukraine	B-/Stable/B	22.4	23.9	25.3	26.8	28.6	30.4	32.2	34.0
Uruguay	BBB/Stable/A-2	13.8	14.3	14.9	15.5	16.1	16.7	17.4	18.0
U.S.	AA+/Stable/A-1+	11.2	11.8	12.8	13.9	14.7	15.2	15.5	16.0
Medians									
Whole sample		13.6	14.0	14.9	15.4	16.2	16.2	16.7	17.3
Advanced economies		16.7	17.2	17.8	18.4	18.9	19.5	19.7	20.1
Emerging economies		7.8	8.7	9.7	10.6	11.7	12.8	13.4	14.2
BRICs		9.6	10.9	12.1	13.3	14.4	15.6	16.7	17.8
Europe		17.3	17.8	18.1	18.8	19.3	19.7	20.0	20.1
Asia		5.7	6.8	7.9	9.0	10.2	11.5	12.6	13.0
Latin America		9.2	9.6	10.1	10.6	11.2	11.9	12.6	13.2
G-7		19.0	19.0	20.0	20.0	21.0	21.0	22.0	22.0
AAA group		16.7	17.2	17.8	18.4	19.1	19.3	19.3	19.5
AA group		14.5	14.8	15.6	16.3	17.0	17.8	18.5	19.2
BBB-A group		12.5	11.9	12.4	13.0	13.4	14.0	14.5	14.6
Speculative-grade group		13.9	14.1	14.9	15.3	15.9	15.9	16.2	16.4

f--Standard & Poor's projections. NM--Not meaningful. Sources: EC, ILO, IMF, OECD, national sources, own calculations.

Table 4

Age-Related Spending By Component (% GDP)

	--2015--					--2050f--					--Change 2015-2050f--				
	Total	PEN	HCA	LTC	UNE	Total	PEN	HCA	LTC	UNE	Total	PEN	HCA	LTC	UNE
Argentina	13.2	7.8	5.4	0.0	0.0	19.8	10.4	9.3	0.0	0.0	6.6	2.7	3.9	0.0	0.0
Australia	8.7	4.0	4.2	0.0	0.5	9.1	3.7	5.0	0.0	0.4	0.4	(0.3)	0.8	0.0	(0.1)
Austria	23.1	13.9	7.0	1.4	0.8	25.9	14.6	8.2	2.5	0.6	2.8	0.7	1.2	1.0	(0.1)
Belgium	22.0	12.1	6.0	2.2	1.8	26.2	15.0	6.1	3.5	1.6	4.2	2.9	0.1	1.3	(0.2)
Brazil	13.0	9.1	3.9	0.0	0.0	25.6	16.8	7.6	1.2	0.0	12.7	7.8	3.7	1.2	0.0
Bulgaria	14.4	9.5	4.1	0.4	0.5	14.5	9.2	4.5	0.5	0.3	0.1	(0.3)	0.4	0.1	(0.2)
Canada	15.4	5.5	7.9	1.2	0.8	19.5	6.9	9.5	2.4	0.7	4.2	1.4	1.6	1.2	(0.1)
Chile	9.2	5.1	4.1	0.0	0.0	13.2	4.2	6.8	2.3	0.0	4.1	(0.9)	2.7	2.3	0.0
China	6.3	4.1	2.1	0.1	0.0	16.5	9.5	4.5	2.5	0.0	10.3	5.5	2.4	2.4	0.0

Table 4

Age-Related Spending By Component (% GDP) (cont.)

	--2015--					--2050f--					--Change 2015-2050f--				
	Total	**PEN**	**HCA**	**LTC**	**UNE**	**Total**	**PEN**	**HCA**	**LTC**	**UNE**	**Total**	**PEN**	**HCA**	**LTC**	**UNE**
Colombia	5.7	3.8	1.9	0.0	0.0	10.0	3.1	6.9	0.0	0.0	4.3	(0.7)	5.0	0.0	0.0
Croatia	17.6	10.7	6.0	0.4	0.5	15.3	7.2	7.4	0.5	0.2	(2.3)	(3.5)	1.4	0.0	(0.3)
Cyprus	13.4	9.3	3.0	0.3	0.8	13.2	9.2	3.3	0.5	0.3	(0.3)	(0.2)	0.3	0.2	(0.6)
Czech Republic	15.8	9.0	5.8	0.8	0.2	17.7	9.6	6.6	1.2	0.2	1.9	0.6	0.8	0.5	(0.0)
Denmark	21.9	9.8	8.2	2.5	1.3	21.5	7.5	9.0	4.2	0.9	(0.3)	(2.4)	0.7	1.7	(0.4)
Egypt	4.4	3.0	1.4	0.0	0.0	9.2	6.6	2.6	0.0	0.0	4.8	3.6	1.2	0.0	0.0
Estonia	12.8	7.6	4.4	0.6	0.2	13.0	6.7	5.0	1.1	0.1	0.1	(0.9)	0.5	0.5	(0.0)
Finland	25.5	13.3	7.9	2.6	1.8	27.2	12.8	8.5	4.4	1.5	1.6	(0.5)	0.6	1.9	(0.3)
France	26.1	14.8	7.8	2.0	1.5	25.3	12.8	8.7	2.7	1.1	(0.8)	(2.0)	0.9	0.7	(0.4)
Germany	20.1	10.1	7.7	1.5	0.8	24.5	12.5	8.4	2.8	0.8	4.4	2.4	0.7	1.3	0.0
Greece	24.2	16.0	6.6	0.5	1.1	23.3	14.4	7.8	0.8	0.2	(0.9)	(1.6)	1.2	0.3	(0.8)
Hong Kong	5.7	3.8	1.9	0.0	0.0	7.8	5.9	1.9	0.0	0.0	2.1	2.1	0.0	0.0	0.0
Hungary	16.8	11.0	4.7	0.8	0.2	17.3	10.7	5.4	1.1	0.2	0.6	(0.4)	0.7	0.3	(0.1)
India	2.3	1.0	1.2	0.1	0.0	5.1	1.0	2.2	1.9	0.0	2.8	0.0	1.0	1.8	0.0
Indonesia	2.2	0.8	1.3	0.1	0.0	5.2	1.2	2.1	1.9	0.0	3.0	0.4	0.8	1.8	0.0
Israel	10.1	5.3	4.3	0.5	0.0	13.0	6.2	5.0	1.8	0.0	2.9	0.9	0.7	1.3	0.0
Ireland	16.2	7.5	6.1	0.7	1.9	19.6	10.0	7.3	1.3	1.0	3.4	2.5	1.2	0.6	(1.0)
Italy	24.4	15.6	6.1	1.8	0.9	24.7	14.8	6.8	2.5	0.6	0.3	(0.8)	0.7	0.7	(0.3)
Japan	18.7	10.2	7.1	0.7	0.7	22.1	9.5	9.8	2.6	0.3	3.5	(0.7)	2.7	1.9	(0.4)
Korea	7.7	2.6	4.5	0.3	0.3	17.8	6.3	8.2	3.1	0.2	10.1	3.7	3.7	2.8	(0.1)
Latvia	12.0	7.2	3.9	0.6	0.3	10.5	5.2	4.5	0.8	0.1	(1.4)	(2.0)	0.6	0.1	(0.2)
Lithuania	13.0	7.1	4.3	1.4	0.2	15.6	8.6	4.5	2.4	0.1	2.7	1.5	0.3	1.0	(0.1)
Luxembourg	16.5	9.7	4.6	1.5	0.7	20.6	12.5	5.0	2.7	0.5	4.1	2.7	0.4	1.2	(0.2)
Malaysia	5.6	3.5	2.1	0.0	0.0	8.1	4.1	4.0	0.0	0.0	2.5	0.6	1.9	0.0	0.0
Malta	17.0	9.6	5.8	1.2	0.3	21.1	11.0	7.6	2.1	0.3	4.1	1.4	1.8	1.0	0.0
Mexico	4.7	1.8	2.9	0.0	0.0	11.4	3.0	5.6	2.9	0.0	6.8	1.2	2.7	2.9	0.0
Netherlands	20.2	7.0	7.3	4.0	1.9	24.2	8.1	8.2	6.7	1.2	4.0	1.1	0.9	2.7	(0.8)
Norway	23.9	10.1	7.6	5.8	0.4	28.8	11.6	8.3	8.5	0.4	4.9	1.4	0.7	2.7	0.0
New Zealand	13.2	4.7	6.8	1.3	0.4	20.6	7.2	9.9	3.2	0.3	7.4	2.5	3.1	1.9	(0.1)
Peru	4.1	2.5	1.6	0.0	0.0	7.4	3.2	4.2	0.0	0.0	3.3	0.7	2.6	0.0	0.0
Philippines	3.4	2.0	1.4	0.0	0.0	4.6	2.4	2.2	0.0	0.0	1.2	0.4	0.8	0.0	0.0
Poland	16.4	11.1	4.3	0.8	0.2	17.3	10.4	5.2	1.5	0.1	0.9	(0.7)	1.0	0.7	(0.0)
Portugal	22.0	14.0	6.1	0.5	1.4	24.1	14.4	8.3	0.8	0.6	2.0	0.4	2.1	0.3	(0.8)
Romania	12.9	8.2	3.9	0.7	0.1	14.6	8.4	4.7	1.4	0.1	1.6	0.2	0.8	0.6	(0.0)
Russia	13.1	9.1	3.8	0.2	0.0	19.1	12.4	5.5	1.2	0.0	6.1	3.4	1.7	1.0	0.0
Saudi Arabia	5.7	2.7	3.0	0.0	0.0	13.9	9.4	4.5	0.0	0.0	8.2	6.7	1.5	0.0	0.0
South Africa	6.3	2.2	3.9	0.2	0.0	10.9	3.3	6.5	1.1	0.0	4.7	1.1	2.6	0.9	0.0
Singapore	1.9	0.7	1.2	0.0	0.0	3.2	2.0	1.2	0.0	0.0	1.3	1.3	0.0	0.0	0.0
Slovakia	14.4	8.1	5.8	0.3	0.2	17.3	9.1	7.5	0.6	0.1	2.9	1.0	1.7	0.3	(0.1)
Slovenia	19.4	11.6	5.7	1.5	0.5	25.6	15.6	6.9	2.7	0.4	6.2	4.0	1.1	1.2	(0.2)

Table 4

Age-Related Spending By Component (% GDP) (cont.)

	--2015--					--2050f--					--Change 2015-2050f--				
	Total	**PEN**	**HCA**	**LTC**	**UNE**	**Total**	**PEN**	**HCA**	**LTC**	**UNE**	**Total**	**PEN**	**HCA**	**LTC**	**UNE**
Spain	20.8	11.8	6.0	1.0	2.0	22.0	12.3	7.1	2.1	0.5	1.2	0.5	1.1	1.0	(1.5)
Sweden	19.7	8.7	6.9	3.7	0.4	19.5	7.2	7.3	4.8	0.3	(0.2)	(1.5)	0.4	1.1	(0.1)
Switzerland	13.7	9.8	2.7	0.8	0.5	16.0	10.7	3.3	1.7	0.3	2.3	0.9	0.6	0.9	(0.2)
Thailand	6.5	4.2	2.3	0.0	0.0	13.6	9.0	4.5	0.0	0.0	7.1	4.8	2.2	0.0	0.0
Turkey	10.9	7.2	3.7	0.0	0.0	15.5	5.6	7.7	2.3	0.0	4.7	(1.6)	4.0	2.3	0.0
U.K.	16.9	7.6	7.9	1.2	0.3	18.9	8.1	9.0	1.5	0.2	1.9	0.6	1.1	0.3	(0.1)
Ukraine	22.4	18.1	4.3	0.0	0.0	34.0	27.3	6.7	0.0	0.0	11.6	9.2	2.4	0.0	0.0
Uruguay	13.8	8.9	4.9	0.0	0.0	18.0	9.8	8.2	0.0	0.0	4.3	0.9	3.4	0.0	0.0
U.S.	11.2	4.9	3.0	2.2	1.1	16.0	5.9	5.9	3.2	1.0	4.8	1.0	2.9	1.0	(0.1)
Medians															
Whole sample	13.6	7.9	4.4	0.5	0.3	17.3	9.1	6.7	1.5	0.2	3.7	1.2	2.3	1.0	(0.1)
Advanced economies	16.7	9.2	6.0	1.2	0.6	20.1	9.3	7.3	2.4	0.4	3.4	0.1	1.3	1.2	(0.3)
Emerging economies	7.8	4.6	3.8	0.0	0.0	14.2	7.8	5.3	0.8	0.0	6.4	3.2	1.6	0.8	0.0
BRICs	9.6	6.6	3.0	0.1	0.0	17.8	11.0	5.0	1.6	0.0	8.2	4.4	2.1	1.5	0.0
Europe	17.3	9.8	5.9	0.9	0.5	20.1	10.7	7.0	1.6	0.3	2.8	0.9	1.1	0.6	(0.2)
Asia	5.7	3.5	2.1	0.0	0.0	13.0	5.9	4.5	1.8	0.0	7.3	2.4	2.4	1.8	0.0
Latin America	9.2	5.1	3.9	0.0	0.0	13.2	4.2	6.9	0.0	0.0	4.1	(0.9)	3.0	0.0	0.0
G-7	18.7	10.1	7.7	1.5	0.8	22.1	9.5	8.7	2.6	0.7	3.5	(0.6)	0.9	1.1	(0.1)
AAA group	16.7	8.2	7.1	1.3	0.5	19.5	7.8	7.7	2.5	0.4	2.8	(0.4)	0.6	1.2	(0.1)
AA group	14.5	8.3	5.9	1.4	0.6	19.2	8.4	7.5	2.9	0.5	4.7	0.1	1.6	1.5	(0.1)
BBB-A group	12.5	7.1	4.3	0.4	0.1	14.6	8.8	6.1	1.4	0.1	2.1	1.6	1.8	1.0	(0.0)
Speculative-grade group	13.9	9.4	4.2	0.2	0.1	16.4	9.8	7.1	0.7	0.1	2.5	0.4	2.9	0.5	(0.0)

f--Standard & Poor's projections. PEN--Pensions, HCA--Health care. LTC--Long-term care. UNE--Unemployment benefits. Sources: EC, ILO, IMF, OECD, national sources, own calculations.

Table 5

No Policy Change Scenario

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				--Long-term foreign currency sovereign ratings--	--Hypothetical long-term sovereign ratings--			
	2020f	**2030f**	**2040f**	**2050f**	**2020f**	**2030f**	**2040f**	**2050f**	**As of April 26, 2016**	**2025f**	**2030f**	**2040f**	**2050f**
Argentina	37	75	141	233	(5.2)	(8.6)	(13.9)	(20.5)	SD	bbb	bbb	bbb	spec
Australia	19	13	9	12	(0.6)	0.0	(0.2)	(1.2)	AAA	aaa	aaa	aaa	aaa
Austria	75	81	101	132	(1.6)	(4.0)	(5.9)	(8.0)	AA+	aa	a	bbb	bbb
Belgium	100	132	181	243	(3.8)	(9.0)	(12.5)	(15.7)	AA	bbb	bbb	bbb	spec
Brazil	64	98	171	301	(6.1)	(8.8)	(16.6)	(27.2)	BB	spec	spec	spec	spec
Bulgaria	26	33	44	66	(1.6)	(1.9)	(2.8)	(4.6)	BB+	bbb	bbb	spec	bbb
Canada	14	33	68	117	(1.3)	(4.0)	(6.5)	(9.7)	AAA	aaa	aa	a	bbb
Chile	12	38	79	140	(2.6)	(4.8)	(8.1)	(12.4)	AA-	a	a	a	bbb

Table 5

No Policy Change Scenario (cont.)

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				--Long-term foreign currency sovereign ratings--	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
China	43	81	152	272	(4.1)	(9.4)	(15.7)	(24.3)	AA-	bbb	bbb	spec	spec
Colombia	34	39	55	86	(2.2)	(3.3)	(5.5)	(8.5)	BBB	bbb	bbb	bbb	a
Croatia	80	88	82	66	(3.5)	(3.5)	(1.8)	(0.5)	BB	bbb	bbb	a	a
Cyprus	81	59	34	7	0.2	(0.4)	1.1	2.0	BB-	a	a	a	a
Czech Republic	37	45	58	82	(1.4)	(2.7)	(3.7)	(5.7)	AA-	a	a	a	a
Denmark	28	33	46	59	(1.2)	(2.0)	(3.0)	(3.6)	AAA	aaa	aaa	aaa	aa
Egypt	71	89	125	169	(6.7)	(8.3)	(10.9)	(14.0)	B-	bbb	spec	spec	spec
Estonia	(4)	(10)	(16)	(24)	0.4	0.9	1.1	1.5	AA-	a	aa	aa	aa
Finland	35	71	115	158	(2.9)	(6.7)	(8.4)	(9.8)	AA+	a	a	bbb	bbb
France	91	118	144	167	(3.8)	(6.8)	(7.7)	(8.1)	AA	a	a	bbb	bbb
Germany	59	69	101	149	(0.8)	(4.0)	(6.7)	(9.8)	AAA	aa	a	bbb	bbb
Greece	168	183	182	196	(3.5)	(6.4)	(6.3)	(7.7)	B-	spec	bbb	bbb	bbb
Hong Kong	(27)	(20)	(8)	10	0.2	(0.2)	(1.1)	(2.3)	AAA	aaa	aaa	aaa	aa
Hungary	63	47	35	35	(1.3)	(0.1)	(0.4)	(1.7)	BB+	bbb	a	a	a
India	68	78	97	132	(6.1)	(6.7)	(8.6)	(11.3)	BBB-	bbb	bbb	spec	spec
Indonesia	22	29	45	73	(1.9)	(2.8)	(4.6)	(7.0)	BB+	spec	spec	spec	bbb
Israel	62	60	68	88	(2.7)	(3.1)	(4.3)	(6.1)	A+	a	a	a	a
Ireland	75	81	102	137	(1.4)	(4.1)	(6.3)	(8.3)	A+	a	a	bbb	bbb
Italy	121	124	131	137	(2.6)	(4.5)	(5.3)	(5.1)	BBB-	bbb	bbb	bbb	bbb
Japan	137	202	297	425	(6.8)	(14.0)	(19.5)	(26.8)	A+	bbb	spec	spec	spec
Korea	13	24	68	149	0.3	(3.6)	(8.2)	(14.6)	AA-	a	a	a	bbb
Latvia	29	18	7	(6)	(0.1)	0.4	0.8	1.7	A-	a	a	aa	aa
Lithuania	32	48	90	136	(0.8)	(4.2)	(7.2)	(8.7)	A-	a	bbb	a	bbb
Luxembourg	(16)	(12)	6	34	0.9	(0.4)	(2.5)	(4.4)	AAA	aaa	aaa	aa	aa
Malaysia	52	69	99	141	(4.0)	(5.9)	(8.1)	(10.8)	A-	a	bbb	bbb	bbb
Malta	47	48	61	90	(1.1)	(2.5)	(4.0)	(6.8)	BBB+	a	a	a	a
Mexico	45	74	119	184	(3.6)	(7.3)	(11.3)	(16.3)	BBB+	spec	spec	spec	spec
Netherlands	63	84	129	193	(2.2)	(5.5)	(9.6)	(13.4)	AAA	aa	aa	bbb	bbb
Norway	(219)	(210)	(102)	65	12.3	4.4	(10.5)	(19.8)	AAA	aaa	aaa	a	a
New Zealand	23	38	81	151	(1.2)	(4.2)	(8.8)	(14.0)	AA	aa	aa	a	bbb
Peru	13	30	58	93	(1.8)	(3.8)	(5.9)	(8.5)	BBB+	bbb	spec	spec	bbb
Philippines	14	7	4	5	0.0	0.0	(0.2)	(0.5)	BBB	bbb	bbb	bbb	bbb
Poland	51	68	95	140	(3.2)	(4.8)	(6.1)	(9.0)	BBB+	bbb	bbb	a	bbb
Portugal	112	113	128	154	(2.6)	(4.3)	(5.5)	(7.0)	BB+	bbb	bbb	bbb	bbb
Romania	40	69	113	169	(3.7)	(5.7)	(8.6)	(11.6)	BBB-	spec	bbb	spec	spec
Russia	16	60	135	259	(3.9)	(7.9)	(13.0)	(20.6)	BB+	spec	bbb	spec	spec
Saudi Arabia	(85)	28	163	329	(5.5)	(13.2)	(22.3)	(32.8)	A-	a	a	bbb	spec

Table 5

No Policy Change Scenario (cont.)

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				--Long-term foreign currency sovereign ratings--	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
South Africa	42	44	64	108	(2.8)	(3.5)	(5.9)	(9.5)	BBB-	bbb	bbb	bbb	spec
Singapore	(80)	(69)	(64)	(61)	2.0	2.0	2.0	2.0	AAA	aaa	aaa	aaa	aaa
Slovakia	49	57	81	131	(2.5)	(3.5)	(5.6)	(9.4)	A+	a	a	a	bbb
Slovenia	68	79	122	199	(2.0)	(4.9)	(9.7)	(15.1)	A-	a	a	bbb	bbb
Spain	91	99	117	155	(3.7)	(4.4)	(6.1)	(9.0)	BBB+	a	a	bbb	bbb
Sweden	26	31	39	45	(1.0)	(1.9)	(2.2)	(2.4)	AAA	aaa	aaa	aaa	aaa
Switzerland	19	11	11	17	0.6	0.0	(0.6)	(1.6)	AAA	aaa	aaa	aaa	aaa
Thailand	19	35	72	124	(1.1)	(4.6)	(7.8)	(11.8)	BBB+	spec	spec	bbb	spec
Turkey	27	31	51	98	(2.0)	(2.4)	(5.2)	(9.4)	BB+	bbb	bbb	bbb	bbb
U.K	82	104	135	174	(3.2)	(6.3)	(8.7)	(10.6)	AAA	aa	a	bbb	bbb
Ukraine	60	70	110	190	(3.5)	(6.3)	(11.7)	(19.1)	B-	spec	spec	spec	spec
Uruguay	45	55	81	122	(3.1)	(4.5)	(7.0)	(10.3)	BBB	a	a	a	bbb
U.S.	84	125	188	258	(5.6)	(10.7)	(15.1)	(19.3)	AA+	bbb	bbb	bbb	spec
Medians													
Whole sample	42	58	81	134	(2.2)	(4.1)	(6.3)	(9.2)					
Advanced economies	48	58	81	134	(1.4)	(4.0)	(6.0)	(8.0)					
Emerging economies	41	58	89	136	(3.4)	(4.8)	(7.9)	(11.0)					
BRICs	54	79	143	265	(5.1)	(8.3)	(14.4)	(22.5)					
Europe	55	68	98	136	(1.8)	(4.0)	(6.0)	(8.0)					
Asia	22	31	69	124	(2.0)	(3.6)	(7.8)	(10.8)					
Latin America	37	55	81	140	(3.1)	(4.8)	(8.1)	(12.4)					
G-7	84	118	135	167	(3.0)	(6.0)	(8.0)	(10.0)					
AAA group	19	22	25	52	(0.7)	(1.2)	(2.8)	(4.0)					
AA group	36	58	91	150	(2.1)	(4.5)	(8.2)	(11.1)					
BBB-A group	48	59	85	131	(2.6)	(4.3)	(6.1)	(9.0)					
Speculative-grade group	64	73	96	126	(3.0)	(3.9)	(5.4)	(7.4)					

f--Standard & Poor's projections. Spec--Speculative grade.

Table 6

No Aging Scenario

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				Long-term foreign currency sovereign ratings	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
Argentina	27	50	77	107	-3.6	(5)	-6.3	-7.7	SD	a	a	a	bbb
Australia	20	23	25	28	-1.1	-1.3	-1.4	-1.5	AAA	aaa	aaa	aaa	aaa
Austria	72	69	65	62	-1.3	-2.1	-1.9	-1.7	AA+	aa	aa	aa	aa
Belgium	98	108	115	123	(3)	-4.9	-5.2	-5.6	AA	a	a	a	a
Brazil	61	66	71	79	-4.4	-3.4	-3.6	(4)	BB	a	a	a	a
Bulgaria	28	48	71	102	-2.6	-3.6	-4.8	-6.2	BB+	spec	spec	spec	spec
Canada	16	16	17	18	-0.6	-0.7	-0.8	-0.8	AAA	aaa	aaa	aaa	aaa
Chile	12	27	45	66	-2.1	-2.9	-3.8	-4.8	AA-	a	a	a	a
China	20	29	40	55	-1.8	-2.5	(3)	-3.8	AA-	a	a	a	a
Colombia	29	24	20	19	-1.4	-1.2	(1)	-0.9	BBB	bbb	bbb	a	a
Croatia	77	83	86	91	(3)	-3.4	-3.5	-3.8	BB	bbb	bbb	bbb	bbb
Cyprus	80	57	31	5	0.1	0.0	1.2	2.0	BB-	a	a	a	a
Czech Republic	36	38	42	46	-1.2	-1.7	-1.8	(2)	AA-	a	aa	aa	aa
Denmark	32	45	62	80	-2.2	-3.1	-3.9	-4.8	AAA	aaa	aaa	aa	aa
Egypt	62	59	62	66	-4.7	-3.8	-3.9	-4.1	B-	a	a	a	a
Estonia	(5)	(11)	(19)	(28)	0.7	1.0	1.4	1.8	AA-	a	aa	aa	aa
Finland	30	41	51	64	-1.5	-2.4	-2.9	-3.5	AA+	aa	aaa	aa	aa
France	92	113	134	157	-3.7	(6)	(7)	-8.1	AA	a	a	bbb	bbb
Germany	56	49	41	30	-0.2	-0.7	-0.3	0.2	AAA	aaa	aaa	aaa	aaa
Greece	166	191	206	237	(4)	-8.1	-8.8	-10.2	B-	spec	bbb	spec	spec
Hong Kong	(28)	(31)	(37)	(44)	0.6	1.7	2.0	2.0	AAA	aaa	aaa	aaa	aaa
Hungary	68	67	70	76	-2.4	-2.6	-2.8	(3)	BB+	bbb	bbb	bbb	a
India	65	68	75	87	-5.4	-5.3	-5.6	-6.2	BBB-	bbb	bbb	bbb	bbb
Indonesia	21	21	23	26	-1.4	-1.5	-1.6	-1.7	BB+	bbb	bbb	bbb	a
Israel	61	50	40	31	-2.1	-1.4	-0.9	-0.5	A+	a	a	aaa	aaa
Ireland	76	68	59	49	-1.1	-1.6	-1.1	-0.7	A+	aa	aa	aa	aaa
Italy	121	121	118	114	-2.7	-3.9	-3.7	-3.5	BBB-	bbb	bbb	bbb	bbb
Japan	135	187	252	333	-6.2	-11.5	-14.7	-18.5	A+	bbb	bbb	spec	spec
Korea	6	(13)	(26)	(35)	2.0	2.0	2.0	2.0	AA-	aa	aa	aaa	aaa
Latvia	31	35	41	49	-1.3	-1.6	-1.9	-2.3	A-	a	a	a	a
Lithuania	30	31	33	34	-0.7	(1)	-1.1	-1.2	A-	a	a	a	a
Luxembourg	(18)	(28)	(33)	(38)	1.8	2.0	2.0	2.0	AAA	aaa	aaa	aaa	aaa
Malaysia	51	59	73	89	-3.5	-4.2	-4.9	-5.7	A-	a	a	a	a
Malta	42	30	16	2	-0.2	0.1	0.7	1.4	BBB+	a	a	aa	aa
Mexico	40	46	51	56	-2.3	-2.9	-3.1	-3.4	BBB+	bbb	bbb	bbb	bbb
Netherlands	64	78	94	110	-2.1	-3.9	-4.6	-5.4	AAA	aa	aa	aa	a
Norway	(195)	(198)	(119)	3	11.8	5.7	-6.3	-12.2	AAA	aaa	aaa	a	a

Table 6

No Aging Scenario (cont.)

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				Long-term foreign currency sovereign ratings	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
New Zealand	20	15	10	4	-0.5	-0.1	0.1	0.4	AA	aaa	aaa	aaa	aaa
Peru	11	17	23	30	-1.2	-1.5	-1.8	-2.1	BBB+	bbb	bbb	bbb	a
Philippines	13	2	(7)	(15)	0.3	0.8	1.3	1.6	BBB	bbb	bbb	bbb	a
Poland	51	68	94	131	-3.4	-4.6	-5.9	-7.6	BBB+	bbb	bbb	a	bbb
Portugal	108	97	89	82	-1.8	-2.2	-1.8	-1.5	BB+	a	a	a	a
Romania	39	62	92	126	-3.4	-4.7	-6.2	-7.8	BBB-	spec	bbb	bbb	spec
Russia	14	37	67	110	-2.9	-3.9	-5.4	-7.4	BB+	spec	bbb	bbb	spec
Saudi Arabia	(91)	1	90	180	-4.4	-8.7	-12.9	-17.2	A-	a	a	a	bbb
South Africa	38	28	23	21	-1.8	(1)	-0.8	-0.7	BBB-	a	a	a	a
Singapore	(77)	(67)	(63)	(61)	2.0	2.0	2.0	2.0	AAA	aaa	aaa	aaa	aaa
Slovakia	48	51	63	82	-2.1	-2.7	-3.3	-4.2	A+	a	a	a	a
Slovenia	69	72	78	86	-2.1	-2.9	-3.2	-3.5	A-	a	a	a	a
Spain	89	102	121	148	-3.6	(5)	(6)	-7.2	BBB+	a	a	bbb	bbb
Sweden	27	32	39	46	-1.3	-1.9	-2.2	-2.6	AAA	aaa	aaa	aaa	aaa
Switzerland	18	4	(10)	(24)	0.9	1.2	1.9	2.0	AAA	aaa	aaa	aaa	aaa
Thailand	13	1	(11)	(21)	0.6	1.1	1.6	2.0	BBB+	bbb	bbb	a	a
Turkey	24	22	24	27	-1.4	-1.2	-1.3	-1.5	BB+	a	a	a	a
United Kingdom	83	97	109	122	-3.2	-4.8	-5.3	(6)	AAA	aaa	aa	aa	a
Ukraine	43	24	7	(8)	(1)	0.3	1.1	1.8	B-	a	a	a	a
Uruguay	40	38	38	40	-2.2	-1.9	(2)	(2)	BBB	a	aa	aa	aa
United States	84	105	128	149	-4.9	-6.9	(8)	(9)	AA+	aa	a	bbb	bbb
Medians													
Whole sample	39	43	48	56	-1.8	-2.1	-2.5	-2.8					
Advanced economies	45	47	41	47	-1.3	-1.7	-1.9	-1.9					
Emerging economies	33	37	56	66	-2.4	-2.9	-3.3	-3.8					
BRICs	40	51	69	83	-3.7	-3.7	-4.5	-5.1					
Europe	49	54	64	78	-1.9	-2.5	-3.1	-3.5					
Asia	20	21	24	27	-1.4	-1.4	-1.3	-1.5					
Latin America	29	38	45	56	-2.2	-2.9	-3.1	-3.4					
G-7	84	105	118	122	(3)	(5)	(5)	(6)					
AAA group	19	20	21	23	-0.4	-0.7	-1.1	-1.2					
AA group	33	40	48	63	-1.4	-2.3	-2.4	-2.8					
BBB-A group	45	48	46	49	-2.1	-1.8	-1.9	-2.2					

Table 6

No Aging Scenario (cont.)

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				Long-term foreign currency sovereign ratings	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
Speculative-grade group	61	59	71	77	-2.5	(3)	-3.1	-3.4					

f - Standard & Poor's projections. Spec - speculative grade.

Table 7

Balanced Budget in 2019 Scenario

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				Long-term foreign currency sovereign ratings	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
Argentina	16	17	40	85	-0.1	-1.8	(5)	-9.2	SD	a	a	a	a
Australia	16	4	(6)	(10)	0.1	0.9	1.0	0.4	AAA	aaa	aaa	aaa	aaa
Austria	71	61	63	74	-0.2	-1.8	-2.8	-3.9	AA+	aa	aa	aa	a
Belgium	94	90	99	115	-0.4	-3.7	-5.2	-6.2	AA	a	a	a	a
Brazil	44	25	40	104	0.2	-0.2	-5.2	-12.5	BB	a	a	a	spec
Bulgaria	20	9	(2)	(8)	0.2	0.8	1.0	0.5	BB+	a	a	a	a
Canada	17	23	42	72	-0.2	-2.2	-3.9	-6.1	AAA	aaa	aaa	aa	a
Chile	9	10	24	54	-0.1	-1.1	(3)	-5.7	AA-	a	a	aa	a
China	17	28	70	150	-0.3	-3.9	-8.7	-15.4	AA-	a	a	bbb	bbb
Colombia	22	13	17	35	0.0	-0.5	(2)	-4.3	BBB	a	a	a	a
Croatia	68	41	10	(11)	0.1	1.8	2.0	2.0	BB	a	a	a	a
Cyprus	79	61	41	18	-0.2	-0.9	0.3	1.6	BB-	a	a	a	a
Czech Republic	32	27	24	30	-0.1	-0.6	-0.9	(2)	AA-	a	aa	aa	aa
Denmark	24	15	12	9	0.2	0.0	-0.2	0.0	AAA	aaa	aaa	aaa	aaa
Egypt	48	16	5	3	0.4	0.7	0.4	-0.4	B-	a	a	a	a
Estonia	(5)	(5)	(6)	(6)	0.0	0.3	0.2	0.2	AA-	a	aa	aa	aa
Finland	25	34	48	55	-0.3	-2.7	-2.8	-2.5	AA+	aa	aaa	aaa	aa
France	85	73	55	29	-0.3	-1.3	0.0	2.0	AA	aa	aa	aaa	aaa
Germany	57	61	85	123	-0.3	-3.1	-5.3	-7.9	AAA	aa	aa	a	bbb
Greece	167	147	107	71	-0.6	-1.6	0.2	1.2	B-	spec	a	a	aa
Hong Kong	(29)	(21)	(9)	8	0.1	-0.1	-1.1	-2.3	AAA	aaa	aaa	aaa	aa
Hungary	58	27	2	(12)	0.3	2.1	2.0	1.4	BB+	a	a	a	aa
India	52	14	(8)	(17)	0.3	1.9	1.9	1.4	BBB-	a	a	a	a
Indonesia	17	9	11	24	0.0	-0.2	-1.3	-2.9	BB+	bbb	bbb	bbb	bbb
Israel	57	29	9	(1)	0.1	1.0	1.0	0.7	A+	aa	aa	aaa	aaa
Ireland	84	74	77	91	-0.2	-2.2	-3.6	-4.5	A+	aa	aa	a	a

Table 7

Balanced Budget in 2019 Scenario (cont.)

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				Long-term foreign currency sovereign ratings	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
Italy	114	90	67	40	-0.1	-0.7	0.0	1.8	BBB-	a	a	a	aa
Japan	135	133	145	172	-0.8	-4.7	-6.2	-8.4	A+	a	a	a	bbb
Korea	7	27	81	171	-0.3	-4.6	-9.6	-16.3	AA-	a	a	a	bbb
Latvia	26	12	(2)	(18)	0.2	0.9	1.5	2.1	A-	a	a	aa	aa
Lithuania	28	36	67	100	0.0	(3)	-5.4	-6.3	A-	a	a	a	bbb
Luxembourg	(15)	(1)	27	67	-0.1	(2)	-4.5	-6.8	AAA	aaa	aa	a	a
Malaysia	48	27	17	16	0.0	-0.1	-0.3	-0.9	A-	a	a	a	aa
Malta	41	34	37	54	-0.2	(1)	-2.1	-4.4	BBB+	a	a	a	a
Mexico	35	32	48	83	-0.2	-2.3	-4.8	-8.3	BBB+	a	bbb	bbb	bbb
Netherlands	60	58	76	110	-0.2	-2.4	-5.1	-7.3	AAA	aaa	aaa	aa	bbb
Norway	(125)	(69)	1	87	0.0	-2.8	-7.4	-12.6	AAA	aaa	aa	a	a
New Zealand	18	23	55	112	0.0	-2.6	-6.5	(11)	AA	aaa	aa	a	bbb
Peru	7	10	23	44	-0.1	-1.3	-2.7	-4.5	BBB+	bbb	bbb	bbb	bbb
Philippines	9	5	5	8	0.0	-0.2	-0.5	-0.9	BBB	bbb	bbb	bbb	bbb
Poland	50	33	18	8	0.0	0.1	0.8	0.5	BBB+	a	a	aa	aa
Portugal	109	84	67	52	-0.2	-0.6	-0.4	0.1	BB+	a	a	a	a
Romania	32	22	21	24	0.0	-0.1	-0.8	-1.2	BBB-	a	a	a	a
Russia	9	16	45	101	-0.1	-2.3	-5.1	-9.3	BB+	bbb	a	bbb	spec
Saudi Arabia	(110)	(38)	57	175	-0.4	-5.9	-12.7	-20.7	A-	aa	a	a	bbb
South Africa	30	13	12	28	0.2	0.2	-1.2	-3.4	BBB-	a	a	a	a
Singapore	(84)	(70)	(57)	(41)	0.5	1.4	0.5	-0.5	AAA	aaa	aaa	aaa	aaa
Slovakia	44	28	21	29	-0.1	0.1	-0.5	-2.3	A+	a	aa	aa	aa
Slovenia	59	51	70	117	0.0	-1.9	-5.4	-9.4	A-	aa	a	a	bbb
Spain	80	52	24	7	-0.1	1.1	1.5	1.4	BBB+	aa	aa	aa	aa
Sweden	23	17	14	7	0.0	-0.3	-0.1	0.3	AAA	aaa	aaa	aaa	aaa
Switzerland	19	20	28	44	-0.1	-1.1	-2.1	-3.6	AAA	aaa	aaa	aa	aa
Thailand	11	23	55	101	-0.3	-3.5	-6.4	(10)	BBB+	spec	spec	bbb	spec
Turkey	19	8	12	38	0.1	0.3	-1.8	-4.9	BB+	a	a	bbb	bbb
United Kingdom	78	67	62	60	-0.2	-1.6	-2.3	-2.1	AAA	aaa	aaa	aaa	aaa
Ukraine	29	26	55	119	-0.1	-2.5	-7.3	-13.8	B-	a	bbb	spec	spec
Uruguay	28	17	19	35	0.1	-0.4	-1.7	-3.7	BBB	a	aa	aa	a
United States	78	64	69	82	-0.3	-2.6	-4.1	-5.5	AA+	aaa	aaa	aa	aa
Medians													
Whole sample	30	25	28	44	-0.1	(1)	-1.9	-3.5					
Advanced economies	43	34	45	55	-0.1	-1.4	-2.1	-2.4					

Table 7

Balanced Budget in 2019 Scenario (cont.)

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				Long-term foreign currency sovereign ratings	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
Emerging economies	26	17	19	35	0.0	-0.2	-1.8	(4)					
BRICs	31	21	43	103	0.0	-1.3	-5.2	-10.9					
Europe	47	34	39	48	-0.1	-1.1	-0.8	-2.1					
Asia	17	14	12	24	0.0	-0.2	-1.3	-2.9					
Latin America	22	17	24	54	-0.1	-1.1	(3)	-5.7					
G-7	78	67	67	72	0.0	(2)	(4)	(5)					
AAA group	18	16	21	52	-0.1	-1.3	-2.2	-2.9					
AA group	29	30	55	65	-0.2	-2.2	-2.9	-4.7					
BBB-A group	43	29	22	35	0.0	-0.4	-1.5	-3.5					
Speculative-grade group	46	25	26	31	0.0	-0.2	-0.1	-0.1					

f - Standard & Poor's projections. Spec - speculative grade.

Table 8

Lower Interest Rate Scenario

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				--Long-term foreign currency sovereign ratings--	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
Argentina	41	88	155	240	(6.5)	(9.7)	(14.4)	(19.7)	SD	bbb	bbb	bbb	spec
Australia	29	40	52	71	(2.8)	(2.9)	(3.8)	(5.3)	AAA	aaa	aaa	aa	aa
Austria	77	74	82	98	(1.8)	(2.7)	(4.0)	(5.2)	AA+	aa	aa	a	a
Belgium	86	85	95	111	(1.6)	(3.7)	(5.1)	(6.0)	AA	a	a	a	a
Brazil	53	67	117	211	(2.5)	(5.5)	(11.7)	(19.6)	BB	bbb	bbb	spec	spec
Bulgaria	23	21	21	29	(0.8)	(0.5)	(0.9)	(2.0)	BB+	bbb	bbb	bbb	a
Canada	16	34	64	104	(1.4)	(3.8)	(5.8)	(8.1)	AAA	aaa	aa	a	bbb
Chile	16	47	90	148	(3.6)	(5.7)	(8.6)	(12.2)	AA-	a	a	aa	a
China	43	71	127	221	(3.8)	(7.7)	(12.7)	(19.2)	AA-	bbb	bbb	spec	spec
Colombia	33	34	45	70	(1.7)	(2.6)	(4.5)	(6.8)	BBB	bbb	bbb	a	a
Croatia	78	81	65	29	(3.1)	(2.6)	2.0	2.0	BB	a	a	bbb	bbb
Cyprus	97	97	91	84	(3.4)	(3.8)	(3.3)	(2.9)	BB-	aa	aa	aa	aa
Czech Republic	32	28	26	32	(0.4)	(0.7)	(1.0)	(2.1)	AA-	a	aa	aa	aa
Denmark	13	(8)	(23)	(32)	2.0	2.0	2.0	2.0	AAA	aaa	aaa	aaa	aaa
Egypt	74	110	158	209	(7.7)	(11.0)	(13.8)	(16.6)	B-	a	bbb	spec	spec
Estonia	(4)	(9)	(14)	(20)	0.4	0.8	0.9	1.1	AA-	bbb	a	a	a
Finland	36	69	103	132	(3.2)	(6.0)	(6.8)	(7.2)	AA+	a	aa	a	a

Table 8

Lower Interest Rate Scenario (cont.)

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				--Long-term foreign currency sovereign ratings--	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
France	95	115	128	135	(4.6)	(5.7)	(5.8)	(5.3)	AA	a	a	a	bbb
Germany	61	67	90	124	(1.3)	(3.3)	(5.3)	(7.4)	AAA	aaa	aaa	aaa	aa
Greece	150	97	51	20	2.0	2.0	2.0	2.0	B-	spec	a	a	a
Hong Kong	(35)	(39)	(39)	(36)	2.0	1.6	1.2	0.7	AAA	aa	a	a	a
Hungary	49	16	(6)	(22)	2.0	2.0	2.0	2.0	BB+	a	a	a	aa
India	60	55	63	82	(3.7)	(3.9)	(5.2)	(7.0)	BBB-	spec	spec	spec	spec
Indonesia	25	35	54	81	(2.5)	(3.5)	(5.2)	(7.3)	BB+	a	a	bbb	bbb
Israel	57	48	48	59	(1.4)	(1.8)	(2.6)	(3.9)	A+	a	aa	aa	aa
Ireland	65	58	63	77	(0.6)	(1.8)	(3.3)	(4.1)	A+	aa	aa	a	a
Italy	101	57	27	4	2.0	2.0	0.8	2.0	BBB-	aa	aa	aa	aa
Japan	148	205	276	366	(9.2)	(12.4)	(16.1)	(20.6)	A+	bbb	spec	spec	spec
Korea	16	34	82	160	(0.6)	(4.6)	(8.9)	(14.3)	AA-	a	a	a	bbb
Latvia	21	(3)	(19)	(32)	2.0	2.0	2.0	2.0	A-	a	a	aa	aa
Lithuania	43	84	150	213	(3.6)	(7.6)	(11.1)	(12.8)	A-	bbb	bbb	bbb	spec
Luxembourg	(16)	(10)	8	35	0.9	(0.7)	(2.6)	(4.1)	AAA	aaa	aaa	aa	aa
Malaysia	51	62	84	114	(3.8)	(4.9)	(6.4)	(8.2)	A-	a	a	bbb	bbb
Malta	49	52	65	93	(1.7)	(2.7)	(4.1)	(6.6)	BBB+	a	a	a	a
Mexico	48	75	115	169	(4.1)	(7.1)	(10.4)	(14.3)	BBB+	spec	spec	spec	spec
Netherlands	56	48	57	79	(0.4)	(1.3)	(3.6)	(5.1)	AAA	aaa	aaa	aa	aa
Norway	(241)	(270)	(220)	(161)	19.5	10.7	2.0	2.0	AAA	aaa	aaa	aaa	aaa
New Zealand	24	41	83	146	(1.4)	(4.4)	(8.5)	(12.7)	AA	aa	aa	a	bbb
Peru	(3)	(17)	(22)	(19)	2.0	1.9	1.3	0.4	BBB+	a	a	a	a
Philippines	15	10	10	13	(0.3)	(0.5)	(0.7)	(1.2)	BBB	bbb	bbb	bbb	bbb
Poland	49	59	75	102	(2.9)	(3.5)	(4.2)	(6.0)	BBB+	bbb	bbb	a	bbb
Portugal	92	49	19	(3)	2.0	2.0	2.0	2.0	BB+	aa	aa	aa	aa
Romania	35	47	69	96	(2.4)	(3.2)	(4.8)	(6.1)	BBB-	bbb	a	bbb	bbb
Russia	19	68	142	254	(4.7)	(8.5)	(12.8)	(18.7)	BB+	spec	bbb	spec	spec
Saudi Arabia	(115)	(84)	(65)	(56)	2.0	2.0	2.0	2.0	A-	aa	aa	aa	aa
South Africa	49	68	104	162	(4.7)	(6.5)	(9.3)	(12.9)	BBB-	spec	spec	spec	spec
Singapore	(80)	(69)	(64)	(61)	2.0	2.0	2.0	2.0	AAA	aaa	aaa	aaa	aaa
Slovakia	50	55	73	113	(2.7)	(3.1)	(4.7)	(7.6)	A+	a	a	a	bbb
Slovenia	50	20	20	43	2.0	0.9	(1.8)	(4.4)	A-	aa	aa	aa	a
Spain	99	117	141	185	(5.6)	(5.7)	(7.6)	(10.2)	BBB+	bbb	bbb	bbb	bbb
Sweden	24	21	20	17	(0.6)	(0.7)	(0.6)	(0.4)	AAA	aaa	aaa	aaa	aaa
Switzerland	20	12	11	17	0.3	0.1	(0.6)	(1.5)	AAA	aaa	aaa	aaa	aaa
Thailand	18	30	59	100	(0.7)	(3.7)	(6.3)	(9.3)	BBB+	spec	spec	bbb	bbb
Turkey	24	23	38	75	(1.1)	(1.6)	(4.0)	(7.4)	BB+	a	bbb	bbb	bbb

Table 8

Lower Interest Rate Scenario (cont.)

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				--Long-term foreign currency sovereign ratings--	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
U.K.	78	81	89	101	(2.2)	(3.4)	(4.6)	(5.0)	AAA	aaa	aaa	aaa	aa
Ukraine	35	4	1	33	2.0	2.0	(1.4)	(6.1)	B-	a	a	a	spec
Uruguay	36	32	42	65	(1.0)	(1.9)	(3.6)	(5.7)	BBB	a	aa	a	a
U.S.	88	125	177	229	(6.5)	(10.0)	(13.2)	(16.0)	AA+	bbb	bbb	bbb	spec
Medians													
Whole sample	42	48	63	82	(1.4)	(2.8)	(4.1)	(5.8)					
Advanced economies	49	49	60	78	(1.0)	(2.3)	(3.4)	(4.7)					
Emerging economies	36	47	64	89	(2.5)	(3.5)	(5.0)	(7.1)					
BRICs	48	67	122	216	(3.8)	(6.6)	(12.2)	(18.9)					
Europe	49	54	60	60	(0.7)	(1.6)	(2.9)	(4.2)					
Asia	24	34	54	81	(1.1)	(3.5)	(5.2)	(7.3)					
Latin America	36	47	90	148	(2.5)	(5.5)	(8.6)	(12.2)					
G-7	88	81	90	124	(2.0)	(4.0)	(6.0)	(7.0)					
AAA group	18	17	15	26	0.0	(0.7)	(1.6)	(2.8)					
AA group	34	58	86	133	(1.7)	(4.5)	(6.3)	(6.6)					
BBB-A group	49	55	63	88	(1.7)	(2.9)	(4.3)	(6.7)					
Speculative-grade group	51	58	52	54	(1.8)	(2.1)	(2.3)	(4.5)					

f--Standard & Poor's projections. Spec--Speculative grade.

Table 9

Higher Growth Scenario

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				--Long-term foreign currency sovereign ratings--	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
Argentina	28	62	117	190	(4.4)	(7.8)	(12.4)	(18.0)	SD	bbb	bbb	bbb	spec
Australia	17	10	4	6	(0.4)	0.2	0.0	(0.9)	AAA	aaa	aaa	aa	aa
Austria	68	65	73	90	(1.3)	(3.1)	(4.4)	(5.8)	AA+	aa	aa	a	a
Belgium	94	113	145	182	(3.5)	(7.9)	(10.4)	(12.4)	AA	aa	aa	a	a
Brazil	60	85	144	248	(5.5)	(7.9)	(14.9)	(24.1)	BB	a	a	bbb	spec
Bulgaria	24	28	34	48	(1.5)	(1.6)	(2.2)	(3.7)	BB+	bbb	a	a	a
Canada	16	32	61	100	(1.4)	(3.9)	(6.1)	(8.7)	AAA	aaa	aa	a	bbb
Chile	13	35	70	120	(2.6)	(4.7)	(7.6)	(11.2)	AA-	a	aa	aa	aa
China	23	58	119	217	(3.3)	(8.1)	(13.8)	(21.3)	AA-	bbb	bbb	bbb	spec
Colombia	28	30	43	69	(1.8)	(2.8)	(4.8)	(7.4)	BBB	a	a	a	a

Table 9

Higher Growth Scenario (cont.)

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				--Long-term foreign currency sovereign ratings--	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
Croatia	73	71	55	29	(3.1)	(2.6)	(0.3)	1.4	BB	a	a	a	a
Cyprus	74	44	15	(7)	0.5	0.4	2.0	2.0	BB-	aa	aa	aaa	aaa
Czech Republic	35	38	45	60	(1.3)	(2.2)	(2.9)	(4.5)	AA-	aa	aa	aa	aaa
Denmark	27	28	36	44	(1.1)	(1.8)	(2.5)	(2.7)	AAA	aaa	aaa	aaa	aaa
Egypt	61	73	100	132	(5.6)	(7.3)	(9.4)	(11.8)	B-	a	bbb	spec	spec
Estonia	(5)	(9)	(14)	(19)	0.4	0.9	1.0	1.3	AA-	a	a	a	a
Finland	31	61	94	121	(2.7)	(6.2)	(7.2)	(7.8)	AA+	aa	aa	a	a
France	87	101	112	115	(3.6)	(5.8)	(5.9)	(5.3)	AA	aa	a	a	bbb
Germany	55	57	78	109	(0.7)	(3.3)	(5.4)	(7.7)	AAA	aaa	aaa	aaa	aa
Greece	155	147	123	110	(3.0)	(4.4)	(3.3)	(3.4)	B-	bbb	a	a	a
Hong Kong	(25)	(16)	(2)	16	0.1	(0.4)	(1.4)	(2.6)	AAA	aa	a	a	a
Hungary	61	38	20	16	(1.0)	0.4	0.3	(0.7)	BB+	a	aa	aa	aa
India	62	66	79	104	(5.5)	(5.8)	(7.4)	(9.6)	BBB-	spec	spec	spec	spec
Indonesia	21	25	38	60	(1.7)	(2.5)	(4.1)	(6.2)	BB+	a	a	a	bbb
Israel	59	50	52	63	(2.3)	(2.4)	(3.4)	(4.8)	A+	aa	aaa	aa	aa
Ireland	72	68	79	99	(1.2)	(3.4)	(5.1)	(6.3)	A+	aa	aa	a	a
Italy	113	101	91	81	(2.1)	(3.2)	(3.2)	(2.2)	BBB-	aa	aaa	aaa	aaa
Japan	128	174	237	319	(6.5)	(12.4)	(16.3)	(21.2)	A+	bbb	spec	spec	spec
Korea	9	19	59	127	0.5	(3.4)	(7.6)	(13.3)	AA-	a	a	a	bbb
Latvia	26	12	0	(14)	0.0	0.7	1.2	2.0	A-	aa	aa	aa	aaa
Lithuania	28	39	72	104	(0.6)	(3.8)	(6.3)	(7.0)	A-	a	a	bbb	spec
Luxembourg	(15)	(10)	8	34	0.9	(0.6)	(2.6)	(4.3)	AAA	aaa	aaa	aa	aa
Malaysia	49	60	82	112	(3.8)	(5.3)	(7.1)	(9.1)	A-	a	a	a	bbb
Malta	41	38	44	64	(0.8)	(1.9)	(3.1)	(5.5)	BBB+	a	a	a	a
Mexico	41	63	99	150	(3.3)	(6.6)	(10.1)	(14.3)	BBB+	bbb	bbb	bbb	bbb
Netherlands	61	73	104	149	(2.1)	(4.9)	(8.3)	(11.0)	AAA	aaa	aaa	aa	aa
Norway	(180)	(148)	(24)	144	10.5	1.0	(14.4)	(23.5)	AAA	aaa	aaa	aaa	aaa
New Zealand	19	31	68	126	(0.9)	(3.8)	(8.0)	(12.5)	AA	aa	aa	a	bbb
Peru	11	27	50	79	(1.7)	(3.6)	(5.4)	(7.6)	BBB+	a	a	a	aa
Philippines	12	4	1	2	0.1	0.2	0.0	(0.4)	BBB	bbb	bbb	bbb	a
Poland	47	58	76	104	(3.0)	(4.2)	(5.1)	(7.2)	BBB+	bbb	a	a	bbb
Portugal	102	90	88	93	(2.0)	(3.0)	(3.5)	(3.9)	BB+	aa	aa	aa	aaa
Romania	38	60	93	132	(3.6)	(5.2)	(7.5)	(9.6)	BBB-	a	a	a	a
Russia	15	56	120	219	(3.9)	(7.6)	(12.2)	(18.4)	BB+	bbb	a	bbb	spec
Saudi Arabia	(96)	23	148	289	(5.2)	(12.9)	(21.2)	(30.2)	A-	aa	aa	aaa	aaa
South Africa	37	36	52	86	(2.3)	(3.0)	(5.2)	(8.2)	BBB-	spec	bbb	spec	bbb
Singapore	(73)	(60)	(53)	(50)	2.0	2.0	2.0	2.0	AAA	aaa	aaa	aaa	aaa

Table 9

Higher Growth Scenario (cont.)

	--Net general government debt (% GDP)--				--General government balance (% GDP)--				--Long-term foreign currency sovereign ratings--	--Hypothetical long-term sovereign ratings--			
	2020f	2030f	2040f	2050f	2020f	2030f	2040f	2050f	As of April 26, 2016	2025f	2030f	2040f	2050f
Slovakia	46	48	63	99	(2.3)	(3.0)	(4.7)	(7.7)	A+	a	a	a	bbb
Slovenia	64	67	98	156	(1.8)	(4.2)	(8.4)	(12.8)	A-	aa	aa	aaa	aa
Spain	84	81	85	105	(3.3)	(3.4)	(4.5)	(6.4)	BBB+	bbb	bbb	bbb	bbb
Sweden	24	26	30	31	(0.9)	(1.6)	(1.7)	(1.7)	AAA	aaa	aaa	aaa	aaa
Switzerland	17	8	6	11	0.7	0.2	(0.4)	(1.3)	AAA	aaa	aaa	aaa	aaa
Thailand	15	29	61	104	(0.9)	(4.2)	(7.1)	(10.6)	BBB+	spec	bbb	bbb	a
Turkey	23	24	41	79	(1.6)	(2.0)	(4.7)	(8.4)	BB+	a	bbb	a	a
U.K.	78	89	107	127	(2.9)	(5.4)	(7.1)	(8.1)	AAA	aaa	aaa	aaa	aa
Ukraine	45	51	85	152	(2.4)	(5.2)	(10.3)	(16.9)	B-	a	a	a	bbb
Uruguay	39	45	64	96	(2.6)	(3.9)	(6.0)	(8.8)	BBB	aa	aa	a	a
U.S.	81	112	157	205	(5.4)	(9.8)	(13.2)	(16.2)	AA+	bbb	bbb	bbb	spec
Medians													
Whole sample	38	47	69	102	(1.9)	(3.4)	(5.3)	(7.6)					
Advanced economies	44	46	66	99	(1.2)	(3.2)	(4.5)	(5.6)					
Emerging economies	33	48	73	104	(2.8)	(4.4)	(7.1)	(9.4)					
BRICs	41	62	120	218	(4.7)	(7.8)	(13.0)	(19.8)					
Europe	47	57	75	99	(1.7)	(3.2)	(4.5)	(5.6)					
Asia	21	25	59	104	(1.7)	(3.4)	(7.1)	(9.1)					
Latin America	28	45	70	120	(2.6)	(4.7)	(7.6)	(11.2)					
G-7	81	101	107	115	(3.0)	(5.0)	(6.0)	(8.0)					
AAA group	17	18	19	39	(0.6)	(1.1)	(2.6)	(3.5)					
AA group	33	50	72	120	(2.0)	(4.2)	(7.4)	(9.5)					
BBB-A group	44	49	68	99	(2.2)	(3.5)	(5.1)	(7.5)					
Speculative-grade group	60	57	70	86	(2.2)	(2.8)	(3.8)	(5.0)					

f--Standard & Poor's projections. Spec--Speculative grade.

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