



**Australian Government**

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**The Treasury**

11 March 2009  
ER2008/06180

Senator Annette Hurley  
Chair of the Senate Standing Committee on Economics  
Parliament House  
CANBERRA ACT 2600

Dear Senator Hurley

During the Senate Standing Committee on Economics Estimates hearing on 25 February 2009, Senator Cameron requested that Dr Gruen table a document he was referencing on debt in Aaa rated countries. In addition, Dr Gruen said that he would obtain the exact date on which the document was released. The attached document, which was prepared by Moody's Investor Services, was released on 12 February 2009.

Yours sincerely

A handwritten signature in blue ink that reads 'Tony McDonald'.

Tony McDonald  
General Manager  
Macroeconomic Policy Division  
Macroeconomic Group

## Special Comment

# Moody's Global Sovereign

February 2009

## How Far Can Aaa Governments Stretch Their Balance Sheets?

*Stress-Testing Governments' Debt Affordability Through the Crisis*

### Executive Summary

The wide-scale "risk socialization" that began more than a year ago – with governments deploying their balance sheets and raising public debt – is now reaching historic proportions.

This is raising questions about the safety of public debt for investors during the very severe and synchronized ongoing global economic downturn. Although the economic and financial foundations of most Aaa economies are affected by the crisis, Moody's does not believe that downgrading all Aaa governments is a solution. Our ratings are primarily ordinal by nature, and the ability of governments to raise resources through taxation makes them the ultimate Aaa bond issuers across asset classes.

This report provides a framework for analyzing public debt deterioration through the crisis, and for determining the extent to which Aaa governments can stretch their balance sheets – in other words, determining when Moody's will deem it necessary to differentiate between different kinds of government debt that had until now been regarded as a sanctuary for investors. Our goal is to provide an analytical framework for potential rating decisions. We believe that setting a "demarcation line" between Aaa and Aa credits in a transparent fashion will serve both investors' and issuers' interests.

For a Aaa government to be downgraded, Moody's must have concluded that the deterioration in credit metrics is (1) observable and material in absolute terms; (2) observable and material in relative terms; and (3) unlikely to be reversed in the near future. Moreover, this decision is shaped by several additional questions: (1) By how much is "debt" effectively increasing, given that not all debt is equal (contractual obligations, conditional commitments, hypothetical liabilities, etc.)? (2) Can a government "grow out of its debt" and regenerate its economic model? (3) To what extent is a government able to raise taxes or cut spending?

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**Moody's Investors Service**

## How Far Can Aaa Governments Stretch Their Balance Sheets?

Although all Aaa governments are affected by the global synchronized crisis, Moody's concludes that they can be divided into three groups. The main issue is not only the extent but also the duration of a government's ability to stretch its balance sheet while remaining a sanctuary for investors.

- **Resistant Aaa countries.** They include Germany, France, Canada and Scandinavian countries whose ratings have so far been largely untested despite strong headwinds. The reason is either that they began from a very strong position, and/or that their economic model remains robust and that the level of contingent liabilities likely to crystallize remains moderate.
- **Resilient Aaa countries.** They comprise the USA and the UK, whose ratings are being tested because of a shock to their growth model and large contingent liabilities. However, in our opinion, these countries display an adequate reaction capacity to rise to the challenge.
- **Vulnerable Aaa countries.** These are countries that are forced to take risks with their public finances: Ireland, and to a lesser extent Spain. Their rating will be a function of their ability to rapidly engineer a new growth model and to adjust public finances to the new environment through bold policy responses, supported by a strong national consensus. The timeframe within which the adjustment must take place is shorter for Ireland than for Spain because of the higher severity of the shock and more rapid deterioration of the government's balance sheet. This is reflected in Moody's decision on 30 January 2009 to assign a negative outlook to the Irish government's Aaa rating.

**Table 1 – Summary of debt challenges and government adjustment capacity**

Aaa countries		Magnitude of debt Challenges		
		Considerable	Sizeable	Limited
Adjustment capacity	Considerable	US		
	Sizeable	UK	Germany France Switzerland Austria	Australia Canada Denmark Finland Luxembourg Netherlands Norway Sweden Singapore
	Moderate	Ireland	Spain	New Zealand

 Resistant Aaa countries

 Resilient Aaa countries

 Vulnerable Aaa countries

## How Far Can Aaa Governments Stretch Their Balance Sheets?

### Introduction

Over the past few months, the balance sheets of the governments of most advanced economies have suffered a succession of shocks as a consequence of the global financial crisis and ensuing global recession.

The boundaries of government balance sheets have expanded as public authorities have lent and continue to lend support to an ever-broader range of counterparties. Contingent liabilities have ballooned as governments have granted guarantees to bank borrowing, and now to other private sector debt.

The severe economic slowdown is affecting tax revenues and resulting in a sharp rise in public deficits and debt.

Finally, and perhaps most importantly, questions arise as to whether the growth potential of some countries has undergone a lasting impairment, with negative consequences for their governments' tax-raising ability.

Overall, the quality of the governments' balance sheets has deteriorated everywhere, with a reduction – and increased volatility – of government net worth.

Against this background, the question arises as to whether the deterioration of the balance sheets of Aaa-rated governments represents a material threat to their rating, and whether their debt remains a sanctuary for investors during these troubled times.

This report presents Moody's analytical framework to answer this question. It should be read in conjunction with Moody's Special Comment entitled "[What Does it Mean to be a Aaa Sovereign](#)" (May 2008), "[Moody's Sovereign Bond Rating Methodology](#)" (September 2008) and other recent Moody's publications on Aaa government ratings.<sup>1</sup>

For a Aaa government to be downgraded, Moody's must have concluded that the deterioration in credit metrics is (1) observable and material in absolute terms; (2) observable and material in relative terms; and (3) unlikely to be reversed in the near future.

Specifically, we need to assess not only the damage (actual and potential) inflicted by the current crisis on sovereign balance sheets, but also the adjustment capacity of the economy and the government, i.e. their ability to repair the damage.

This report is divided into six sections.

- In the first section, we set the stage and explain what it means to be a Aaa government; in other words, what makes Aaa governments special?
- In section 2, we show how the current crisis is affecting governments' balance sheets. We focus on the broader concept of government net worth rather than the narrower concept of gross debt. We also present a new approach for capturing and analyzing in a meaningful way all government liabilities.
- In section 3, we specify the choice of metrics that we use to assess relative levels of debt affordability among governments, and where precisely the demarcation line stands between Aaa and Aa governments.
- In section 4, we estimate how the crisis is going to alter Aaa government's debt metrics. We use projections and stress tests consistent with our baseline expectation of a painful and gradual economic recovery<sup>2</sup> to assess which governments will emerge from the crisis with more fragile positions.
- In section 5, we go a step further. We expose the currently Aaa-rated governments to a further stress test, consistent with our adverse global macro-risk scenario of economic and financial disintegration. We assume a further substantial crystallization of contingent liabilities arising from governments' support to the banking sector. We conclude in particular that the magnitude of debt challenges is "considerable" for Ireland, the US and the UK, and "sizeable" for Spain.
- In section 6, we assess the ability of governments to reverse the damage suffered on their balance sheets, through their fiscal adjustment capacity and through the underlying rebound capacity of their economies.

<sup>1</sup> In particular the Special Comments entitled "[Dimensioning US Government Debt](#)" and "[Not all Public Debt is the Same: Navigating the Public Account Maze](#)" (both February 2009). See section 'Related Research' at the end of this document.

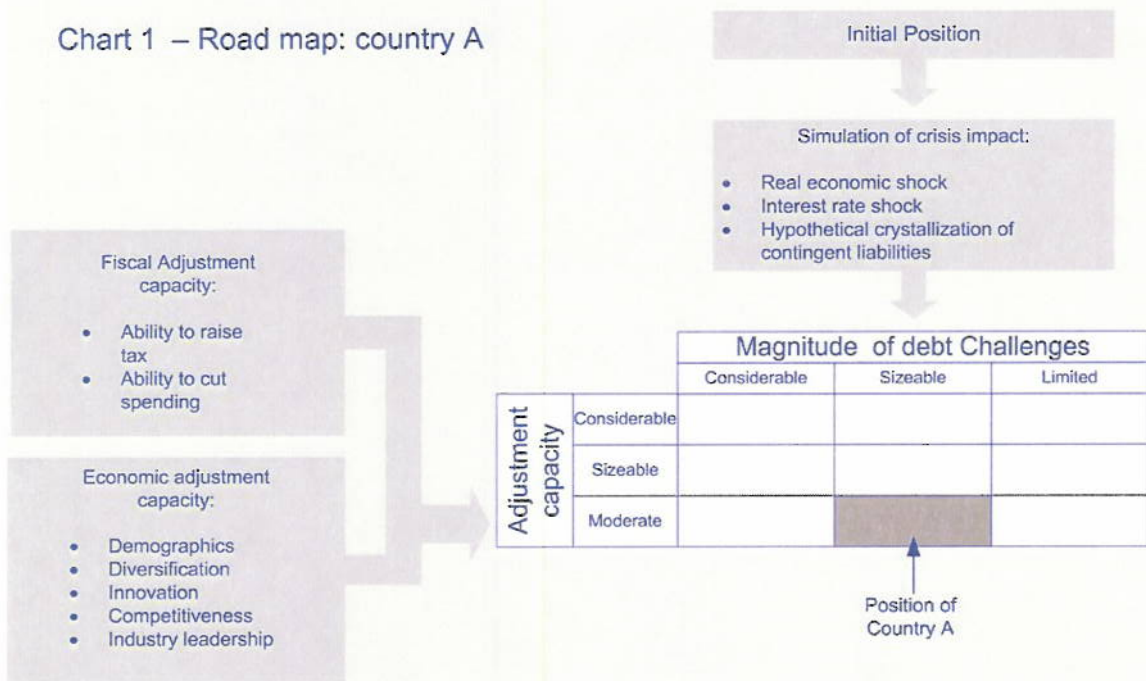
<sup>2</sup> As described in Moody's Special Comment entitled "[Global Macro-Risk Scenarios 2009-2010 – From Global Integration to Global Disintegration](#)" (December 2008).

### How Far Can Aaa Governments Stretch Their Balance Sheets?

We conclude that the US has a "considerable" adjustment capacity, the UK a "sizeable" adjustment capacity, but that Spain and Ireland have only a "moderate" adjustment capacity.

- We conclude on the three groups of countries: (1) the resistant Aaa countries; (2) the resilient Aaa countries; (3) the vulnerable Aaa countries (see table on page 2).

Chart 1 – Road map: country A



## How Far Can Aaa Governments Stretch Their Balance Sheets?

### Section 1: What are the characteristics of a Aaa-rated government in a synchronised global crisis?

*Key Message: The very severe and synchronized global economic downturn has affected the economic and financial foundations of most Aaa-rated economies. Downgrading all Aaa governments is not a solution; our ratings are primarily ordinal by nature and governments are the ultimate Aaa bond issuers. For a Aaa government to be downgraded, we must come to the conclusion that the deterioration in credit metrics is (1) observable and material in absolute terms; (2) observable and material in relative terms; and (3) unlikely to be reversed in the near future.*

It is not sufficient for a government to exhibit an extremely low probability of default to qualify for a Aaa rating. Governments rated in the Aa range also exhibit this characteristic.

What distinguishes Aaa governments from peers that are rated (slightly) lower on the rating scale is first and foremost an exceptional shock-absorption capacity, which should allow them to absorb most plausible shocks without impairing their balance sheet in an irreversible manner. This is what makes sovereign Aaa-rated debt a sanctuary for investors.

A Aaa rating therefore does not speak only to the mean of the risk distribution faced by holders of sovereign debt (expected loss) but also, to some extent, to the shape of the risk distribution and in particular the tail end of it (transition risk).

#### Exceptional shock absorption capacity

In practical terms, to achieve a Aaa sovereign rating, a country and its government must exhibit a very high economic resilience to shocks, coupled with exceptional government financial strength and balance sheet flexibility. A Aaa government may face a material deterioration in its balance sheet – indeed, most are currently experiencing this – but it has to be capable of repairing the damage relatively quickly.

#### Unconstrained access to finance

Another necessary prerequisite for a government to be rated Aaa is an unconstrained ability to raise funds in all plausible circumstances. There is admittedly an element of circularity here. A high level of creditworthiness contributes to imperviousness to liquidity risk. This in turn allows governments to use their superior access to finance to interpose their balance sheets and lend some protection to the private sector in the event of a financial crisis (through financial stability operations such as those implemented in most advanced economies since September 2008) or in the event of an economic crisis (through fiscal flexibility). This ability to provide the private sector, and hence the economy, with a buffer against shocks, contributes to the economy's resilience, which is itself a rating factor.

As governments are stretching their balance sheets in the current circumstances, they are inevitably losing some flexibility to absorb *further* shocks. At some point, their margin for manoeuvre could erode to the point that the virtuous circle of liquidity/flexibility/robustness risks breaking down, at which point their Aaa status would no longer be warranted. Indeed, there is no government whose Aaa rating can be taken for granted forever.

#### Some governments – albeit fewer than before – have to remain Aaa

Moody's is not, however, considering a scenario in which *all* Aaa governments could lose their rating. While there is a clear element of cardinality in a Aaa rating (i.e. negligible risk of default), it is also, like all ratings, an ordinal measure of creditworthiness across asset classes.

In fact most Aaa governments are positioned very highly *within* the Aaa category.

## How Far Can Aaa Governments Stretch Their Balance Sheets?

To the extent that Aaa ratings are the anchor of the rating scale and represent the *most* creditworthy class of issuers, there will always have to be at least one Aaa issuer – a sanctuary for investors. And as it is difficult to conceive of a world where there are Aaa issuers but none is a government (given the sovereign ability to appropriate resources from institutions located in their jurisdiction through taxation and other means), there will always have to be at least one Aaa sovereign issuer.

There may well be fewer Aaa governments in a year from now than there are currently, and their average credit metrics are likely to look worse given the global synchronized downturn – but there will still be some governments that retain their Aaa status.

### Where is the demarcation line between Aaa and Aa countries?

It is not enough to observe a material deterioration in a country's credit metrics to conclude that it should be downgraded. This deterioration must be material in relative terms as well – again, a synchronized downturn does not call for a synchronized downgrading of all government debt.

Delineating the demarcation between Aaa and Aa governments is to a large extent a normative exercise. Contrary to lower-rated governments, there is no relevant empirical way, based on a record of defaults, to characterize the intrinsic differences between a Aaa government and a Aa government. This is why the demarcation line and the assumptions that underpin it must be as transparent as possible (see Section 3). Annex A reviews the case of "fallen archangels", i.e. those governments that lost their Aaa status over the past 25 years.

To conclude, for Moody's to downgrade a Aaa government, the following conditions would have to be met simultaneously:

- Under plausible scenarios, debt affordability would deteriorate materially in *absolute* terms;
- It would also deteriorate noticeably on a *relative* basis;
- The balance sheet of the government has to have experienced a *lasting* impairment, so that the deterioration in debt affordability is irreversible over a foreseeable horizon.

## How Far Can Aaa Governments Stretch Their Balance Sheets?

### Section 2: The impact of the ongoing crisis on government balance sheets

*Key Message: Assessing the impact of the crisis by looking solely at the increase in gross government debt metrics would be too simplistic. A more difficult, but much more sound, approach to capturing the effect of the crisis requires an examination of the whole of the government's balance sheet and therefore of the government's net worth. In particular, this requires a comprehensive mapping of government liabilities. Looking at the crisis from a balance-sheet angle highlights the critical concept of the "power to tax", which ultimately helps us differentiate between sovereigns.*

The decision to assign (or not) a Aaa rating to a government requires Moody's rating committee to assess a far broader set of qualitative and quantitative elements than just debt affordability indicators.

However, Moody's considers that, in the context of the ongoing global crisis, potential downward pressure on Aaa ratings will be driven mostly by a subset of all rating factors – specifically, Factor 1 (economic strength) and Factor 3 (government financial strength) as described in Moody's sovereign bond rating methodology.

Once the issue is narrowed to debt metrics, two questions stand out:

- First, by how much is "debt" effectively increasing, given that not all debt is equal (contractual obligations, conditional commitments, hypothetical liabilities, etc.)?
- Second, how do we move beyond the increase in headline gross debt data and analyze how the crisis affects the whole of a government's balance sheet?

#### Which debt are we talking about?

The financial reporting of public accounts is rudimentary at best. Not only is the main focus generally on gross debt rather than on net worth but liabilities are also piled up as if they mean the same – dollar for dollar, or euro for euro, etc. – for the government.

We expect the current crisis to spur efforts to make public accounts more intelligible.

Moody's has taken an initial stab at this problem in its just published Special Comment, entitled *"Not All Public Debt is the Same: Navigating the Public Accounts Maze"*, which explains the details of an approach we use at Moody's to map liabilities in an analytically consistent way.

This approach involves an assessment of government financial commitments based on two key uncertainties:

- (i) the question as to whether the government is committed or not – this is the degree or the firmness of the commitment; and
- (ii) the question about how eventually exposed public finances are – the commitment being more or less easily measurable as its risk of materialization and incidence vary.

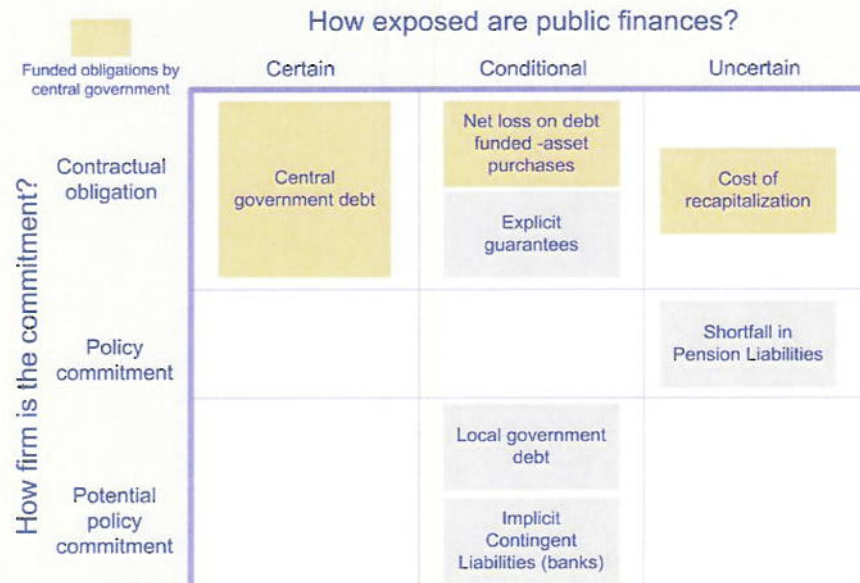
This approach is captured in the schematic below: on the vertical axis, we assess the degree to which the government we rate is committed to honouring a liability. Obviously, a bond, as a contractual obligation, is a firm obligation. A policy declaration to bail out banks or corporates reflects a different degree of commitment as compared to a direct contractual obligation, such as a bond. The firmer the commitment, the heavier it 'weighs' on the government's balance sheet.

On the horizontal axis, we look at the severity for public finances and the uncertainty that surrounds them. The effective "cost" to public finances can be certain in the case of a bond; conditional in the case of a guarantee; and uncertain in the case of a future pension liability as many different factors could potentially alter its net present value. A \$100 billion liability associated with a possible public pension shortfall does not 'weigh' as much as a \$100 billion bond debt.



## How Far Can Aaa Governments Stretch Their Balance Sheets?

Chart 2 –Sovereign Liability Map: stylized case



### Adopting a balance-sheet approach is more demanding but also more sound

From a credit rating perspective, what matters ultimately is the extent to which the crisis impacts both the financial obligations of governments (all types of liabilities) and the resources available to service these obligations (all types of assets).

To illustrate the different channels by which the crisis impacts the governments and how they combine to stretch debt affordability, it is helpful to rely on a balance sheet approach as sketched out in our recent Special Comment which lays out our government liability map<sup>3</sup>.

The ongoing crisis affects the government's balance sheets in three ways:

- First, it results in an outright deterioration in government's net debt metrics as a direct consequence of the recession;
- Second, it compounds the exposure of governments to the medium-term macroeconomic performance of their economies through the acquisition of large credit exposure as part of financial stability operations and fiscal stimuli plans; And
- Third, it may impair in a lasting way the government's main asset, namely its ability to raise tax, if the growth/tax model and industrial specialization of some countries prove to be poorly suited to the state of the post-crisis world and slow to reform.

To provide greater detail, the effects of the crisis can be summarized as follows:

<sup>3</sup> Please refer to Moody's Special Comment entitled "Not All Public Debt is the same: Navigating the Public Accounts Maze" (February 2009).

## How Far Can Aaa Governments Stretch Their Balance Sheets?

### **Outright increase in net debt as revenues shrink**

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As all economies have ground to a halt, a mechanical shortfall in tax revenues can take place, and to a lesser extent an increase in government social expenditure, causing government deficits and debt to increase.

This has no counterparty on the asset side of the balance sheet, and so results in a direct and sizeable increase in net liabilities. Those countries that had accumulated fiscal surpluses in more favourable economic times (Ireland, Spain) and start with a low level of indebtedness are relatively better placed to absorb this particular shock than countries that have posted recurring deficits even at the peak of the cycle (France, UK, US).

### **Government activism compounds exposure to medium-term economic vitality**

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The effect of financial stability operations and fiscal stimuli is more subtle.

Since the autumn of 2008, governments have repeatedly interposed their balance sheets to shelter the private sector from liquidity risk and to prop up the capital base of banks. These financial operations have resulted in an increase in financial and other liabilities (government debt) that is more or less matched by an increase in assets (equity ownership in, or loans to, banks and other institutions, potentially ownership of 'toxic' assets, etc.). Initially, there is no material net impact on the government's net worth.

However, these operations create a mismatch between the financial characteristics of the assets and liabilities of the government, exposing it to a fiscal loss – or gain – over time. What will determine the size and sign of the net impact on government net worth is the performance of the assets, ultimately linked to the performance of the whole economy.

The same effect applies to contingent liabilities arising from the guarantees that governments are granting liberally to borrowing undertaken by banks and now other institutions. The eventual impact of these guarantees on the government's balance sheet depends on the financial performance of the guaranteed entities and therefore, by extension, on the macroeconomic performance of the whole economy.

Through financial operations and the expansion of their balance sheets, governments have therefore *compounded* their dependence on the medium-term ability of their economies to regenerate and grow out of the current recession.

Similar reasoning can be applied to the successive fiscal stimulus plans unveiled by governments. These plans entail a direct increase in government primary deficits, and therefore also an increase in government debt. This has no direct counterparty on the asset side of the balance sheet. If, however, these plans do succeed in preserving the productive potential of the economy (the original aim of Keynesian policy was to do so through government *investment*), then fiscal stimuli would enhance the government's main asset, the power to tax, and thus generate the resources to cover the increase in debt. Fiscal stimuli, therefore, again compound the exposure of government debt affordability to the underlying vitality and regeneration capability of the economy.

### **Tax and growth models at risk in a post-crisis world?**

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This underlines the critical importance of the third channel through which the crisis may negatively affect the government's balance sheet: namely, the potential impairment of the power to tax that may arise in those countries whose tax model or growth model is ill suited to the post-crisis world.

While it is still difficult to state with any degree of precision what exactly the post-crisis world economy will look like, it is reasonable to assume that capital will be more scarce than has been the case over the past two decades; that financial leverage will be much lower than recently; and that growth of financial services, in particular cross-border and international trade, will be slower.

## How Far Can Aaa Governments Stretch Their Balance Sheets?

This implies that for those countries whose growth model was more based on (private) debt (Spain, UK, the US) or for those countries whose growth model was more based on the growth of international finance, services and trade (Ireland, UK), economic performance and accordingly the government's power to tax might have undergone a lasting impairment. A similar assessment applies to those countries whose tax model is skewed towards sources of revenue (corporate tax, property tax, capital gain tax) which may be impaired for several years.

For these countries, the key question from a rating perspective is whether and how quickly they have the capacity to regenerate the government's power to tax by reallocating resources and readjusting their growth model to the post-crisis world order.

As an illustration, on 30 January 2009, Moody's assigned a negative outlook to the government of Ireland's Aaa rating, indicating that the ratings could be downgraded if the economic downturn were to suggest a structural erosion of the Irish "economic model".

## How Far Can Aaa Governments Stretch Their Balance Sheets?

### Section 3: How do we assess debt affordability in practice?

**Key Message:** Our preferred debt metrics for highly rated governments centre around the concept of how "easy to live with" public debt is for a given country – i.e. to what extent servicing the debt affects political and social choices. Measures of affordability aim at scaling the size and cost of a government's liabilities with the resources at its disposal to service them. The key measure of the debt/resources ratio for a given government is situated "somewhere" between debt/GDP and debt/revenues.

Ultimately, credit analysis is concerned with the ability and willingness of creditors to honour their financial obligations. For Aaa sovereigns, whose *willingness* to pay is not in question given the strength of domestic institutions, downward pressure on the rating would arise from the *ability* to pay being stretched excessively.

Debt metrics are standard indicators used to measure affordability – and one among many rating factors – but they need to be interpreted with some caution, given the unique ability of governments to effect discretionary changes to their revenue through taxation.

How do we interpret debt metrics?

As in corporate finance, measures of affordability aim at scaling the size and cost of a government's liabilities with the resources at its disposal to service them. The two main types of indicators we use here are:

- Debt/Resources (concept equivalent to Debt/EBITDA in corporate finance);
- Cost of servicing the debt as a share of revenues.

#### **Indicators of debt/resources: how to use them?**

Scaling the size of liabilities against the resources available to the government presents three difficulties:

- First, as indicated earlier, standard measures of public debt typically *underestimate* the true magnitude of government liabilities, because they do not account for contingent liabilities or implicit liabilities. They may also in some cases *overestimate* the magnitude of liabilities, especially where the debt aggregate used is that of the general government (including local or regional government debt) while Moody's sovereign rating applies to the central government. To circumvent this problem, Moody's may not use similar debt definitions for all countries, but consider the parameters that we deem relevant, i.e. take account of how much debt the sovereign is effectively liable for.
- A second difficulty is the denominator of the ratio, i.e. what measure we use to assess government resources. A useful standard indicator, the most similar to corporate finance ratios, is *debt/revenue*. A ratio based on current revenues, however, may underestimate the ability of a government to increase its resources by raising the tax rate (or freeing resources by cutting down on expenditure). This ratio therefore needs to be corrected for the adjustment capacity of the government, i.e. in particular its taxing flexibility. The US debt/revenue ratio is currently around 200%, much closer to that of a typical Aa country such as Italy (around 225%) than a typical Aaa country such as Germany (around 150%). But the US tax pressure is low (34%) compared to that of Italy (46%) or Germany (44%). Assuming that this provides the US government leeway to increase its revenues (not a straightforward conclusion), the relatively high debt/revenue ratio exaggerates the burden of the debt on its balance sheet.
- The widely used debt/GDP ratio has the opposite bias. Debt/GDP is also a measure of liabilities relative to resources, in the sense that, through its power to tax, the government has a contingent claim on the wealth of the economy. The taxing power does not, obviously, extend to the whole of GDP, so this ratio overestimates the ability of the government to levy resources. Adjustment needs to be made at least for a country's tolerance for taxation. Societies such as France, with a large public sector and tax pressure of 50%, are more tolerant of taxation than the US (34%). So, while both countries have debt/GDP ratios of around 65%, the French government has a smaller debt in relation to its own size and access to more resources to service the debt than the US. An adjustment also needs to be made for the fact that

## How Far Can Aaa Governments Stretch Their Balance Sheets?

government only has potential access, through taxation, to the 'unencumbered' part of GDP, excluding for instance interest payments on private sector debt (as governments would normally not tax these). While financial leverage contributes to increasing GDP, it also somewhat erodes the government's tax appropriation capacity.

For these reasons, the 'true' measure of the debt/resources ratio for a given government is situated 'somewhere' between debt/GDP and debt/revenues. A graphical representation of the zone bounded by these two ratios for different countries (see chart 3) illustrates the fact that, on these two measures, the cluster of Aaa governments showed at the onset of the crisis markedly different characteristics from an typical Aa government (Italy).

### Indicator of affordability: interest payment/revenues

Another indicator of affordability is the extent to which interest payments on the debt materially affects social and political choices.

For a Aaa country, debt has to be seamlessly 'easy to live with' – not merely in the sense that it is financially affordable, but also in the sense that it is not a binding constraint on policy choices.

Moody's estimates, based on empirical observations, that when debt service costs exceed around 10% of revenues, they start exerting pressure on social and political options available to the government. Therefore, debt becomes less 'affordable'. In the extreme, a country whose public debt service absorbs 50% of government revenues would be considered to have a very unaffordable debt level, independently of the absolute level of the debt – which may be low.

This indicator has the benefit of capturing, in addition to the information contained in the debt/revenue ratio for instance, the effect of interest rates on affordability.

Based on this measure, the US government can afford a (marginally) higher level of debt than another country, because the safe haven status enjoyed by Treasury securities translates into a lower average cost of borrowing. Similarly, Japan's debt affordability (interest payment/revenues at around 10% over the last years) is less stretched than its debt/GDP ratio at almost 200% would suggest, because of the low level of interest rates that it can obtain from its loyal and pliant domestic investor base.

The ratios above, in particular the latter, are those that we use below to identify which governments are stretching their balance sheets and debt affordability level to a level that puts their rating under pressure. A rising debt/revenue level or interest payment/revenue ratio does not however imply by itself that a downgrade is warranted. That depends on whether and how quickly the government can re-establish affordability by either raising its primary balance as a share of GDP (*government's own adjustment capacity*) or through a recovery in GDP growth (*economy's adjustment capacity*). These two steps are considered in the following sections.

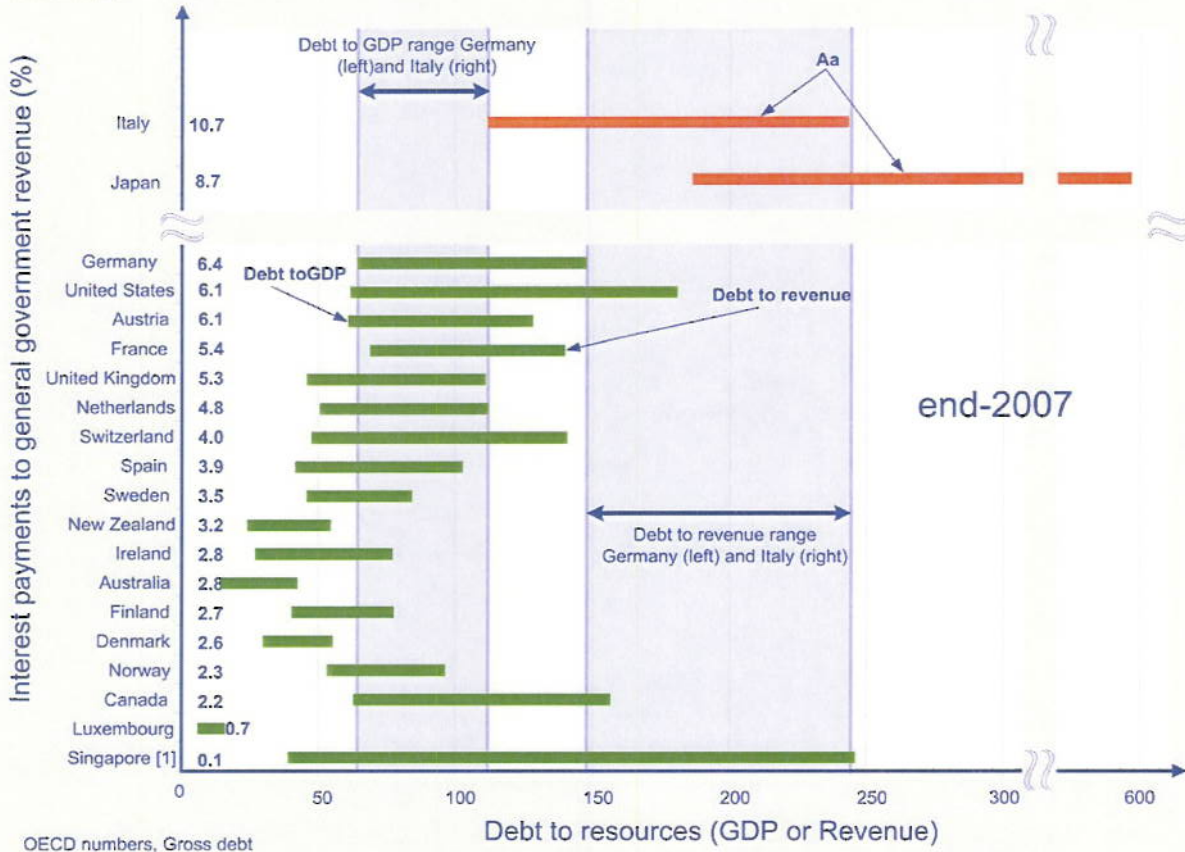
The starting point of the analysis is the positioning of each Aaa government pre-crisis (for which we take end-2007 data) as represented in chart 3.

### How Far Can Aaa Governments Stretch Their Balance Sheets?

**Chart 3 – Debt metrics for Aaa and selected Aa governments pre-crisis (end-2007)**

How to read the chart: the horizontal axis shows debt/resource metrics. The horizontal line for each country is bounded by debt/GDP on the left, and debt/revenue on the right. Aaa governments are shown in green and, for comparison purposes, selected Aa governments are shown in red. The two shaded areas indicate the debt/GDP and debt/revenue ratios of Germany (archetypical Aaa government) and Italy (archetypical Aa government) at end-2007.

The vertical axis indicates the ranking of countries in terms of interest payment/revenue. The further up the axis a country is located the higher its interest payment/revenue ratio.



[1] Net interest expenditure. Singapore net interest expenditure is very low because of large interest income.

## How Far Can Aaa Governments Stretch Their Balance Sheets?

### Section 4: How the crisis is stretching debt affordability...

*Key Message: Moody's dimensions the effects of the crisis on Aaa government finances by projecting debt affordability metrics and taking account of the shocks they currently experience, consistent with our baseline scenario of a slow and painful healing of their economies. All Aaa government debt affordability metrics have deteriorated considerably as a result – i.e. the Aaa anchor has been set adrift. Some countries face comparatively more severe challenges, such as Ireland, the UK and the US.*

As noted above, a Aaa government should be able to absorb most plausible shocks without overstressing debt affordability in an irreversible manner. The current crisis offers a 'live' test of that resilience, because it affects the balance sheets of governments through many different channels.

The first step of our analysis therefore consists of a projection of debt affordability metrics, building on the shocks being experienced by all countries.

Consistent with Moody's global baseline scenario of a slow and painful economic convalescence, we are making the following assumptions for the purpose of our analysis:

- A further shock to the macroeconomic environment. We simulate this by assuming that the fall in economic growth – and resulting rise in public debt – forecast for 2009-2010 will continue for another full year into 2011.
- A permanent interest rate shock, comprising two elements: first, we assume that credit risk discrimination is permanently elevated, and that the widening of bond yield spreads since end-2007 is sustained and applies to the entire stock of debt. Second, we make the normative assumption of a *further* rise of 100 bps to the cost of funding of *all* governments, to take account of a post-crisis state of the world in which capital is more scarce.<sup>4</sup>

For illustrative purposes, we have assumed that, over the projection horizon, overall tax pressure (the ratio of government revenues to GDP) remains constant. That means that we are simulating the effect of the crisis *in the absence* of government efforts to repair their position in the short term.<sup>5</sup>

Note that this simulation does not represent Moody's expectation regarding the evolution of debt metrics of individual governments. Rather, it represents a plausible dimensioning of the extent to which the current crisis stretches debt affordability, under a scenario of severe macroeconomic and financial tension, but in the absence of a dislocation of the banking system (see next section).

As can be expected, the outcome of our simulation, illustrated in chart 4, reflects the following developments:

- A general deterioration in the debt metrics of Aaa governments, raising the (GDP) weighted average ratios of debt/GDP from 56% to 85% and debt/revenue from 147% to 240% by end-2011. These are levels that are currently more likely to be associated with a Aa than Aaa government. Similarly, the weighted average level of interest payment to revenue ratio would rise to a level that, before the crisis, would have been deemed high for a Aaa-rated government rating.
- A differentiation among countries. It is not surprising that the position of some governments is suffering relative more than that of others. This is the case for governments whose economy was relatively more vulnerable to the crisis because of high private sector indebtedness, or because their industrial specialization was more skewed towards international trade and finance. In this illustrative projection the debt metrics of the United Kingdom, the United States and Ireland in particular are moving towards more challenging levels – in the case of Ireland despite a robust initial position.

<sup>4</sup> This shock aims to capture in a simple normalized manner the different scenarios that may result from an increase in the real cost of servicing the debt. This may arise from a rise in nominal rates, but also encompasses a scenario in which nominal rates fall, but where inflation falls even more (at the extreme, a sustained deflationary environment), leaving governments exposed to a rise in real rates.

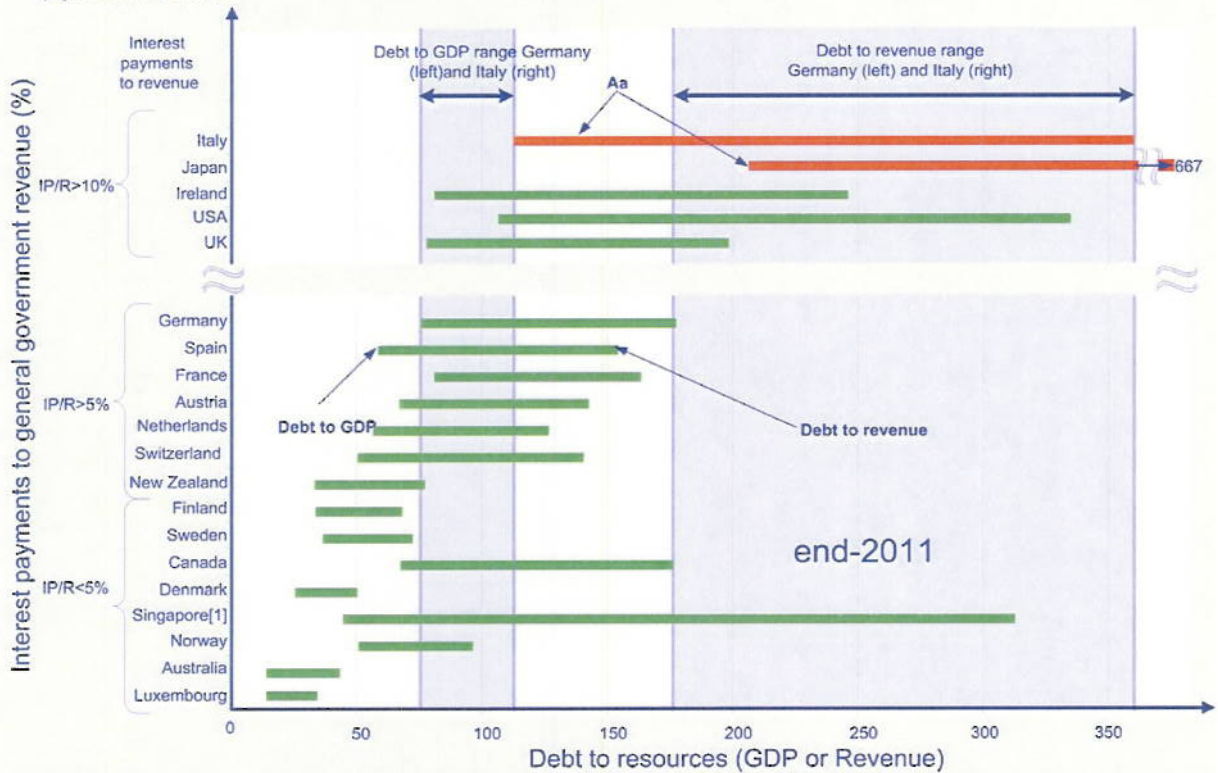
<sup>5</sup> Admittedly, this assumption slightly underestimates the effects of the crisis on government balance sheets, because in a recession tax revenues are likely to fall faster than GDP, but to the extent that all governments are treated symmetrically it does not fundamentally alter their relative positioning.

### How Far Can Aaa Governments Stretch Their Balance Sheets?

Chart 4 – Debt metrics for Aaa and selected Aa governments in a plausible worst-case scenario without any banking contingent liabilities (end-2011)

How to read the chart: the horizontal axis shows debt/resource metrics. The horizontal line for each country is bounded by debt/GDP on the left, and debt/revenue on the right. Aaa governments are shown in green and, for comparison purposes, selected Aa governments are shown in red. The two shaded areas indicate the debt/GDP and debt/revenue ratios of Germany (archetypical Aaa government) and Italy (archetypical Aa government) at end-2011. The forecasted ratios reflect a plausible worst-case scenario that includes a macroeconomic shock and an interest rates shock.

The vertical axis indicates the ranking of countries in terms of interest payment/revenue. The further up the axis a country is located the higher its interest payment/revenue ratio.



Source: Moody's, Gross debt

[1] Net interest expenditure. Singapore net interest expenditure is very low because of large interest income.



## How Far Can Aaa Governments Stretch Their Balance Sheets?

### Section 5: ...and how it could stretch it even further

**Key Message:** A further significant crystallization of contingent liabilities may not be a likely scenario, but it is not entirely implausible. A severe stress test, assuming that each country experiences conservatively high bank losses that are entirely absorbed by the government, provides a measure of how much further government balance sheets could be stretched. This further shock would particularly weigh on the balance sheets of governments in Ireland, Spain and Switzerland. When combining all stress tests, the rank ordering of countries facing the sternest challenges would not be different from previously. Ireland, the UK and the US, would face a considerable debt test. Austria, Germany, France, Spain and Switzerland would also, but for different reasons, face sizeable challenges. Obviously, a materialization of such contingent liabilities would make assumptions on the rebound capacity of countries even more critical to the preservation of the rating.

In the previous section, we did not take into account of the risk of a further crystallization of contingent liabilities, in particular the guarantees that governments have granted liberally to borrowing undertaken by banks and now increasingly to other institutions as well. Whether these contingent liabilities will materialize, and what the net fiscal cost will be for governments is highly uncertain – this is what we capture in the “Government Liability Map”.

However, it would be too sanguine to assume that governments could not face additional fiscal losses as a consequence of their financial stability operations.<sup>6</sup>

Therefore, further large bank-related fiscal losses may not be *likely*, but they are clearly not *implausible*.

This could result in government balance sheets becoming overstretched beyond their recovery capacity.

For these reasons, we expose in this section the balance sheets of Aaa governments to a severe stress test, assuming that large-scale losses will arise from their explicit and implicit exposure to the banking system, and assess the effect on debt affordability metrics.

Such a test is more consistent with Moody's adverse global macro-scenario of disintegration than with the baseline one. While we do not rate countries on the basis of rather extreme scenarios, we always factor into our rating analysis the effects of low probability/high severity shocks.

Specifically, we assume:

- That the banking system of each country faces losses that are at the *upper end of plausible estimates* under a highly stressed scenario. To obtain these, we adopted a top-down approach informed by bottom-up experience. We applied to each category of bank assets conservatively high loss rate assumptions, set by reference to – but well in excess of – historical precedents (See box 1).
- That the loss is *entirely* borne by the government of each country, either directly or indirectly.

The conservative nature of these assumptions means that the stress test outcome will not offer anything more than an assessment of the magnitude of the debt challenges that governments *may* face, in a very adverse and fairly extreme scenario. Note, for instance, that the nature of our assumptions means that they do not provide relief to governments of countries where banks have relatively more abundant capital buffers, such as Spain.

The countries that face the sternest challenges under such a scenario are, logically, those countries that have large banking systems in relation to GDP, a larger exposure to riskier asset classes and/or a more adverse macroeconomic environment. Those include Ireland, Spain, Switzerland and the UK.

Adding this hypothetical fiscal loss to debt levels provided in the previous section results in additional stretching of the government's debt affordability metrics, illustrated in chart 5 below.

<sup>6</sup> Government guarantees on bank lending may admittedly never be called. But the reason may be that governments stepped in by offering other forms of support (additional recapitalisation, transfer of troubled assets to a state-owned ‘bad bank’, etc.) that still result in governments absorbing some of the losses of the banking sector.

## How Far Can Aaa Governments Stretch Their Balance Sheets?

While the magnitude of the challenges facing several countries would be amplified, the rank order is not fundamentally altered:

- Ireland, the United Kingdom, the United States face the most considerable challenges.
- Spain and Switzerland, albeit to a lesser degree, face a sizeable challenge, as well as a few other governments much less affected by the various facets of the crisis, but whose initial position was less robust (Austria, Germany, France).
- The other Aaa governments also see a deterioration of their balance sheets, but the test they face is more limited.

### Box 1 - Stressed Bank Losses in Aaa Countries: Calculation Methodology

While not expected losses, stressed losses for banking systems are calculated by looking at a worst case scenario which goes significantly beyond historical loss experiences and current mark-to-market valuations. For each banking system, stressed loss assumptions were applied to both loans and structured securities.

In terms of loans, we generally used a multiple of the loss rates experienced during recent periods of substantial economic slowdown. That multiple varied by asset class, and from country to country, but generally was 1.5 times to 3 times peak loss rates. For loan classes that are often the object of securitization, we also used stressed loan losses rates calculated in conjunction with our structured finance group.

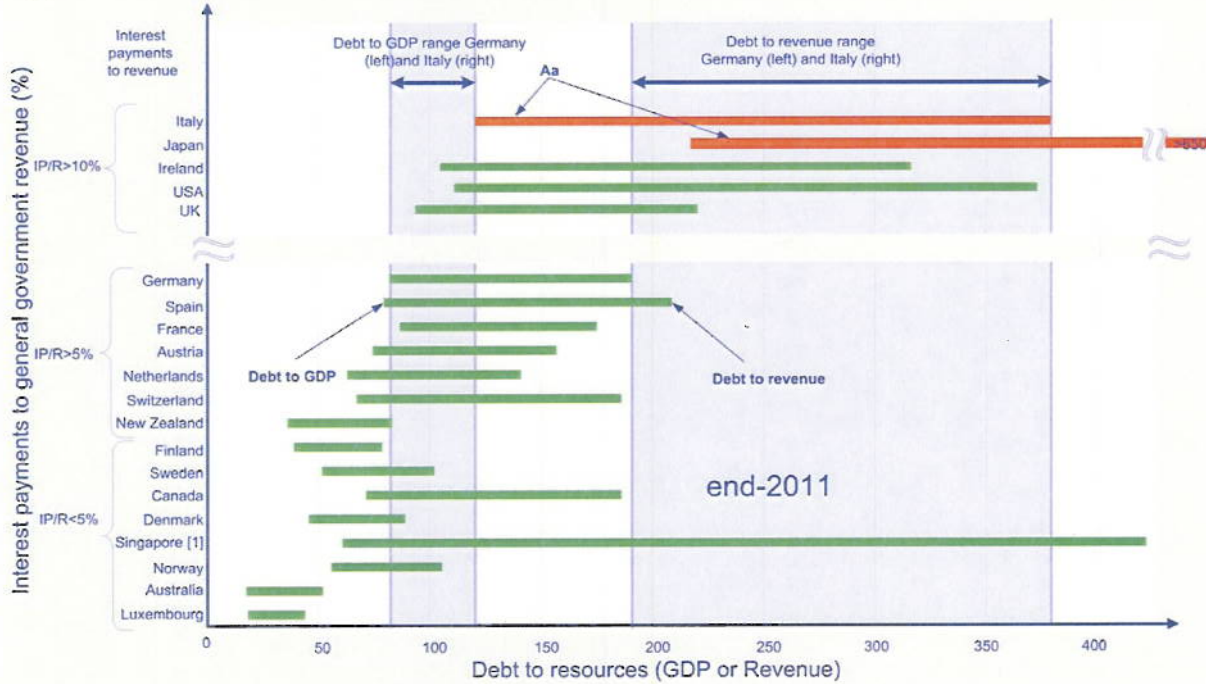
For structured securities, we assumed that they would not be held to maturity. Therefore, we applied mark-to-market loss rates, stressed to a 95% confidence level. It is important to note that these loss rates are significantly higher than our expected loss rates, even under a stressed scenario.

## How Far Can Aaa Governments Stretch Their Balance Sheets?

Chart 5 – Debt metrics for Aaa and selected Aa governments in a plausible worst-case scenario including further banking contingent liabilities (end-2011)

How to read the chart: the horizontal axis shows debt/resource metrics. The horizontal line for each country is bounded by debt/GDP on the left, and debt/revenue on the right. Aaa governments are shown in green and, for comparison purposes, selected Aa governments are shown in red. The two shaded areas indicate the debt/GDP and debt/revenue ratios of Germany (archetypical Aaa government) and Italy (archetypical Aa government) at end-2011. The forecasted ratios reflect a plausible worst-case scenario that includes a macroeconomic shock and an interest rates shock and further banking contingent liabilities.

The vertical axis indicates the ranking of countries in terms of interest payment/revenue. The further up the axis a country is located the higher its interest payment/revenue ratio.



Source: Moody's, Gross debt

[1] Net interest expenditure. Singapore net interest expenditure is very low because of large interest income.

## How Far Can Aaa Governments Stretch Their Balance Sheets?

### Section 6: Estimating the adjustment capacity of economies and governments

*Key Message: In response to heightened pressures on public finances, governments can try to "grow out of their debt" and/or increase their levy on national income. It is this adjustment capacity that determines by how much – and how long – a Aaa government can stretch its balance sheet. We conclude that the rebound capacity appears ex ante stronger in the US or the UK (and a number of other countries whose governments face less challenging tests) than it is in Spain or Ireland.*

Having assessed the extent of the 'damage' caused by the crisis to government's balance sheets, the next stage of our analysis is to assess whether, how, and how fast governments can repair this damage.

Against this the background, Moody's may take rating actions on Aaa countries in two circumstances:

- First, countries that are likely to emerge from the crisis with an overstretched balance sheet and debt affordability levels, if we conclude they do not have the adjustment capacity to repair their situation over a foreseeable horizon.
- Second, countries that may not exhibit an immediate deterioration in their balance sheet beyond a level consistent with a Aaa status, but whose growth or public finance models are deemed to be structurally eroded, suggesting that the deterioration in credit metrics cannot easily be reversed and may in fact continue inexorably (e.g. the situation that led to the loss of Japan's Aaa rating in 1998).

In either case, as underlined when Moody's assigned a negative outlook to the Irish government's Aaa rating on 29 January 2009, the key question is whether a government has a sufficient adjustment capacity to regain full control over the size and magnitude of the cost of its debt.

There are two ways in which a government can consolidate a deteriorated financial position. (1) It can increase its primary balance as a percentage of GDP (which constitutes the government's own adjustment capacity); or (2) it can benefit from an increase in the tax base through a sustained recovery of GDP (economy's adjustment capacity). In figurative terms, the government can either increase its slice of the national cake, or acquire the same slice of a bigger cake.

#### The adjustment capacity of governments: assessing "fiscal space"

The extent to which a government can generate fiscal margin for manoeuvre can be summarized in two simple questions:

- By how much can government (further) raise tax pressure on the economy?
- By how much can government (further) cut expenditure?

The answers provide the range by which a government should be able to improve its primary balance when the crisis abates.

In each case, the assessment depends on the current level of taxation/expenditure, and the tolerance of the society for higher tax pressure or lower provision of public services. France and Germany have a similarly (high) tolerance for taxation, but as Germany's current tax pressure of 44% is lower than France's 50%, its ability to generate resources from a higher tax rate should – all other factors being equal – be higher.

Historical experience is a guide in this case, but not proof of future capability. A government that has been able to generate large primary surpluses in the past, especially in a period of not particularly buoyant economic growth, is likely to be able to do so again (Canada, Finland, Sweden, etc.). But that may be less true if either its past fiscal performance owed to structural factors was eroded by the crisis (such as high growth fuelled by rising household indebtedness) or if new structural influences materialised (such as ageing, a trend

## How Far Can Aaa Governments Stretch Their Balance Sheets?

of material significance in most advanced economies, or the lengthy absence of global trade stimuli) that create new constraints in coming years and decades.

Against this background, we do not aim to provide accurate measures of adjustment capacity for each government, but rather a credible order of magnitude.

This is achieved by scoring the margin for increasing revenues and reducing expenditure on a five-notch scale. We then combine the scores to derive a total adjustment capacity for the government's primary balance.

The resulting score represents a broad estimate of the fiscal space that a government might be able to generate when the crisis abates, on condition that the economy's productive capacity is not permanently dented. A government with a low adjustment capacity may only be able to improve its primary balance by a couple of percentage points of GDP, while a government with a very high adjustment capacity should be able to improve structurally its primary balance by at least 5 percentage points of GDP.

**Table 2 – Government adjustment capacity scorecard**

Country	Tax pressure	Ability to raise tax further	Govt spending/GDP	Ability to cut expenditure further	Fiscal adjustment capacity
Australia	35	High	34	Medium	High
Austria	48	Medium	48	Medium	Medium
Canada	39	High	39	Medium	High
Denmark	54	Medium	52	Medium	Medium
Finland	52	High	47	High	High
France	50	Medium	52	Medium	Medium
Germany	43	Medium	43	Medium	Medium
Ireland	35	Medium	40	Medium	Medium
Luxembourg	43	High	40	Medium	High
Netherlands	47	Medium	46	Medium	Medium
New Zealand	45	Medium	42	Medium	Medium
Norway	57	High	39	Medium	High
Singapore	15	Very high	14	Medium	High
Spain	38	Medium	40	Medium	Medium
Sweden	53	Medium	50	Medium	Medium
Switzerland	37	Medium	37	Medium	Medium
UK	42	High	46	Medium	High
US	33	High	38	Medium	High

Another factor that impacts on governments' adjustment capacity in a crisis environment is the degree of national cohesion. In countries that benefit from a very high degree of social and political cohesion, and strong allegiance to the central government, people can be expected to be more willing to make an additional effort to support their government. Where that level of cohesion is weaker, a higher tax pressure is more likely to be met with resistance, emigration of workers or tax evasion. There are numerous historical examples of societies where substantial borrowing in times of national emergency (including wars) have been first raised and then paid off through popular support. To some extent, we therefore give 'the benefit of the doubt' to countries where we believe that national cohesion in the face of national emergency is unusually high.

As might be expected, there is fairly limited difference among Aaa governments as regards fiscal adjustment capacity, as all are deemed to have at least a moderate ability to improve their primary position. The ability to recover from a crisis through common sacrifice is indeed a common characteristic of Aaa governments,

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consistent with Moody's sovereign methodology. More interesting is that none is deemed ex ante to have very large room for manoeuvre, a reflection inter alia of the generally quite high levels of tax pressure among advanced economies, but also of the various structural challenges (such as ageing) that many face or will face imminently. The latter is an important consideration as regards the time horizon over which government must repair their balance sheets after the current shock. Governments of countries where ageing challenges are already present or imminent (mainly but not exclusively 'Old World') have considerably less time to adjust than governments of countries where demographics are more favourable (some but not all 'New World' countries).

### The adjustment capacity of economies

The second means by which governments can improve their affordability indicators is through an expansion of their tax base, i.e. through a recovery of the economy's economic potential.

The question is whether individual countries can 'grow out of their national debt'.

The ability of an economy to resist shocks and to regenerate its productive potential features is an important factor in Moody's sovereign rating methodology at any time. As indicated above, the importance of this rating factor is heightened in current circumstances by the fact that most Aaa governments, through their large ongoing absorption of private sector risk, are compounding their exposure to the underlying economy's performance.

An example of how crucial it is for a country to have the economic flexibility to grow out of debt was evident in Sweden and Finland in the aftermath of the banking crisis of the early 1990s. Both countries were largely able to repair damaged government balance sheets by regenerating economic vitality and reallocating productive resources towards high-growth industrial sectors. The rebound capacity of Finland and Sweden allowed them to recover Aaa ratings that had been lost in October 1990 and January 1991, respectively (see Annex A). However, unlike today's crisis, which is truly global in nature, the Nordic countries were able to benefit strongly from an external competitiveness boost to their economies since the rest of the world was functioning relatively normally at the time.

Assessing an economy's regeneration capacity with any degree of precision relies on many disputable assumptions, not least regarding the state of the world economy after the crisis. At a minimum though, economic vitality and flexibility rely on the following factors:

- **Demographics:** a country with a rapidly growing workforce will, over time, generate more revenue than a country with a shrinking one. As debt is, in the ultimate analysis, tax deferred, a larger number of taxpayers in the future has to be a positive factor. On this measure, 'New World' countries fare better than most European countries. In our illustrative scorecard, we represent demographic dynamism by the cumulative increase in population projected by 2025.
- **Economic diversification:** A more diversified economy can more easily reallocate resources away from those sectors lastingly affected by the crisis and towards those sectors from which growth and employment will emerge in coming years. In our scorecard, economic diversification is captured by the volatility of output over the past decade (more diversified economies tend to exhibit lower volatility over a long period) and by a sector-specific analysis illustrated by the share of the first three industry groups in national stock exchange indices.
- **Competitiveness, efficiency and innovation:** Another indicator of flexibility is the ability of countries to 'reinvent' their business models, as shown by the Nordic precedent. For countries that have lost a substantial engine of domestic growth (household financial leverage and wholesale finance in the UK and Ireland, construction in Spain), the ability to rebound relies in part on external competitiveness and labour market flexibility. Likewise, countries that demonstrate a higher capacity for innovation are more likely to adjust flexibly to the post-crisis environment and exploit the opportunities it will yield. We use three indicators to explain this complex factor: global rankings of competitiveness and innovation, as compiled respectively by the World Economic Forum and Insead; and a simple measure of the degree to which

## How Far Can Aaa Governments Stretch Their Balance Sheets?

each country generates global 'industry leadership', for which we use the aggregate size of its corporations listed among the 500 largest global firms, scaled by its GDP.

To aggregate the effect of these different dimensions, we construct a simple scorecard, in which individual countries are ranked for each factor and the ranks are then added up. This gives an ordinal measure of rebound capacity. While the merits of each indicator are admittedly disputable, taken together they provide a plausible positioning of all countries in terms of the ability of their economy to grow out of their national debt.

**Table 3 – Economic Adjustment Capacity Scorecard**

Country	Overall ranking	Demographics	Output volatility	Diversification	'Global Industry leadership'	WEF Competitiveness ranking	Insead innovation ranking
US	1	4	10	2	6	1	1
Germany	2	18	1	4	4	7	2
Sweden	2	9	5	7	8	4	3
France	4	10	2	1	2	13	14
Switzerland	4	10	7	16	1	2	6
UK	4	10	12	3	3	10	4
Australia	7	3	4	10	5	14	16
Canada	8	5	13	11	12	9	9
Finland	8	14	14	8	7	6	10
Denmark	10	17	6	17	11	3	7
Singapore	11	5	17	15	15	5	5
Austria	12	15	3	6	17	11	12
Netherlands	12	15	11	8	14	8	8
New Zealand	14	7	9	5	16	16	17
Norway	14	8	16	13	10	12	11
Luxembourg	16	2	15	17	N/A	17	13
Ireland	17	1	18	14	13	15	15
Spain	18	13	8	12	9	18	18

Perhaps not surprisingly, the United States, which exhibits unrivalled capacity for innovation, tops this ranking by some distance, followed by a group of resilient, diversified economies including France, Germany, Sweden, Switzerland and the UK.

We then group the countries in three groups, based on the scores:

- The first group consists of the United States alone, a country whose adjustment capacity is deemed high enough to not only bring back economic growth to its trend, but possibly even recover some of the output lost during the crisis, which should help reverse over time at least some of the ongoing deterioration in debt metrics;
- The second group consists of countries whose economic rebound capacity is high enough to bring back growth on or close to trend quickly. While they may not be able to recover the lost output, their debt metrics should stabilise quickly once the crisis abates and – should governments make use of their own fiscal adjustment capacity – improve again;
- The third group includes countries which, either because of questionable competitiveness (Ireland, Spain) or lesser economic diversification (Luxembourg, New Zealand, Norway) are likely to need more time to

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adjust and rebound if (and only if) their economic model is effectively dented. That would make it harder to first stabilize and then potentially reverse the trend in debt metrics. Not all the countries in this group are equally vulnerable to the current crisis. Only for those whose growth model and business specialization are more challenged by the crisis (Ireland and to some extent Spain) is economic adjustment capacity a potential rating pressure point at this juncture.

### Overall adjustment capacity

The scores of individual countries on both adjustment dimensions are plotted in table 4 below. This suggests that the United States has considerable adjustment capacity, which should allow its government to absorb equally considerable debt challenges. Ireland, Spain (and New Zealand, which however does not face the same magnitude of challenges), on the other hand, appear ex ante to have relatively moderate total adjustment capacity, which implies that sizeable debt challenges could more easily lead to their governments' balance sheets being overstretched.

**Table 4 – Summary scorecard of adjustment capacity**

Aaa countries		Ability to "grow out of the debt"			
		Very High	High	Moderate	Limited
Ability to adjust government revenue and/or expenditure	Very High				
	High	US	Canada Australia Finland Singapore UK	Luxembourg Norway	
	Moderate		France Germany Switzerland Netherlands Austria Sweden Denmark	Ireland New Zealand Spain	
	Limited				

Considerable adjustment capacity
  Sizeable adjustment capacity
  Moderate adjustment capacity



## How Far Can Aaa Governments Stretch Their Balance Sheets?

### Conclusions: Scaling adjustment capacity against debt challenges

The final stage of the analysis consists of scaling the adjustment capacity against the magnitude of the debt challenges faced by individual countries in order to identify which countries face potential rating pressure, and more importantly where this pressure originates.

It is important to underline that the analysis conducted here does not supersede either Moody's sovereign rating methodology or the deliberations of rating committees. Its intention is to shed light on the analytical process used by Moody's analysts to rate Aaa governments *through the current crisis*.

On the basis of the current deterioration in debt metrics and the outcome of our stress tests (sections 4 and 5), we can rank governments in terms of the magnitude of the debt challenges that they face (sharpness of deterioration, actual and potential debt level).

- In this respect, the United States, the United Kingdom and Ireland face clearly considerable challenges.
- A second group of countries – comprising Austria, Germany, France, Spain and Switzerland – also face a severe test of debt affordability, either because their initial position was not particularly strong, or because the deterioration of their balance sheet is substantial and rapid.
- Other Aaa countries are less likely to face overstretched debt metrics.

We also rank countries in terms of fiscal and economic adjustment capacity, based on the result of the analysis in section 6.

- In this regard, the United States exhibits considerable adjustment capacity.
- Most other Aaa countries show considerable capacity, or do not consider their economic potential rebound capacity as being particularly tested even when subjected to severe stress tests.
- Ireland's rebound potential – and to a lesser extent Spain's – appears more disputable given the extent to which their growth models are challenged.

## How Far Can Aaa Governments Stretch Their Balance Sheets?

Table 5 – Summary of debt challenges and government adjustment capacity

Aaa countries		Magnitude of debt Challenges		
		Considerable	Sizeable	Limited
Adjustment capacity	Considerable	US		
	Sizeable	UK	Germany France Switzerland Austria	Australia Canada Denmark Finland Luxembourg Netherlands Norway Sweden Singapore
	Moderate	Ireland	Spain	New Zealand

Resistant Aaa countries     
  Resilient Aaa countries     
  Vulnerable Aaa countries

Cross-referencing these two indicators (see table 5 above) leads to the following overall conclusions.

While all Aaa governments are affected by the global synchronized crisis, they can be divided into three groups:

- **The resistant.** Those whose Aaa rating has so far been largely untested despite strong headwinds – Germany, France, Nordic countries, Antipodean countries for instance. The reason is that they started from a robust position and/or that their economic model remains largely robust and that the level of contingent liabilities likely to crystallize remains moderate. Of course, debt will increase and government net worth is being affected, but not disproportionately.
- **The resilient.** Those whose Aaa rating is tested because of a double shock to their growth model and large contingent liabilities, but whose public finances and economies, in our opinion, display an adequate reaction capacity to rise to the challenge and rebound (the US, the UK).
- **The vulnerable.** These countries are forced to take more risks with their public finances. Their ratings evolution will be a function of their ability to rapidly engineer a new growth model and to adjust their public finances to the new environment, through bold policy responses supported by a strong national consensus (Ireland, Spain). The timeframe within which the adjustment must take place is shorter for Ireland than it is for Spain because of the higher severity of the shock and more rapid deterioration of the government's balance sheet. This has been reflected in Moody's decision to assign a negative outlook to the Irish government's Aaa rating.

These conclusions may change, and rating actions may ensue, in the event that our current assumptions regarding either the magnitude of debt challenges or the rebound capacity of the economy – ultimately the most critical parameter of the analysis in the current environment – are proven wrong.

## How Far Can Aaa Governments Stretch Their Balance Sheets?

### Annex A: Moody's past downgrades of Aaa sovereigns

Only a handful of Aaa sovereigns have been stripped of their top ratings during the past 25 years. The short list of "fallen archangels" comprises Norway (1987), Finland (1990), Sweden (1991), Canada (1994), Japan (1998) and Iceland (2008). Of those downgraded prior to Iceland's downgrade last year, all but one (Japan) regained their Aaa status within a decade or less.

A reflection on the circumstances and assumptions that led to past Aaa downgrades as well as the reasons for their subsequent re-accession to Aaa status provides helpful information in the current context.

The common thread underlying all past Aaa downgrades was a rapid and severe deterioration in government balance sheets. More than that, Moody's believed that there was a very low likelihood that the countries could implement the considerable adjustments necessary to stabilize the fiscal position, much less reverse the vicious trajectory of public debt by returning the primary fiscal position to balance or surpluses, within a roughly 5- to 7-year time horizon.

In Norway's case, the initial driver for the one-notch downgrade to Aa1 was the government's over-reliance on oil revenues, which imperiled the fiscal position as well as the country's economic growth model when oil prices fell precipitously in 1986. Despite initial progress in adjusting to the oil price collapse, Norway's fiscal situation was further weakened by the financial crisis which struck as well as Sweden and Finland in 1990. In turn, the impact of that crisis on Swedish and Finnish government finances was the trigger leading to those sovereigns' one-notch downgrades in late 1990 and early 1991. The depth of the recessions in Sweden and Finland and the sheer speed of the deterioration in those countries' government finances due to the relatively short-term maturity structure of their government debt led to additional one-notch downgrades one to two years later (indeed, Sweden was downgraded yet again in early 2005).

The reasons for the subsequent regaining of Aaa status in each of these cases (Norway in 1997, Finland in 1998 and Sweden in 1999) was a concerted sacrifice by all segments of the society in response to the initial crises, including mutually agreed wage restraint, accompanied by significant structural adjustment, in particular of the fiscal framework through tax reform and the establishment of fiscal rules. The economies were also able to benefit from the gains afforded by improvements in the competitiveness of their tradeables sectors, and this progress was consolidated by continued fiscal discipline even after the worst effects of the crisis had faded.

Canada's foreign currency rating was downgraded to Aa1 in 1994 when its general government debt/GDP ratio was approaching 100%, and when the federal government's interest payments consumed nearly 30% of its total revenues. As with Sweden and Finland, Moody's expected that the effort involved in bringing the deficits down – which were prevalent at all levels of government – would need to be so profound and maintained for a relatively long time, that it would prevent a return to Aaa-range debt metrics within the medium term and leave open the possibility that both policymakers and the population would develop "reform fatigue." Also, as in the Nordic countries, Canada's debt was relatively short term, and the heavy presence of cross-border investors in the local debt market increased market volatility, so the foreign currency rating was downgraded by another notch to Aa2 a year later along with a one-notch downgrade in the local currency rating.

Canada regained its Aaa ratings on both foreign and domestic currency government debt in 2002. In all of these cases, Moody's had, in retrospect, perhaps underestimated the growth regeneration capacity of both the Nordics and Canada as well as the determination of these societies to recover from crisis through common sacrifice. These characteristics are some of the most important factors behind Aaa ratings: it is why no Aaa country is assessed as having a payment adjustment capacity lower than medium in Moody's sovereign bond rating methodology.

Japan's downgrade from Aaa occurred later than the others and went much further over the course of three years, falling to A2 for the government's local currency rating. This was motivated by similar concerns about worsening debt affordability when a protracted recession compounded by persistent deflation took the debt/GDP ratio well above 100%. Although the actual payments burden represented by debt was extremely modest because of ultra-low interest rates, Moody's assumed that ongoing large deficits and the continued

## How Far Can Aaa Governments Stretch Their Balance Sheets?

rise in government debt would eventually result in a meaningful rise in interest rates that would translate into a considerable increase in payments pressure. Also important were the considerations of the very poor demographic trends – which would translate into an even more burdensome payments responsibility on a per capita basis and erode private savings – and the expectation that once Japan liberalized its capital account, risk-averse Japanese would shift part of their investment portfolios outside Japan. Among the reasons why the government's ratings were subsequently upgraded in two steps to Aa3 was that both assumptions regarding interest rates and portfolio diversification never materialized – it turned out that the Japanese can live with a larger debt burden than previously assumed.

## How Far Can Aaa Governments Stretch Their Balance Sheets?

### Moody's Related Research

#### Global Risk Perspectives

- Global Macro-Risk Scenarios 2009-2010 - From Global Integration to Global Disintegration?, December 2008 (113063)

#### Rating Methodology

- Sovereign Bond Ratings, September 2008 (109490)

#### Special Comment

- Anchors in the Storm: Aaa Governments and Bank Bail-Outs, March 2008 (108164)
- What Does It Mean To Be A Triple-A Sovereign?, May 2008 (109129)
- Government Assistance to Fannie & Freddie is No Threat To US Government's Aaa Rating, July 2008 (110178)
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## How Far Can Aaa Governments Stretch Their Balance Sheets?

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