Estimating the Prudent Level of Debt for Australia

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The prudent level of debt

A more common concept used for setting a debt target is sometimes known as 'safe-debt' or the prudent level of debt, that is, debt benchmarks and thresholds that ensure financial stability. These approaches are based on uncertainty and probabilistic methods – using techniques such as primary balance reaction functions, natural debt limits, value at risk and fair spread approaches.

This approach estimates the maximum level of public debt that does not compromise fiscal solvency and incorporate a buffer to reflect the uncertainty (prudent level of debt). See Appendix A for an example following Ostry, et al., 2010.

- Regardless of whether the debt-to-GDP ratio is explicitly targeted, prudence will dictate that governments sooner or later increase primary balances in response to a rising debt-to-GDP ratio so that debt does not increase without bound and is kept at a sustainable level. This response of the primary balance to the debt-to-GDP ratio is captured in the primary balance reaction function or fiscal policy reaction function.

- This fiscal policy reaction function is an analytical tool that summarises the typical response of a government to the level of public debt and other relevant variables.
  - The government's response is treated as being reflected entirely in the primary balance.
- A fiscal policy reaction function is usually estimated with the following components.
  - *Fiscal response* — this reflects the relative weighting that governments give to two aims:
    - *consolidation effect* — fiscal prudence generally leads governments to react to higher debt by increasing their primary balances, to ensure that debt-to-GDP does not increase indefinitely; and
    - *persistence effect* — to give households and business more certainty, governments typically smooth their fiscal policy decisions by avoiding repeated large changes to tax or spending policy from one year to another.
  - *Cyclical response* — this reflects the extent to which the primary balance is automatically pulled in a certain direction by cyclical factors before any action or decision by the government.
- While the fiscal policy reaction function is a useful analytical tool, there are some important caveats to consider:
  - Since a fiscal policy reaction function is estimated using historical observations, its application is limited when looking to predict a government's response to levels of debt or to macroeconomic conditions outside of what has historically been observed.
  - It is not intended to fully reflect all the considerations taken into account as part of the decision-making process leading to Budget and MYEFO.
  - It also does not take account of the willingness or ability of individual governments to achieve particular targets.
  - Ostry, et al. (2010) estimate a debt-to-GDP limit of 225 per cent for Australia, based on a projection of the ratio of 21 per cent by 2015. This means that it is possible that an updated estimate of the debt limit or the prudent level of debt for Australia will be significantly higher than the current level of debt, which would make the estimations irrelevant as a reference for a debt target. However, a reaction function is still a useful analytical tool to explain the relative importance of the determinants of the primary balance over time.

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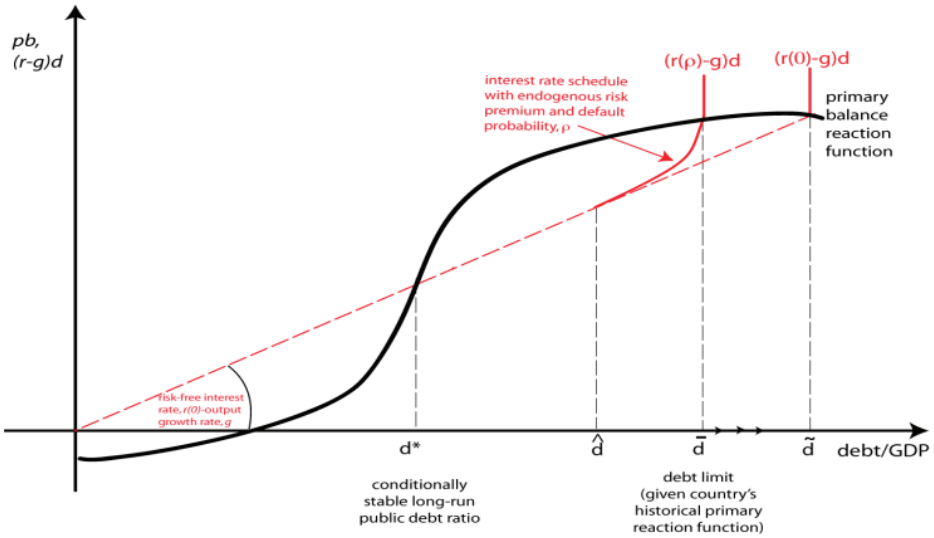
Appendix A

A stylised depiction of the determination of the debt limit is shown in Figure 1 (Ostry, et al., 2010).



There are two relationships shown in this figure.

- The solid line is the estimated fiscal reaction function that shows the primary balance-to-GDP ratio rising in response to higher net debt-to-GDP ratios.
  - The non-linear shape of the curve reflects a cross country study by the IMF. This study found that the primary balance becomes more reactive to the level of debt as debt rises to a certain point. At high levels of debt, however, the primary balance becomes less responsive to changes in debt. When primary balance surpluses are already large, further reductions in spending and increases in taxes become increasingly difficult to deliver.
- The dashed line in Figure 1 depicts the schedule of primary balances required to stabilise different levels of debt.
  - : Along this line the primary surplus exactly matches the interest payments on the existing net stock of debt after accounting for the offsetting effect of economic growth (g). The required interest payments are determined by the interest rate (r) and the size of net debt-to-GDP ratio.

These two relationships can be used to estimate the following levels of debt:

- The lower intersection, d^*, is the long-run debt ratio to which the economy will converge, conditional on debt never exceeding the debt limit.
- The higher intersection, $\tilde{d}$, is the debt limit assuming no risk premium as debt increases.
- Taking account of the endogeneity of the interest rate to the rising default risk, the market charges a risk premium when debt exceeds $\hat{d}$. Therefore, the interest rate schedule (r(ρ)-g)

bends upward with rising default risk (ρ) as debt approaches its limit, $\tilde{d}$, where the position of the limit is itself endogenous to the behaviour of the interest rate.

Once the debt limit is estimated, Adedeju, et al. (2016) develops a methodology to estimate the prudent level of debt.

- The prudent level of debt is defined as the level of debt below the debt limit so that in the event of a shock in the real interest rate or growth rate, the probability of debt rising above the debt limit is small.

[Reference in case some of this wording could be used]

Debt limit measures are meant to reflect the maximum level of debt that can be contracted without:

- imposing welfare costs/negative growth effects; or
- incurring debt distress/default

Debt limits from OECD paper:[3] The primary balance reaction function is estimated and used to calculate public debt limits, which concludes that governments:

- React weakly by increasing primary balance in response to higher debt, but remains below a certain level (d1);
- React strongly by increasing primary balance to increases in debt above d1 up to a second threshold (d2); and
- May abandon fiscal discipline above d2 and reduce the primary balance.

Debt stabilises when the effect of past debt accumulation is exactly offset by the primary balance. There is a stable equilibrium d for which the government would generate a higher surplus if a shock increases the debt ratio. By contrast, when the debt level approaches the debt limit, then the government is facing an interest rate spiral, and at the debt limit, the interest rate goes towards infinity, which means that the government loses market access.

The OECD model suggests that for Australia, in 2013, the debt limit using the model based interest rate is around 250 per cent of GDP, higher using the interest rate at the time.

Debt level maximising growth from OECD paper:[4]

The main assumption is that government spending follows the “golden rule”, that is public debt is used exclusively to finance net investment, while taxes finance current spending.[5]

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[3] https://www.oecd-ilibrary.org/docserver/5jrxtjmmt9f7-en.pdf?expires=1728887878&id=id&accname=guest&checksum=77759BEB98B9BE6D8C2E5D80016B0976

[4] https://www.oecd-ilibrary.org/docserver/5jrxtjmmt9f7-en.pdf?expires=1728887878&id=id&accname=guest&checksum=77759BEB98B9BE6D8C2E5D80016B0976

[5] Building on the initial work by Aschauer (2000), Checherita-Westphal et al. (2014) and Strasky (2015) use a simple growth model with private and public capital to illustrate the role and size of government debt in a long-run perspective.

A main conclusion is that the growth-maximising debt level falls between 50-80% of GDP.

Estimates suggest a **gross debt threshold range, where negative effects of debt start to dominate, of 70 to 90% of GDP for higher-income countries**, with specific risk exposures to factors such as foreign debt, bank fragilities, etc., to be taken into account.

- Causation between higher debt and lower growth runs both ways and the empirical literature has not come to a strong conclusion on causality (Panizza and Presbitero, 2014).
- However, there is a statistically significant threshold effect in the case of countries with rising debt-to-GDP ratios. The debt trajectory seems more important than the level of debt itself.

Results should be interpreted with caution as they rest on the strong assumption about debt financing (the "golden rule") and it is not clear whether debt financing of public investment is the first-best option, as the "golden rule" asserts.

- This function is used to determine the range of debt-to-GDP ratio that will generate interest payments (adjusted by economic growth) that can be covered by the primary balance, that is the levels of debt sustainable over time.