

DOES THE LEVEL OF PUBLIC DEBT MATTER?

Susan Schadler

Key Points

- After years of heated debate, the academic literature has seriously questioned whether the level of public debt matters to economic growth or to early warning indicators (EWIs) of potential crisis.
- Nevertheless, the International Monetary Fund (IMF), in its lending and surveillance activities, has a central, although appropriately nuanced, place for the level of public debt relative to GDP in its analysis. The IMF has sound reasons for its approach to the debt level, but the difference in perspective vis-à-vis the academic literature is striking.
- The IMF would do well to bring its targets (at least over the medium to long term) for the level of debt for crisis countries in line with its thresholds for safe debt levels in non-crisis countries. This would require formulating policies for fiscal, monetary, structural and debt restructuring policies around these targets.

Introduction

Research on links between the level of a country's public debt and its broader economic developments has been heatedly debated in the economic literature. Two strands of the research stand out — one linking the level of debt to a country's GDP growth rate and the other examining the debt level as an EWI of economic crises. As a broad generalization, research at the moment favours the view that high levels of debt are not a cause, in and of themselves, of low growth nor are they particularly good predictors of impending economic or even debt crises.

In principle, the empirical findings have obvious implications for policy makers confronting the question of how to fashion policies (and fiscal policy in particular) when a country has a high debt burden. The IMF, as both a contributor to the literature and an adviser concerned with preventing or dealing with debt crises, has a particularly important stake in navigating the findings. Whether in its surveillance (routine annual advice to all member countries) or the construction of its lending programs to support countries in or near crisis, the IMF must answer the question “how much does the level of debt matter?” Despite the empirical research that casts doubt on the importance of debt, the level of debt figures prominently in the algebra of debt sustainability and the IMF's real-world policy advice.

This policy brief examines the nexus of the relatively strong conclusions coming from the academic research and the IMF's policy advice. It addresses the following question: given that the broad conclusion from the academic literature is that the level of debt itself is not systematically bad for growth or stability, why does the debt level seem to figure rather prominently in the IMF's policy advice and conditionality?



A Brief and Selective Review of the Academic Debate¹

It is roughly accurate to use the work of Carmen M. Reinhart and Kenneth S. Rogoff (2009; 2010) as the starting point for the present debate on debt and growth. Reinhart and Rogoff refer to theory on optimal taxation as their conceptual framework. Fiscal policies that result in high levels of public debt are likely to require governments to levy distortive taxes (either through conventional tax policies or inflation) to service debts in full and the result of these is deadweight losses for the economy.² Alternatively, future government spending might be reduced, but this also could have distortive effects (assuming the pre-adjustment level and structure of government spending is optimal). Obviously, an alternative scenario is that the buildup in debt had resulted from a government borrowing to invest in high-yielding activities so that growth should rise in the future and the country would grow its way out of higher debt without the need for distortive tax increases. This scenario would require either unemployed resources or higher returns to government than to private investment. Reinhart and Rogoff implicitly assume the first scenario is more common than the second.

Reinhart and Rogoff construct a sample of 44 advanced countries (ACs) and emerging markets (EMs) for about 200 years to 2009 and examine differences in “buckets” of observations within four ranges of (central) government debt relative to GDP: below 30 percent; 30–60 percent; 60–90 percent; and over 90 percent. They then construct average growth rates corresponding to the observations in each range for the government debt ratio. They draw two broad conclusions: average growth rates across observations (both ACs and EMs) in each bucket are similar for the three lower debt ratio buckets, but lower (that is, there is a non-linearity in the debt-growth relationship) when debt exceeds 90 percent of GDP; and, separating EMs from ACs, there is another non-linearity for EMs when debt exceeds 60 percent of GDP.

Disagreements with these conclusions comprise several criticisms. The most substantive find fault with one or more aspects of the Reinhart and Rogoff analysis:³

- Reinhart and Rogoff choose their debt ranges arbitrarily. They place observations for debt/GDP in year t in buckets with pre-set ranges and reported average growth in the same

year for each range. Subsequent researchers have examined GDP growth in relation to non-arbitrary debt thresholds (either using moving ranges or endogenously determined ranges) and found less or no evidence of thresholds.

- Reinhart and Rogoff identify a correlation, not a causal relationship. Subsequent work has questioned whether high debt is caused by low growth or vice versa. It has entailed using multiple regressions to control for the possible effects of third variables on the debt-growth relationship and examining the relationship between debt ratios and *future* growth, even over quite long periods. The results have been mixed, but on balance favour the absence of a causal relationship between the level of debt and growth.⁴ Casting doubt on the sense of even trying to find causality, Markus Eberhardt (2013) finds that debt and GDP growth samples are not co-integrated (that is, they do not have statistical properties that allow an accurate causal relationship to be tested).
- Possible cross-country differences in any structural relationship between debt and growth, for which Reinhart and Rogoff do not control, could be biasing results.

The rebuttals to Reinhart and Rogoff have mostly been carried out with data from ACs only, while Reinhart and Rogoff use a sample that about evenly includes ACs and EMs. As such, the evidence against the debt-growth nexus may not be fully applicable to EMs.

The weight of evidence now is with the views that any correlation that might exist between the level of debt and economic growth does not reflect a causal relationship, and that there is no systematic non-linearity (debt threshold) in the relationship. There are some recent qualifiers stemming from more nuanced investigation of the effect of high debt in specific circumstances. Two stand out. First, Alexander Chudik et al. (2015), using techniques robust to many of the criticisms listed above in a sample including both advanced and emerging economies, finds evidence of significant long-term negative effects of high and rising public debt on output growth. Conversely, they find that average growth rates in countries with high debt ratios that are *falling* are roughly comparable to growth rates in peer countries with lower debt levels. In other words, the direction of change of the debt ratio when it is high makes a difference to growth. Second, Òscar Jordà, Moritz Schularick and Alan M. Taylor (2015) find that high debt levels (although not defined in terms of a threshold) cause longer and deeper recessions following

1 For a comprehensive survey, see Panizza and Presbitero (2012).

2 See Barro (1979).

3 Beyond the following conceptual differences, Thomas Herndon, Michael Ash and Robert Pollin (2013) call attention to coding errors, data exclusions and weighting methodology issues, which they argue undermine the threshold findings of Reinhart and Rogoff. The coding problems were acknowledged by Reinhart and Rogoff, but the work has still been definitive in spawning further academic work on the public debt-growth nexus.

4 Stephen G. Checchetti, Madhusudan Mohanty and Fabrizio Zampolli (2011) and Manmohan S. Kumar and Jaejoon Woo (2010) find a significant negative causal relationship and a threshold comparable to Reinhart and Rogoff for a sample of ACs. For representative work finding no significant causal relationship or thresholds, see Panizza and Presbitero (2012), Pescatori, Sandri and Simon (2014) and Chudik et al. (2015).

financial crises stemming from private credit bubbles. In other words, the impact of high public debt on growth comes through its negative effect on growth during recessions.

A different strand of the debate on the effects of high public debt burdens comes under the rubric of EWIs. The modern vintage of EWI studies started after the Asian crises and searched mainly for indicators of currency and banking crises. Few of the early studies investigated fiscal variables as causes of crises, mainly because of limited fiscal data availability, but also because, when tried, fiscal variables proved less powerful in predicting crises.⁵ Recently, however, a few studies have zeroed in on fiscal crises exclusively. In general, the findings are that EWIs for fiscal crises are complex, but that the role of the public debt level per se is relatively weak.

Two recent EWI studies use a signalling approach to identify variables that could help predict a near-term fiscal crisis. Thresholds are estimated for a wide range of variables using a methodology that maximizes the likelihood that values of the variable above (or below, as appropriate) a threshold would have predicted actual fiscal crises in the past. Then to construct an EWI, deviations of each variable above or below its threshold, each weighted by its relative signalling power, are combined in an index. Weights for each variable are calculated as unity less its historical type 1 error (failing to predict actual crises) and less its type 2 error (predicting a crisis that did not occur). In other words, variables get higher signalling weights when they have a good track record of not predicting a crisis when one does not occur, but also of not failing to predict a crisis when one does occur.

Both studies — European Central Bank (ECB) (2014), covering 33 ACs during 1970–2013 and Baldacci et al. (2011), covering 81 ACs and EMs during 1995–2010 — find a very small weight attaches to the ratio of public debt to GDP. In Baldacci et al. (2011), the debt ratio comes in with a seven percent weight in the AC index for ACs and a 2.5 percent rate for the EM index. Type 2 errors for the debt ratio are particularly high (67 percent) for ACs while type 1 errors for the debt ratio are 60 percent for EMs. In ECB (2014), the signalling power of the debt level is tied for second-to-last place among 28 variables considered, with false positives of 12 percent and false negatives of 86 percent.

5 The prominent EWI papers from this era are Kaminsky, Lizondo and Reinhart (1998; 1999).

How Does the IMF Use Debt Levels?

It is tempting to conclude at this point that the IMF should downplay the level of public debt in its analysis and advice. In fact, however, the level of debt plays a rather central role in the IMF's work. To be sure, the level of debt is viewed in a nuanced manner, embedded in models that incorporate a substantial range of other considerations: the structure of a country's debt; its fiscal policy history; and the past and expected future relationship between growth and the real interest rate. But debt thresholds and targets are nevertheless prominent. Why?

It is important to recognize that anticipating and managing economic crises is particularly important in the IMF's objective function.⁶ The IMF's central tool for pursuing these objectives vis-à-vis fiscal considerations is its Debt Sustainability Analysis (DSA), a framework for analyzing the risks inherent in a country's fiscal policy and level of sovereign indebtedness. DSAs are compiled for all countries in the IMF's annual bilateral surveillance and the formulation of conditionality in lending programs. Somewhat different frameworks are used for ACs, EMs and low-income economies. This section considers the role of the debt level in the DSA. For a full description of the framework see IMF (2011; 2013).

The main objective of the DSA (as its name suggests) is to assess whether a country's public debt outlook is sustainable. In the IMF's definition, debt sustainability is closely intertwined with what it calls fiscal policy sustainability: "the fiscal policy stance can be regarded as unsustainable if, in the absence of adjustment, sooner or later the government would not be able to service its debt" (IMF 2011). The DSA puts three broad considerations at centre stage:

- the medium-term path of the debt ratio under a baseline scenario and in various stress scenarios — a continuously rising debt ratio is prima facie evidence of unsustainable developments;
- in these scenarios, whether the level at which the debt ratio stabilizes is consistent with a country's potential growth and a manageable debt rollover ratio; and
- the composition of debt and what that implies for the rollover ratio and the gross financing requirement (GFR), that is, the amount a government must borrow annually from markets.

The DSA is a complex analysis that takes into account many features of a country's fiscal policy and debt position, both

6 While policy makers also need to include stability in their objective functions, their broader mandate together with pressures from electoral cycles tend to diminish the relative importance of stability vis-à-vis that of the IMF.

observed currently and projected in several risk scenarios.⁷ Nevertheless, the IMF emphasizes that not only the trend, but also the level of debt/GDP, are central to assessments of sustainability.

The IMF (2011) gives several reasons for the role of the debt level in assessing sustainability. First, unless growth is expected to exceed the real interest rate in the future, the higher the debt level, the higher the future primary surpluses needed to cover debt servicing; counting on an excess of the growth rate over the interest rate or a given primary surplus to be sustained involved risks. Second, the higher the debt level, the more vulnerable a country is to growth, interest rate or exchange rate shocks. Third, for any given maturity structure, the higher the debt ratio, the higher the rollover risk. Fourth, the IMF, at least when its DSA was revamped in 2011, had not fully given up on a negative link between the level of public debt and growth.

Another consideration not flagged in IMF (2011) is the heightened risk of bad equilibria when debt is high. For example, high debt leaves a country more susceptible to a self-fulfilling speculative attack starting with an event in another country, which causes markets to doubt a country's ability to service its debt and therefore to push up the risk premia on that country's debt. Interest rates might have been held down in a "good equilibrium" in conditions of lower debt.

Three types of analyses illustrate the nuanced but still central role of debt thresholds in IMF advice.

First, in surveillance of market-access countries (MACs, a category encompassing ACs and EMs that borrow predominantly on non-concessional terms), the DSA establishes the level of scrutiny a country receives (with obvious implications for messages sent to the market on the country's level of vulnerability). In the DSA, the IMF establishes whether a country must be subjected to "high scrutiny" (that is, a quite extensive analysis of its risks of fiscal/debt crisis summarized in a heat map that drills down into the specific risks a country faces) or "low scrutiny" (a more routine summary of the DSA without a detailed assessment of risks of crisis). Obviously the former are the countries where debt sustainability is a significant concern. Countries are placed in the high-scrutiny category if their position exceeds even one of two thresholds: current or projected public debt/GDP of 50 percent for EMs and 60 percent for ACs; GFR/GDP of 10 percent for EMs and 15 percent for ACs. All countries receiving exceptional access (use of IMF resources above normal access limits) are subject to high scrutiny. The thresholds for both debt levels and GFR are derived from

⁷ Martin Guzman and Daniel Heymann (2016) present a rigorous critique of both the conceptual underpinnings and execution of the IMF's DSA template.

an EWI/signalling exercise comparable to those described in the previous section.

Second, since the global financial crisis, the IMF has sunk considerable effort into identifying "fiscal space" for countries to pursue expansionary fiscal policies either as a counter-cyclical tool or to raise public investment for infrastructure needs. Fiscal space analyses also inform the IMF's advice on how quickly to reduce high debt levels. This effort has not produced a formal template as in the case of the DSA. Nevertheless, conceptual and empirical analyses — in particular Jonathan Ostry et al. (2010) and Ostry, Atish R. Ghosh and Raphael Espinoza (2015) — have given substance to the effort. Broadly, the approach in these studies is to determine an upper limit on the level of debt beyond which a country is at serious risk of losing market access or experiencing an explosive increase in interest payments.

In contrast to the DSA, the upper limit on debt in fiscal space analyses is determined for each country individually. For example, Ostry and his co-authors estimate such an upper limit for many ACs on the basis of a country's historical record of fiscal adjustment in the face of rising debt. Fiscal space is defined as the gap between the present level of the public debt ratio and the estimated limit. Countries with substantial fiscal space would typically have conceptually sound reasons for reducing high levels of debt opportunistically (that is, when growth is in the strong part of a cycle or some unexpected increase in revenue occurs) or even expanding public investment. Countries with little or no fiscal space would be advised urgently to adjust policy to reduce the level of debt. Once again, the level of debt is key to this calculation, albeit in a framework that appears to depend solely on backward-looking fiscal reaction functions in defining what is a high level of debt. It would be worthwhile for the IMF to consider other approaches to assessing the notional debt limit.

Third, the DSA is central to establishing conditionality for countries borrowing from the IMF. Especially when there is an important debt dimension to the crisis — either because the crisis originated from fiscal deficits or a banking crisis required official support financed by public debt — achieving fiscal targets set in the DSA is a main focus. The DSA then becomes that central analytical framework for organizing the impact of all policies — fiscal, structural, financial sector and monetary — on the economy and, ultimately, on debt sustainability. Typically, conditionality is not set on the debt level per se. But conditionality on all other policies listed above is importantly geared toward achieving a level of debt consistent with manageable rollover risks and GFR.

Placing a strong weight on debt sustainability in the aftermath of fiscal crises is, arguably, universally accepted, from either side of the debate on whether debt levels are important more generally. Yet, the IMF has at times been less deliberate in ensuring that post-crisis debt falls below the thresholds it uses in surveillance.

For example, in the euro-crisis lending programs, targets even five to 10 years out have been well above the thresholds established for high-scrutiny cases in surveillance:

- for Greece, the 2010 Stand-by Arrangement had a target for public debt to peak at 150 percent of GDP in 2013 and to fall by 2020 only to 120 percent of GDP;
- for Ireland, the 2010 Extended Arrangement had a target of 125 percent of GDP in 2013 with a negligible drop through 2015; and
- for Portugal, the 2011 Extended Arrangement targeted public debt at 115 percent of GDP, falling to 111 percent in 2015.

The IMF does not explain the rationale for the large gap between debt levels targeted in lending arrangements and those seen as posing high risk in surveillance. But the gaps beg the question of whether long-term debt targets in programs should not be more or less the same as the thresholds used more generally for MACs. If the debt scenario under a reasonable set of adjustment policies with ample time for structural reforms to affect GDP growth cannot get debt below the relevant MAC threshold, there would seem to be a strong case for debt restructuring sufficient to close the gap. For all of its pragmatic use of the debt level in its operational work, the IMF seems to have shied away from an obvious application that would render its lending arrangements far more convincing.

Conclusions

The difficulty of finding strong evidence that the level of debt is important to output growth or as an EWI is a cause for caution in using it naively in policy making. Nevertheless, couched in frameworks that account for a wide range of country-specific and time-specific circumstances, the level of debt has an important place in policy making. It is relevant to any analysis in which fiscal vulnerabilities are important and to policy prescriptions that need to assess the “space” available for fiscal policies to support demand.

In general, the IMF’s DSA has evolved in the past few years to strike a better balance of considerations involving the level of debt. It has moved away from its overly simplistic, pre-euro-crisis definition of public debt sustainability as any downward trend in the debt ratio, by placing substantial weight on the level of debt, the composition of debt and the GFR. The resulting framework is complex and still provides only a probabilistic view of a country’s vulnerabilities. But this is a reflection of the same influences that cause most empirical examinations of the effects of high debt to yield few firm insights.

On the whole, the IMF has managed the inherent uncertainty about sustainable levels of debt in a reasonable manner. It has

used the debt level as an important indicator of risks, but has left itself space to take into account many country specific and structural factors that affect safe thresholds for debt. However, the IMF still has a way to go to make the thresholds for concerns about public debt in surveillance consistent with the public debt targets in countries recovering from crisis. For a fully consistent application to surveillance and program countries, the Fund should ensure that through a combination of adjustment, reform and restructuring, crisis countries return to debt levels below the thresholds used in surveillance.

Acronyms

ACs	advanced countries
DSA	Debt Sustainability Analysis
ECB	European Central Bank
EMs	emerging markets
EWIs	early warning indicators
GFR	gross financing requirement
IMF	International Monetary Fund
MACs	market-access countries

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