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Debunking the Relevance of the Debt-to-GDP Ratio

Arturo C. Porzecanski

Key points

- Historical experience does not confirm the simplistic notion that the heavier the burden of the public debt relative to GDP, the greater is the risk that governments will encounter debt-servicing difficulties.
- In 25 government defaults that occurred during 1998-2017, the pre-default debt-to-GDP ratios ranged from a very low of 27% (Ecuador in 2008) to a very high of 236% (Nicaragua in 2003), with a sample median of 79%.
- As ratios of government debt rise, some societies manage to deliver more responsible fiscal behaviour. Low debt ratios, on the other hand, often mask dangerous currency or maturity mismatches, as well as contingent liabilities, capable of suddenly impairing banks and governments.
- The demand for government bonds can behave unpredictably, and governments with low or high debt ratios can suddenly find themselves cut off from needed financing.
- Official institutions like the IMF, European Commission, and World Bank have done themselves and their member states a great disfavour by obsessing about debt ratios which do not predict fiscal outcomes.

Budgetary deficits and mounting public indebtedness have become the norm in virtually all countries around the world. Since the 1970s, most governments have failed to pursue a symmetrical, sound fiscal behaviour—running surpluses during cyclical booms and deficits during busts—that would deliver a low, or at least stable, level of public indebtedness over the long run. They have mostly run smaller budgetary deficits during good economic times and larger deficits during cyclical downturns. It is this ‘deficit

bias' that accounts for the significant accumulation of public debt that can be observed nearly everywhere. This accumulation has occurred in absolute terms and frequently also in relation to export earnings, fiscal revenues, and Gross Domestic Product (GDP).

Even prior to the global financial crisis of 2008, the fiscal accounts of most advanced and developing economies had been in the red in each of the preceding 30 years, with deficits averaging around 3% of GDP per annum in both groups (Kumar and Ter-Minassian 2007). One initial reason was the economic growth challenges posed by the oil shocks of the 1970s, which encouraged most governments to run looser fiscal policies in order to support aggregate demand—often despite the obvious inflationary consequences. While there was an improvement in the overall fiscal positions of the advanced economies during the economic boom of the 1990s, a period of deterioration ensued among them starting in the early 2000s. In contrast, in the emerging economies fiscal prudence became more pervasive after the 1990s, following a series of damaging currency and debt crises in Asia, Latin America, and beyond.

The 2008 financial crisis greatly deepened the trend, ushering in a 7-year period during which 28 out of 35 advanced economies consistently operated in the red. The exceptions were mostly small countries: Estonia, Hong Kong, Korea, Luxembourg, Norway, Singapore, and Switzerland recorded mostly annual operating surpluses. But as a 35-member group, and from 2009 until 2015, the advanced economies registered general-government deficits that averaged the equivalent of 5¼% of GDP per annum. The result was that their gross government indebtedness soared from 79% of collective GDP in 2008 to a peak of 107% in 2016—it rocketed by nearly thirty percentage points of GDP in a mere eight years (IMF 2017a). Thus, the ratio of public debt-to-GDP for advanced economies is currently only slightly below the level registered in the aftermath of the Second World War, which was by far the highest since the late 1800s (Jaramillo et al. 2016).

In the developing world, the pace of public debt accumulation was half as large, averaging almost 15 percentage points of GDP between 2008 and 2016. The debt burden in low-income countries increased, on average, from the vicinity of 30% of GDP to around 40% of GDP. In emerging and middle-

income countries, it grew on average to around 45% of GDP. Just about the only economies that registered fiscal surpluses during most of this period were the oil exporters, whether in the Persian Gulf or in Central Asia (Azerbaijan, Kazakhstan, and Uzbekistan) (IMF 2017a).

This collective behaviour suggests that political elites and their constituents, as well as the institutional investors and commercial banks that have provided the bulk of the needed deficit financing, are mostly undeterred by the trend toward heavier government debt burdens. Base interest rates, bond yields, and spreads over benchmarks have generally remained very low in nominal and inflation-adjusted terms during the post-2008 surge in debt accumulation, especially in the advanced economies most prone to deficit spending.

The Track Record of Debt Ratios

As a simplistic principle, the larger and heavier the burden of the public debt—all else being equal—the greater should be the risk that governments will encounter debt-servicing difficulties. In particular, the greater and heftier the burden of debts contracted abroad by the public and private sectors, especially when payable in foreign currencies, the greater should be the risk that governments will encounter external debt-servicing difficulties. However, historical experience seldom confirms this seemingly logical premise.

The unreliability of ratios of public debt to GDP, and of public and private foreign debt to export earnings, as predictors of sovereign defaults is illustrated in Figure 1, which lists 25 government defaults that occurred between 1998 and 2017 involving foreign-currency and/or local-currency debt. In each case the table details the ratios of government debt to GDP and of total foreign debt to export earnings prevailing the year prior to each default. As can be observed, the pre-default ratios of public debt to GDP ranged from a low of 27% (Ecuador in 2008) to a high of 236% (Nicaragua in 2003), with a sample median of 79%. The previous-year ratio of foreign debt (public plus private sector) to total export earnings, for its part, ranged from

a modest 54% (Ukraine in 1998) to a maximum of 560% (Nicaragua in 2003), with a sample median of 182%.

Figure 1: Default on public debt and key debt ratios

Country	Date of default	Debt affected	Public debt/ GDP prior year (%)	Public & private foreign debt/ exports prior year (%)
Russia	Aug-98	FC&LC	57.7	121.1
Ukraine	Sep-98	FC&LC	29.9	54.3
Pakistan	Jul-99	FC	76.2	345.0
Ecuador	Aug-99	FC&LC	61.4	301.8
Ukraine	Jan-00	FC	61.0	91.8
Ivory Cost	Mar-00	FC	89.8	244.4
Argentina	Nov-01	FC&LC	45.6	380.0
Moldova	Jun-02	FC	84.0	196.4
Uruguay	May-03	FC&LC	94.7	324.9
Nicaragua	Jul-03	LC	235.7	560.4
Grenada	Dec-04	FC&LC	78.8	206.2
Dominican Rep.	Apr-05	FC	36.9	74.8
Belize	Dec-06	FC	103.6	164.4
Seychelles	Jul-08	FC	130.1	137.1
Ecuador	Dec-08	FC	26.7	128.3
Jamaica	Feb-10	FC&LC	124.0	260.3
Ivory Coast	Jan-11	FC	63.0	91.3
Greece	Mar-12	FC&LC	172.1	N/A
Belize	Aug-12	FC	83.5	134.3
Jamaica	Feb-12	FC&LC	141.9	296.0
Cyprus	Jul-13	LC	79.3	N/A
Argentina	Jul-14	FC	41.7	159.3
Ukraine	Oct-15	FC	70.3	181.9
Mozambique	Ari-16	FC	87.1	235.3
Belize	Mar-17	FC	100.4	137.8
<i>Median ratios</i>			79.3	181.9
<i>Minimum</i>			26.7	54.3
<i>Maximum</i>			235.7	560.4

Sources: Defaults from Moody's Investors Service; gross government debt/GDP from IMF Historical Public Debt Database and *Fiscal Monitor*; total external debt/exports from World Bank International Debts Statistics.

The countries that have defaulted more than once during this period have done so at wildly different ratios. Ukraine defaulted in 1998 when its debt ratios (to GDP and to exports) were quite low—in the vicinity of 30% and 54%, respectively. But when the country defaulted again 18 months later, those ratios stood at 61% and 92%, respectively. Prior to Ukraine's third default in 2015, the country's ratios were 70% and 182%, respectively. In the case of Ecuador, the country's ratios ahead of its 1999 default were close to 60% and 300%, respectively, whereas prior to the 2008 default they reached lows of 27% and 128%, respectively. Argentina's debt-to-GDP ratios were similar ahead of defaults in 2001 and 2014, but the country's foreign debt/exports ratios were vastly different (380% versus 159%).

Equally random are the values of these ratios for countries that have yet to default. For example, Japan has had the highest ratio of public debt to GDP of any country in the world—it has averaged more than 200% every year since 2009—without encountering even a hint of potential debt-servicing difficulties. At the same time, Greece has been plagued with debt-servicing difficulties since 2011 after reaching a public debt-to-GDP ratio of around 180%. Cyprus defaulted on its domestic government debt in mid-2013 after its debt-to-GDP ratio had neared 80%, but neither Belgium nor Ireland nor Italy have encountered debt-servicing problems despite having ratios exceeding 100% of GDP—in Italy's case, in every year since the early 1990s.

Several sophisticated empirical studies investigated the question of what role debt ratios may have played in past defaults and near-defaults, whether on domestic or foreign obligations. The conclusion reached was that the relevance of debt ratios, if any, depends on specific circumstances and the presence of other factors. One found that no fiscal variables were significant determinants of sovereign debt crises, using a panel logit model in a sample of 47 advanced and emerging economies between 1970 and 2002. High values of these fiscal indicators were associated with crises only when other macroeconomic fundamentals were also weak (Schimmelpfennig et al. 2003).

A follow-up study looked at experience in that same sample, concluding that unconditional thresholds, e.g. for debt-to-GDP ratios, were of little value *per se* for assessing the probability of a government default on foreign debt.

If a large external debt burden was present in the context of monetary stability, a current account in surplus, and sound public finances, then vulnerabilities such as short maturities, political uncertainty, or rigid exchange rates may have triggered temporary liquidity problems—but they did not lead to a solvency crisis (Manasse and Roubini 2005).

Yet another effort analysed the relationship between debt ratios and crises using a pooled sample of 55 low- and middle-income countries between 1971 and 2002. It found that a debt-to-GDP ratio of 40% was associated with a 20% probability of facing a crisis in the following year; one of 80% was paired with a 50% probability; and a ratio of 100% was correlated with a sample probability of 63%. However, there were no obvious cut-off points for the range of sustainable debt ratios because debt crises have occurred, as illustrated here, at a very wide range of debt ratios (Finger and Mecagni 2007).

Behind the Irrelevance of Debt Ratios

There are many good reasons why debt ratios do not predict fiscal outcomes. In some countries fiscal responsibility tends to weaken, while in others it strengthens, as deficits mount and debt ratios increase to high and potentially risky levels. Historical precedents (e.g. bad memories of a prior fiscal crisis), social attitudes (toward the sanctity of contracts), and the presence of institutional checks and balances (like independent judiciaries and central banks) are influential in the political economy of fiscally responsible—or irresponsible—behaviour. This explains why some societies are more conservative and will back fiscal austerity as debt ratios become elevated, while others are complacent or polarized—and can thus more easily slide down the slippery slope to default. Behavioural differences account for why some nations become ‘serial defaulters’ and therefore cannot safely handle debt loads that are relatively light (Reinhart and Rogoff 2004).

Two recent statistical studies have investigated the link between ideology and fiscal prudence—or lack thereof. The first, analysing from 2 to as many as 21 decades of data for 55 countries, found evidence that left-leaning governments have tended to run more expansionary fiscal policies, but also

to introduce corrective measures more forcefully in response to increases in the debt-to-GDP ratio. Conversely, right-leaning governments have tended to run less expansionary fiscal policies, but to make weaker fiscal efforts in response to mounting debts. Increases in sovereign borrowing costs have prompted a stronger policy reaction to rising debt levels among governments of all stripes, especially in countries which were most heavily indebted—65% or higher ratios of public debt to GDP (Mauro et al. 2015). The second, based on a panel of OECD countries between 1950 and 2010, found that deficit spending is not an inherent trait of left-leaning governments, though they are more prone to activist countercyclical fiscal policies including more aggressive debt expansion in downturns (Müller et al. 2016). To be sure, loose monetary policies and sustained optimism on the part of investors have the potential to lull all types of governments into a false sense of security, thereby delaying fiscal corrections on their part.

There are circumstances under which sovereigns have gotten into trouble, often on short notice, at what seemingly were manageable, low levels of indebtedness relative to GDP. A first one is when off-balance sheet or contingent liabilities suddenly come to life, burdening a sovereign with large-scale obligations that undermine its creditworthiness. The unexpected need to provide fiscal resources to compensate bank depositors affected by a systemic banking crisis, or to pay for humanitarian relief and infrastructure reconstruction-related costs—say, in the wake of armed conflict, or a seismic or weather-related calamity—also has the potential to lead to a destabilizing jump in the public debt.

It has been estimated that, in a large sample of advanced and developing countries, increases in public debt occurring between 1973 and 2015 were not mainly the result of large operating deficits. Most dramatically, during the sub-period 1973–87, the aggregate public debt increased by about 30 percentage points of GDP, but not because of cumulative operating deficits net of interest payments. Rather, the growth of the public debt was virtually all because of contingent liabilities inherited from the private sector (Jaramillo et al. 2016).

Empirical research employing a panel of 154 countries from 1980 to 2006 revealed that banking crises, for example, were associated with a significant

and long-lasting increase in government debt. In the more severe crises, they were followed by a medium-term increase of about 37 percentage points in the ratio of government debt to GDP, after including the cost of bailouts and deficit spending to counter associated economic downturns. The debt ratio increased more in countries with an elevated initial debt ratio, a greater share of foreign-currency debt, and a lower quality of institutions (Furceri and Zdzienicka 2012).

A vivid and recent example of this phenomenon is provided by Ireland, where in the aftermath of the Lehman Brothers bankruptcy there was a run on funding for the top seven Irish banks, which the authorities stopped by issuing a blanket guarantee covering all their liabilities. In the event, €80 billion of new capital had to be injected into those banks, of which €64 billion, equivalent to some 40% of GDP, was provided by the Irish state—thereby greatly blowing up the sovereign's public debt and undermining Ireland's creditworthiness (IMF 2016a).¹ Without extraordinary financial support from its European partners and the International Monetary Fund (IMF), the Irish government would likely have faced severe debt-servicing difficulties. Prior instances of contingent liabilities or the recognition of obligations causing a sharp increase in the public debt include Canada in 1999–2000, Egypt in 2003, Greece in 2002 and 2004, and Japan in 1998 and 2006.

There is also the risk posed by currency mismatches, such as when a government or the banking system under its protection experiences large losses in the wake of a massive currency devaluation, because too many liabilities (relative to assets) were denominated in foreign currencies, suddenly becoming very costly to keep servicing in full. Such currency mismatches have been a major contributor to many sovereign and financial crises in developing economies, and a case from the early 2000s illustrates the point.

In early 2002, the authorities in Argentina abandoned a fixed-exchange-rate regime in which one peso was convertible into one dollar. The currency went on to lose two-thirds of its value that year, and because the public debt

¹The final cost of the Irish government's bank bailout net of recoveries was recently estimated at €40 billion (IMF 2016a).

was overwhelmingly denominated in currencies other than pesos—97% of it was contracted in US dollars, European currencies, or Japanese yen—the peso-equivalent cost of the debt tripled virtually overnight. The ratio of Argentina’s public debt to GDP skyrocketed from about 55% at the end of 2001 to 165% at the close of 2002, so that the obligations could not possibly be serviced on their original terms (Porzecanski 2014). More recently, the depreciation of local currencies in Hungary, Poland, and Romania between 2008 and 2011 likewise resulted in a destabilizing jump in public- and private-sector indebtedness, given the widespread nature of currency mismatches (involving mostly shorts in euros and Swiss francs) in those countries.

Maturity mismatches are also dangerous, especially when governments, and potentially also systemically important banks and corporations, rely on short-term funding to cover long-term needs, often because long-maturity financing is too costly or unavailable. These mismatches can lead to refinancing problems when maturing obligations cannot easily be rolled over, or else to large unfunded gaps when sizeable maturities come due, or when lines of credit are withdrawn during a period when new financing is hard to obtain. An infamous case of the perils of maturity mismatches was Russia in 1998.

The Russian government’s issuance of debt (*Gosudarstvennoye Kratkosrochnoye Obyazatelstvo*, or GKOs) in the form of zero-coupon bonds denominated in roubles with short maturities meant that, by May 1998, nearly three-quarters of the government’s domestic debt fell due within fewer than 12 months. This exposed the government to extreme rollover pressures, not only because of the volume of GKOs that were continuously maturing, but because the yields that investors demanded on new issues soared during the first half of 1998, reflecting a deterioration in sentiment and worries about a looming currency devaluation. The combination of annualized yields skyrocketing to almost 100% with redemptions falling due meant that debt-service payments on GKOs came to exceed the rouble equivalent of US\$1 billion per week. Given that foreign investors accounted for as many as one-half of GKO holders, the eventual

devaluation and default turned a domestic debt crisis into one with grave banking and international ramifications (Porzecanski 2014).

Most sovereign debt crises, however, are precipitated by surprise economic or political events that trigger a loss of confidence on the part of creditors just when governments are most vulnerable to a disruption in access to financing. Indeed, sovereign debt crises usually follow from the sudden development of too large a gap between the amount of official funding demanded and the supply of funding willingly delivered by bondholders and other creditors.

A good example is the recent case of Greece. The conventional version of why Greece entered a debt crisis that culminated in the world's largest sovereign default to date is that the country had been fiscally mismanaged for a long time. Consequently, even before the global financial crisis of late 2008 hit, the country was 'an accident waiting to happen.'

In fact, Greece's road to fiscal disaster was never straightforward—and there was no historical inevitability about it, either. In the five decades through 2009, successive Greek governments had managed the country's public finances without a hitch, including servicing a very high level of public debt that averaged the equivalent of nearly 100% of GDP. That included a track record of very prudent liability management, such that, as of end-2009, the government was not running currency or maturity mismatches; contingent liabilities were not a problem; and the cost of the debt was very low.

What did Greece in was, first, the erosion of investor confidence that began in December 2009 prompted by initial hesitation by newly elected Prime Minister George Papandreou to take corrective fiscal measures even after announcing that the fiscal deficit had reached double digits in relation to GDP. And then there was the shattering of investor confidence in October 2010, following the announcement from German Chancellor Merkel and French President Sarkozy that they had agreed (in Deauville, France) that private investors would have to 'contribute' to any future European sovereign bailouts. This turned the tables on bondholders, who had expected better times once Greece received ample financial assistance from its eurozone partners and the IMF. What followed was a death spiral of rating-

agency downgrades, economic contraction, tax-revenue shortfalls, systemic banking woes, and collapsing prices for government bonds—all of it culminating in the massive March 2012 sovereign default (Porzecanski 2013).

The lesson is that forecasting debt sustainability or creditworthiness requires anticipating the surprise factors that trigger changes in market perceptions of sovereign default risk, and thus shifts in the demand for government bonds—and not the evolution of debt-to-GDP ratios. These changes take place because investors' risk aversion can shift suddenly, certain asset classes go in or go out of fashion, investment horizons turn short or go long, or because of perceived modifications in ‘the rules of the game.’ Years, and sometimes decades, of benign appraisal by the financial markets and the credit-rating agencies can thus come to a surprisingly abrupt end. At times, investors appear to differentiate among countries in accordance with their respective credit profiles, but on occasion they get caught up in entry or exit modes that recognize no borders and disregard country fundamentals.

Use and Abuse of Debt Ratios

Given the generalized upward march in government debt burdens, many warnings have been issued about the potential for debt-servicing problems, or for a debt-related drag on future economic growth, especially by multilateral organizations such as the Bank for International Settlements, the European Union, the IMF, the Organisation for Economic Co-operation and Development, and the World Bank. And these warnings about the sustainability—or unsustainability—of a given country’s public or foreign debt have been based on a ratio like public debt to GDP that, as illustrated here, has no predictive power—certainly not out of its proper historical, institutional, economic, financial, and political context.

Ratios of external and public debt to GDP remain at the core of the joint IMF-World Bank methodology for conducting standardized debt-sustainability analyses in low-income countries, because ‘[a] situation where one or more debt burden indicators are continually rising and above [certain] thresholds as the forecast horizon advances is a strong signal that debt is unsustainable’ (IMF 2017b, p. 46). The IMF and World Bank’s approach

strongly influences how regional development banks and other official creditors go about assessing debt sustainability, and this in turn affects their lending and advice. In the case of middle-income countries with easy access to the international capital markets, the IMF's analysis of alternative scenarios and stress tests is somewhat more open-minded, focusing on the evolution of the debt-to-GDP ratio together with the ratios of debt to revenues and gross financing needs to GDP (IMF 2013).

Debt ratios are convenient shortcuts for sustainability scenario-building, but the Fund and the Bank should know better. A World Bank study of 132 low- and middle-income countries covering the 1970–2002 period confirmed that countries with better policies and institutions were able to carry substantially higher debt burdens than countries with worse policies and institutions—and without increasing the risk of debt distress (Kraay and Nehru 2006). This is something that casual empiricism easily confirms. Therefore, any serious debt-sustainability exercise must incorporate judgments on the supportive or non-supportive nature of the relevant policies and institutions.

The Fund and the Bank have repeatedly been caught by surprise by many of the world's sovereign debt crises—including the 2008 financial crisis which caused enormous collateral damage in Europe (IMF 2016b). Their lamentable track record strongly suggests that any approach based purely on a forecast of debt-to-GDP ratios, on the basis of assumptions about a few economic variables, is of limited relevance in terms of accurately predicting debt sustainability in the real world.

In the European Union, and for a quarter-century now, the ratio of government debt to GDP has been one of two criteria for the assessment of member states' debt sustainability. According to the Maastricht Treaty of 1992, planned or actual government budget deficits are not to exceed 3% of GDP, and the stock of government debt is not to pass the equivalent of 60% of GDP. If the debt-to-GDP ratio exceeds 60% but is 'sufficiently diminishing and approaching,' then the criterion is deemed to have been complied with. These criteria were later tweaked by tightening procedural regulations and having member states maintain cyclically adjusted positions

close to balance or in surplus, with the possibility of warnings and then sanctions for noncompliance.

There has been a lively debate about the usefulness and proper application of EU fiscal rules. They were criticized from the start for being defined too narrowly—e.g. government liabilities as measured may not be offset by liquid state assets—and either too tight or too loose relative to the business cycle. But then their implementation was circumvented by various governments directly and including through creative accounting. It later became clear that a credible enforcement mechanism was lacking, so that even Germany broke its commitments shortly after the launch of the common currency, and neither Germany nor any other fiscally errant countries went on to receive more than a slap on the wrist.

But the far more significant point is that the financial crisis of late 2008 proved that the eurozone's fiscal rules were completely inadequate to the task of identifying vulnerabilities in debt sustainability. To be sure, Greece's public debt-to-GDP ratio stood above 100% at the end of 2007, and Portugal's (68%) was slightly above the Maastricht criterion, but Cyprus went into the crisis with a ratio of 54%, Spain 36%, and Ireland a mere 24% (IMF 2017a). Neither the fiscal deficit nor the ratio of government debt to GDP rang any alarm bells about the build-up of systemic risks in banks in these and other EU member states, such as the Netherlands and the United Kingdom. The ratios were blind to the fiscal implications of bank leverage and short-term funding risks which not even the Basel II rules contemplated appropriately (Banque de France 2009)—never mind the deterioration in bank assets from the bursting of property bubbles. The fiscal rules likewise were deaf and dumb to the eurozone's vulnerability to a 'sudden stop' in capital movements and to the advent of cross-border contagion effects. Therefore, the Maastricht ratios were unable to reflect the enormous cost of bank bailouts and countercyclical fiscal policies that came to pass, undermining the creditworthiness of most eurozone governments.

Ratios of government debt to GDP, or of foreign debt to exports, have other shortcomings. They provide a static snapshot of the relative size of obligations at any given point in time, but they do not convey a trajectory—never mind a forward-looking judgment of capacity to pay. Beyond such

ratios' inability to reveal the extent of contingent liabilities, currency or maturity mismatches, or the nature and behaviour of the investor base, as mentioned previously, they also do not convey the cost of servicing or rolling over the public debt. For example, there are low-income countries with relatively high debt ratios, but their interest burdens are light and their maturity profiles are very benign, because they are the beneficiaries of loans granted on concessional terms by official bilateral and multilateral agencies. This should set them apart from governments which obtain financing mostly at high coupons, short maturities, or in foreign currency—but debt ratios are oblivious to these differences.

Also, debt ratios are not comparable across many countries because some exchange-rate regimes—the most heavily managed ones—are more crisis-prone than others. This fairly intuitive matter was confirmed by a recent empirical study based on a sample of 50 emerging-market economies over the 1980–2011 period, which found that free-floating currency regimes are indeed the least vulnerable to all kinds of crises, while fixed-exchange-rate regimes exhibit some of the greatest vulnerabilities (Ghosh et al. 2015). Therefore, domestic or international instability—economic, financial, or political in nature—can have far more destabilizing consequences in some low-debt contexts than in high-debt contexts—depending on the extent to which the currency regime is flexible and can play a constructive, shock-absorbing role.

The Proper Context for Debt Ratios

Among financial intermediaries, private investors, and credit-rating agencies, in sharp contrast, the analysis of creditworthiness does not hinge on a handful of purely economic indicators—never mind solely, or even mostly, on ratios of debt to GDP or exports. Casual reading of investment-oriented research bulletins emanating from investment banks, trading desks at broker-dealers, or portfolio managers in asset-management firms will illustrate the holistic approach that is commonly employed by actors in the financial markets. It involves assessments of debt sustainability that draw from the realms of history, politics, international relations, psychology, economics, finance, and

the law. Reports and pronouncements from the financial industry encompass judgments about key decision-makers (e.g. finance ministers and central bank heads), the role of institutions (the legislature and the courts), fund flows (into and out of banks and money managers), market dynamics (risk aversion and herding trends), regional and industry characteristics (linkages and transmission mechanisms), and other useful factors integral to the demand and supply of financing for governments.

Such 360-degree vision is particularly useful in detecting situations where debts may become unsustainable because of an unwillingness of governments to make the often-unpopular decisions needed to protect their sovereign debt obligations. After all, governmental choices on how much to borrow, where to allocate budgetary funds, whether to set aside revenues for a ‘rainy day’ fund, and how best to mobilize state assets are made by human beings under pressure—and not by computers based on algorithms. To illustrate, in the aftermath of the 2008 financial crisis, the authorities in Iceland—debt-to-GDP ratio under 30% as of end-2007 (IMF 2017a)—decided to defend the sustainability of government obligations by refusing to bail out their leading banks, which were in serious trouble and were thus allowed to fail. In the rest of Europe—including in Switzerland—the authorities in country after country did not have the nerve to let their main banks fail, so they made fateful decisions which adversely affected the sustainability of their public debt.

The credit-rating agencies know full well that debt ratios provide little if any of the information that is relevant to sustainability assessments. As one of them concluded after a review of the historical evidence, while defaults are correlated with rising debt burdens, a high debt-to-GDP ratio is neither a necessary nor a sufficient condition for a sovereign to default (Moody’s 2010). As another leading agency has noted, a sustainable public debt burden varies across countries and over time, and hence there is no simplistic relationship between the stock of government debt relative to GDP on the one hand, and sovereign creditworthiness or ratings on the other (Fitch 2017).

Therefore, and as their rating-methodology documents explain, the agencies combine many data points and forecasts with qualitative judgments in the attempt to capture capacity, as well as willingness, of sovereigns to

meet their debt obligations. Their analysis incorporates indicators of institutional effectiveness and political risk; economic structure and growth prospects; the size and nature of international assets and liabilities; fiscal performance and resilience; and monetary independence and exchange-rate flexibility.

In the case of Fitch, for example, a 3-year average of the ratio of government debt to GDP is assigned a weight of merely 7.3% in their proprietary sovereign-ratings model, which incorporates a total of 18 exogenous variables. But then the results of the model are calibrated using a qualitative overlay framework consisting of judgments on factors such as the coherence and robustness of the prevailing macroeconomic policy framework; extent of contingent liabilities and flexibility of fiscal financing; vulnerability to external shocks; extent of political stability and willingness to pay; and quality of the regulatory and business environments (Fitch 2017).

The results of a thoughtful assessment of debt sustainability are evident in how the two largest credit-rating agencies have adjusted their sovereign ratings for countries that were rated AAA/Aaa—top quality—just prior to the 2008 financial crisis. As can be seen in Figure 2, one decade later most top-rated countries remain top-rated, even though their debt/GDP ratios have increased by a median of 11 percentage points. However, the range of change in debt/GDP ratios among countries still rated AAA/Aaa is very wide, extending from negative 16 percentage points (Norway reduced its indebtedness to GDP) to positive 44 points (United States as per Moody's) or 32 points (Australia as per Moody's and S&P).

Figure 2: Changes in sovereign ratings and debt-to-GDP ratios, 2007–17

Change in sovereign ratings as per Moody's*	Country	Change in public debt to GDP**	Change in sovereign ratings as per S&P*	Country	Change in public debt to GDP**
Remained at Aaa:	Australia	32.2	Remained at AAA:	Australia	32.2
	Canada	22.7		Canada	22.7
	Denmark	10.5		Denmark	10.5
	Germany	1.5		Germany	1.5
	Luxembourg	10.8		Luxembourg	N/A
	Netherlands	15.0		Netherlands	10.8
	New Zealand	11.9		New Zealand	15.0
	Norway	-16.1		Norway	-16.1
	Singapore	25.9		Singapore	25.9
	Sweden	0.7		Sweden	0.7
	Switzerland	-6.8		Switzerland	-6.8
	USA	44.1		Median	10.7
	Median	11.4			
From Aaa to Aa:	Austria	15.4	From AAA to AA:	Austria	15.4
	Belgium	17.3		Finland	29.3
	Finland	29.3		France	32.4
	France	32.4		UK	47.3
	Isle of Man	N/A		USA	44.1
	UK	47.3		Median	32.4
	Median	29.3			
From Aaa to A:	Iceland	13.9	From AAA to A:	Ireland	45.4
	Japan	57.3		Spain	63.2
	Median	35.6	From AAA to BBB:		
From Aaa to Baa:	Spain	63.2			

Sources: Moody's Investors Service and S&P Global Ratings.

* Foreign currency ratings for 31 December 2007 and 2017.

Source: IMF *Fiscal Monitor*, October 2017.

The countries that were downgraded to the AA/Aa level registered a median increase in their debt ratios of about 30 percentage points, but here again the range is a very wide 32 percentage points (compare Austria with the United Kingdom). Countries downgraded further to single-A or triple-B registered some of the largest debt/GDP increases (Spain, Japan, and Ireland). Therefore, it can be concluded that while deteriorations in debt/GDP ratios

appear to have contributed to rating-agency downgrades, there is more than sufficient variation in the evolution of sovereign ratings to suggest that many other factors were taken into consideration.

Conclusion

Historical experience seldom confirms the simplistic notion that the greater and heavier the burden of debts contracted by governments, especially when payable in foreign currencies, the greater should be the risk that governments will encounter debt-servicing difficulties. There are many good reasons why debt ratios do not predict fiscal outcomes. As debt ratios rise, some societies manage to deliver more responsible fiscal behaviour, thereby preventing a loss of investor confidence and thus a slide to default. Low debt ratios often mask dangerous currency or maturity mismatches which can suddenly impair banks and governments. Contingent liabilities, especially those arising from the banking system, have the power to undermine the creditworthiness of governments. The demand for government bonds can behave unpredictably, and when risk aversion spikes abruptly, governments can find themselves cut off from financing unless they can react constructively—and quickly.

Consequently, deriving relevant, predictive information about debt sustainability from simplistic debt ratios—and particularly from government debt to GDP—has been next to impossible. Official institutions like the IMF, the European Commission, and the World Bank have done themselves and their member states a great disfavour by obsessing about debt ratios which do not have clear implications for debt sustainability, and in any case are difficult to interpret and predict. Private investors and the credit-rating agencies to which they pay attention rightly follow a more holistic approach; it incorporates hard data and soft judgments to better assess the creditworthiness of states. That does not make them impervious to mistakes—but at least they are on the right track.

The lessons from painful experience are that governments will often encounter debt-servicing difficulties when they least expect it—and no matter their debt ratios. To be sure, to the extent that nations adhere to market-friendly policies that foster investor confidence and prosperity, and

generate the budgetary revenues, export earnings, and capital inflows necessary to keep servicing debt obligations, their fiscal resilience will be enhanced. Sound liability-management practices can also make a major contribution to creditworthiness, because when the public debt has a risk-averse currency, interest rate, and maturity structure, it should be able to withstand the temporary harm done by a sudden deterioration in financial-market condition, a natural disaster, or a turn for the worse in foreign trade or capital inflows. And last, but not least, appropriate prudential regulations, and sensible monetary and exchange-rate policies, can make a major difference in terms of minimizing contingent liabilities arising out of the banking system, state-owned enterprises, and other risk pockets in the economy, thereby preventing a potentially destabilizing jump in the public debt.

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