

Fickle Formulas

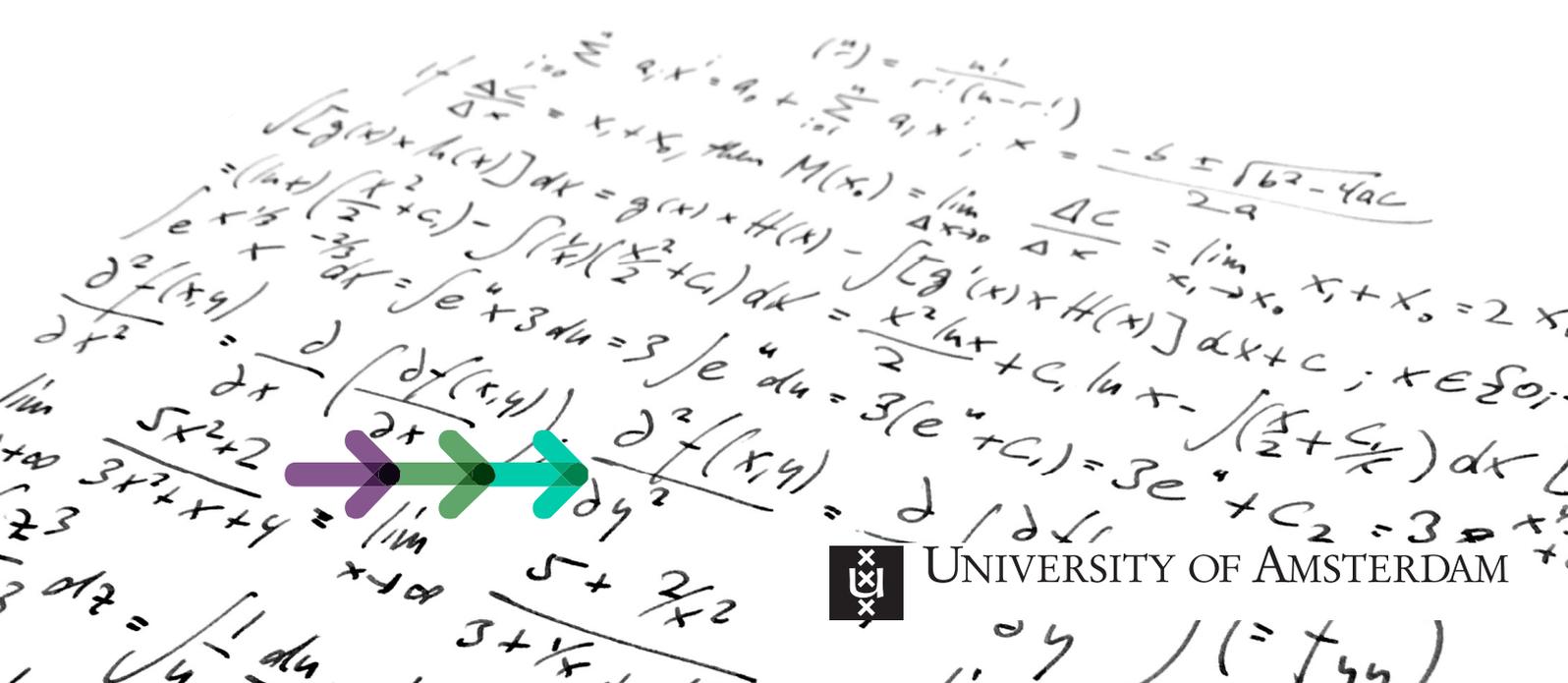
Fuzzy debt. Why it's impossible to specify what governments owe

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Fuzzy debt. Why it is impossible to specify what governments owe.

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ABSTRACT. Government debt figures play central roles in the global political economy. Both citizens and investors use them as yardsticks for fiscal sustainability, and governments themselves draw on them to analyze and chart their policies. Yet public debt data is not nearly as solid as is commonly assumed. Rarely acknowledged differences in calculation methods can generate widely divergent official figures for government debt, as we evidence through a careful analysis of OECD and IMF data. The body of the article outlines the root cause of these differences: the “fuzziness” of public debt itself as a concept. Debt data has to answer four questions: which entities are considered part of the government, what counts as a liability, how these liabilities should be valued and whether or not government assets should be taken into account. As we argue, none of these four questions have unambiguous answers. In consequence, alternative debt measures reflect arbitrary conventions, political compromises and pragmatic measurement choices rather than an objective standard for what public debt is and how it should be quantified. The fuzziness of debt figures in turn limits their ability to promote public accountability, sound policymaking and well-considered investment choices. Instead of using debt data as unproblematic input for both quantitative and qualitative analyses, researchers should not only be much more cautious in its use, but uncover the unobserved political baggage of the actual debt formulas governments use.

Word count: 10,188



Introduction

Public debt is a powerful lever in politics. Investors, credit rating agencies, citizens, and international organizations judge and frequently punish countries for the debt they accumulate.¹ The struggle to raise the so-called debt ceiling is an annual highlight in the American political calendar. European Union (EU) limits on permissible debts and deficits – the 60 percent and 3 percent rules – have attracted enormous criticism.² Many countries in Latin America, Africa and South East Asia – and more recently in Europe – have suffered debilitating debt crises over the past decades as investors lost confidence.³ Even without crises, public debt levels can be central to the terms on which countries have access to global capital markets.⁴

Also in political economy research, public debt plays a central role. Scholars are for example concerned with the redistributive effects of fiscal policy, debt management, fiscal sustainability, financial crises and the societal and economic consequences of debt. How does debt affect government policy choices? How are different societal groups affected by government debt?⁵ Because of these implications of debt, others have investigated its political and institutional determinants: why do some countries accumulate large public debts while others do not?⁶

In all these instances, the political power of debt lies not in the long-term fiscal effects of the liabilities themselves – which may play out over decades – but in investors', citizens' or analysts' perception of debt levels. It is the debt figures that matter. In that light, it is striking that these numbers are not nearly as hard as they seem. International organizations such as the International Monetary Fund (IMF) or the Organization of Economic Cooperation and Development (OECD) frequently report widely differing estimates of governments' liabilities. What was the public debt of the United States in 2009? We would

¹ Cottarelli 2017.

² Blyth 2013.

³ Reinhart and Rogoff 2009.

⁴ Mosley 2003.

⁵ Hager 2015.

⁶ Alesina and Perotti 1995; Alesina and Passalacqua 2015.



expect that a clear answer would be easy to find. As it turns out, none exists. Depending on the source, US debt levels range somewhere between 85.8 percent to 105.1 percent of GDP.⁷ Similar discrepancies can be found for many other countries. They lead us to ask three questions: what causes such differences? What do these causes tell us about the solidity of government debt as a concept and putative force in economic affairs? And how do skewed understandings and calculations matter to our political economies and research about them more generally?

Differences in headline public debt figures – even when we consult the most authoritative sources – stem from thorny conceptual problems: which kinds of liabilities should be included, and which assets? Should we use the nominal value of government debt when adding up the figures, or rather its market value – which can be quite different. How to deal with state-owned enterprises or state guarantees? And how should we account for different maturity structures and exposure to exchange rate risk? None of these questions have clear and uncontroversial answers. But the invisible choices made in government finance statistics fundamentally shape headline figures – frequently by ten percentage points or more. That, in turn, affects how countries compare to each other as well as the political, economic and analytical choices that are built on them.

Our core argument is that public debt is a fuzzy concept. It defies clear delineation and measurement. There is no bright line between what constitutes public debt and what does not. The political and economic impact of government debt is filtered through measurement conventions, which may or may not correspond to what citizens, investors, policymakers and academics think they are. Understanding the politics surrounding public debt then means understanding how debt figures are calculated, what alternative approaches might have been, and how the choice for the formula on the books has come about. Debt figures are not only drivers of politics, but they are political artefacts in and of themselves.

Our point of departure is that statistics and indicators are social and political artifacts rather than unproblematic representations of an economic reality out there.⁸ Much scholarship from philosophy, science and technology studies, history and sociology has argued the point convincingly, even if it remains underappreciated in political economy.⁹

⁷ Data from Bloch and Fall 2015. According to the OECD's Economic Outlook No.95 (June 2014), 2009 US debt stood at 85.8 percent of GDP. According to the IMF's Government Financial Statistics Yearbook (2013), this figure was 105.1 percent of GDP.

⁸ Broome and Quirk 2015; Alonso and Starr 1987; Porter 1995; Desrosières 1993.

⁹ Davis et al. 2012; Lepenies 2013b; Salais, Baverez, and Reynaud 1986; Coyle 2014; Mitra-Kahn 2011; Sætnan, Lomell, and Hammer 2011.



Rather than reiterating those arguments at length, we choose a different approach here. To demonstrate that we need to see government debt not as “out there” but as constructed through calculative practices and conventions, we delve into the concrete measurement conundrums that debt statisticians confront. That way, we hope to make a convincing case that – even disregarding abstract arguments about the nature and solidity of statistical representations of society – there are ambiguities in debt statistics that cannot be ignored.

As we show below, the sources of fuzzy debt are so varied that they defy a simple account of the choices behind them. Political science scholars have offered insightful accounts for the politics surrounding specific aspects of debt measurement, for example in the run-up to and evolution of economic and monetary union in the EU.¹⁰ We want to illustrate the fuzziness of public debt itself, highlight its divergent sources, indicate how much measurement differences matter to reported headline figures and suggest how those arguments bear on real-world politics and political economy research. The politics underlying the choices for alternative measurement approaches vary with the specific ambiguity that is stake. Therefore, they have to remain beyond the scope of this paper.

At its most general level, our analysis suggests that politicians, experts, academics and citizens should eschew “public debt” as a unitary category. Instead, they should focus on aggregates that relate directly to the specific analytical question or policy challenge they confront.¹¹ These questions might concern the debt carrying capacity of a country, the effect of debt on economic growth, the desirability of debt-financed public investment, the implications of ageing, and so on. To get a handle on each of these issues, different approaches to measuring and comparing public debt might be most useful. A single, unitary public debt figure may in fact obstruct a better understanding of how government liabilities of all kinds shape our economies and politics.

This article proceeds in five steps: the following section briefly lays out our view of economic statistics as political artefacts. We briefly survey just how much debt figures can differ in order to indicate the size of the problem. The subsequent section is the main body of this article. It reveals the main conceptual ambiguities surrounding the concept of public debt and the divergent choices that international organizations have made in dealing with them. To do this we build on interviews with various statisticians from the OECD, Eurostat and national statistical offices. We have consulted and retrieved data from several statistical

¹⁰ Koen and Van den Noord 2005; Savage 2005; Barta and Schelkle 2015; Mabbett and Schelkle 2015.

¹¹ We see that happening already to some degree in the European Union and the debt sustainability analyses that the European Commission performs.



databases, among which of the OECD, the IMF and Eurostat. Section five draws out the main practical and political implications of these ambiguities, and the conclusion tables the implications of these arguments for academic research in economics and beyond on public debt, its origins and consequences.

Economic statistics as social constructs

Debt registers are among the oldest economic records we know.¹² When socio-economic statistics started to thrive in the 17th century, they were clearly tied to political ends and effective statecraft,¹³ not least as tools of colonial domination.¹⁴ The history of social and economic statistics is intimately tied to the changes of society over time; large-scale industrialization and the rise of factory work and hence the “social question” spawned unemployment statistics.¹⁵ Economic crisis in the inter-war years, coupled with the rise of Keynesian macroeconomic thinking, in turn, gave national income statistics the decisive push, which would eventually lead to gross domestic product (GDP).¹⁶

Indicators more generally have proliferated over the past decades – both in global governance¹⁷ as well as on the microsocial and organizations levels.¹⁸ Frequently, they have tried to capture concepts that did not readily lend themselves to quantification (say, a financial secrecy, transparency or modern slavery index), such that the potential for disagreement about measurement and thus political argument was close to the surface.¹⁹

Macroeconomic indicators are different in that respect: the most widely used ones – price indices, gross domestic product, unemployment figures, etc. – have a naturalistic ring, if only because they have been around long enough and are so widely used in politics, public debate and academic research. Unemployment or inflation as commonly seen as something “out

¹² Graeber 2011; Sedlacek 2011.

¹³ McCormick 2009; Carroll 2006; cf. Scott 1998.

¹⁴ Mitchell 2002; Appadurai 1996.

¹⁵ Zimmermann 2006; Salais, Baverez, and Reynaud 1986; Desrosières 1993.

¹⁶ Fogel et al. 2013; Lepenies 2013a; Philipsen 2015; Fioramonti 2013; Masood 2016; Coyle 2014.

¹⁷ Cooley and Snyder 2015; Kelley 2017; Davis et al. 2012; Broome and Quirk 2015.

¹⁸ Fourcade and Healy 2017; Espeland and Stevens 2008.

¹⁹ See in particular the contributions in the 2017 special issue of the *Review of International Studies* (45[1]).



there”, which an indicator captures more or less well. The history of indicators for both concepts points in a different direction: disputes about what was supposed to be measured, and how it should be measured, went hand in hand.²⁰ Unemployment as a concept is no less socially constructed than the metrics we use to gauge it.²¹

Public debt measures – certainly in the harmonized form in which we see them in the European Union – are a relatively recent addition to the panoply of core economic indicators. In Oskar Morgenstern’s authoritative *On the Accuracy of Economic Observations* from 1950, sundry statistical series are thoroughly discussed, but not government debt figures.²² On top, government debt is much harder to relate to personally than, say, inflation or unemployment. For those reasons, debt statistics have not been subjected to the same level of critical analysis as is true for many other headline figures.²³ Our mission in this paper is to show that these numbers are no less shot through with ambiguities and arbitrary political choices than is true for other economic statistics.

How the figures differ

Did the Greek government owe 130 or nearly 160 percent of GDP in 2010? Was Portugal’s public debt less or more than 100 percent of GDP in 2011? The answers to those questions depend on the source you consult.²⁴ This paper reveals the degree of uncertainty in debt estimates and their real-world consequences. Before we delve into the conceptual and technical ambiguities in debt measurement, it is important, however, to get a sense of just how much, and how broadly, reported figures differ.

OECD researchers Bloch and Fall have juxtaposed figures for 2009 general government gross debt as a percentage of GDP – the usual headline figure. We reproduce the first four countries from one of their tables, plus the United States, to give an impression of the differences (Table 1).

²⁰ For the history of inflation measurement, see e.g. Stapleford 2009; Banzhaf 2004; Reed 2014.

²¹ Baxandall 2004; Salais, Baverez, and Reynaud 1986; Zimmermann 2006.

²² Morgenstern 1963.

²³ Green 2000; Hayes 2011; Fioramonti 2013.

²⁴ According to OECD (2014) *National Accounts at a Glance 2013*, Greek public debt in 2009 was 130.2 percent of GDP, the OECD’s *Economic Outlook No.95* reports a value of 157.3 percent of GDP. Portugal’s debt varied somewhere between 97.2 percent of GDP (OECD *National Accounts at a Glance 2013*) and 118.4 percent of GDP (OECD *Economic Outlook No.95*).



Table 1: General government gross debt in 2009, taken from Bloch and Fall 2015, p7

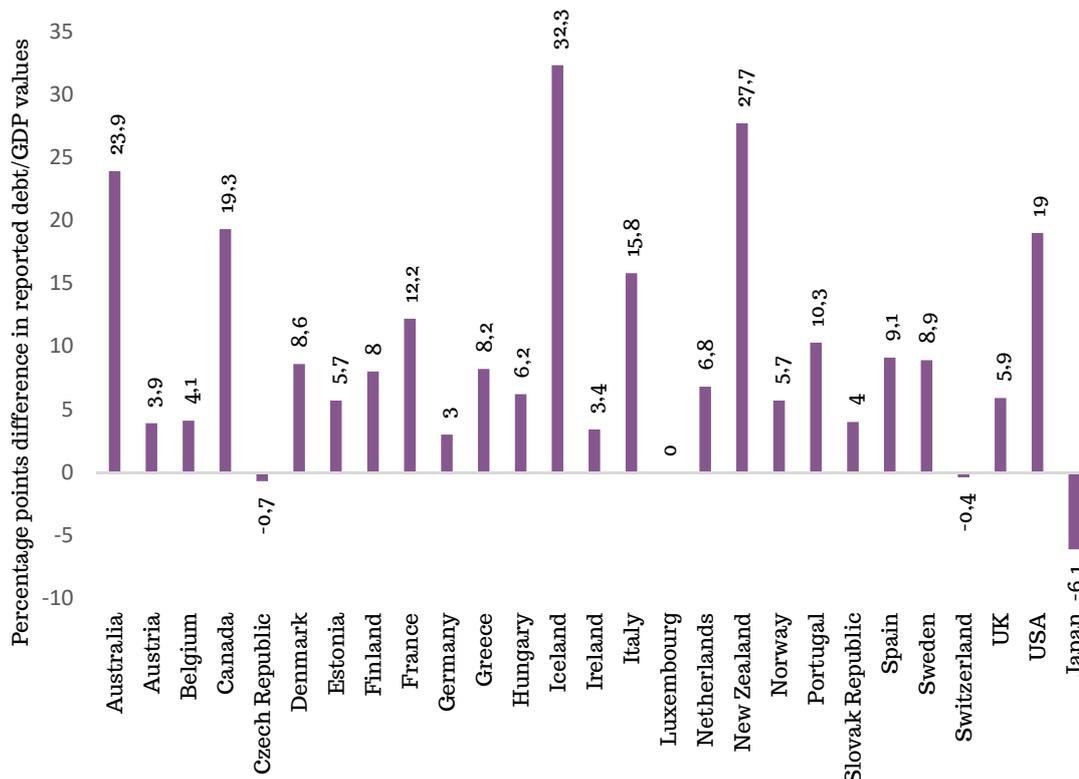
	IMF World Economic Outlook, April 2014	OECD Economic Outlook No. 95, June 2014	IMF (2014) Government Financial Statistics Yearbook 2013	OECD (2014) National Accounts at a Glance 2013
Australia	16.7	19.4	40.6	37.4
Austria	69.2	74.3	73.1	74.0
Belgium	95.7	101.0	99.8	99.8
Canada	81.3	87.4	100.6	102.9
United States	86.1	85.8	105.1	89.5

As the table shows, international figures can differ greatly.²⁵ Australia's number ranges between a low of 16.7 percent and a high of 40.6 percent, Canada's debt lies somewhere between 81.3 percent and 102.9 percent. The differences exist not just for statistics from different organizations, but between publications from the same organization. The graph below plots 2009 public debt figures from two IMF publications: the IMF World Economic Outlook from April 2014 and the IMF's Government Financial Statistics Yearbook 2013, published in 2014. If both publications reported the same level of a country's debt, it would have been on the red line (such as Luxembourg, the only country for which the figures fully coincide).

²⁵ Note that the publications in question report debt levels from several years back – 2013 and 2014 publications listing 2009 debt levels. The data should therefore not suffer from incomplete reporting or the need for later revision because of its recent vintage.



2009 general government debt/GDP - difference between two 2014 IMF publications



The chart plots the difference between two values for 2009 general government debt that the IMF published in 2014. It compares the IMF Government Financial Statistics Yearbook 2013 (published in 2014) and the IMF World Economic Outlook April 2014. For example, for Australia, the WEO reported a debt level of 16.7% of GDP, whereas the GFS Yearbook reported 40.6% of GDP.

We observe the different figures and trends also before and after 2009, arguably an extreme year because of the global financial crisis.

The table below depicts the difference between the lowest and highest number reported, with the numbers in parentheses.²⁶ The crisis naturally had its effect, but the difference between reported debt figures remains high for Australia, Canada and the United States.

²⁶ Data from the OECD National Accounts at a Glance 2013, OECD Economic Outlook No.95 and IMF World Economic Outlook, April 2014.



	2007		2011	
	Min-max	Difference	Min-max	Difference
Australia	19.7-25.8	16.1%	24.3-43.9	19.6%
Austria	60.2-63.4	3.2%	98-104.1	6.1%
Belgium	84-87.9	3.9%	72.8-80.6	7.8%
Canada	66.5-86.3	19.8%	83.5-109.9	26.4%
United States	63.8-75.8	12%	98.8-120.6	21.8%

Some of the jumps highlighted above become understandable once we delve into the technical footnotes and appendices of these publications; for now the important point is that reported figures for the headline concept vary significantly from one publication to the other. The countries we discuss should be seen as hard cases: they are highly developed with strong statistical systems and closely monitored by international institutions, in the European context by Eurostat. We will continue to focus on OECD countries for the remainder of this article. It should be born in mind, however, that if these problems are so acute for these countries already, they are bound to be much bigger for those outside that select circle.²⁷ We will return to this point in the conclusion.

What are the conceptual ambiguities?

Why do international organizations publish different figures? To be sure, it is not a question of poor reporting. In spite of incidents of conscious data manipulation – most notoriously in the case of Greece accession to the common European currency – we found no evidence that poor statistical practices or standards are responsible for the observed variation in the figures. Rather, the problems are conceptual. To calculate public debt, we need to delimit public debt from several sides: who is it who has the debt (i.e., when is a liability a government liability)? How hard does a promise have to be to count as debt? To build aggregate figures, we have to ask what the present-day value is of uncertain promises in an uncertain future. And finally, when we want to assess the depth of a country's potential debt problems, should we offset government assets against its liabilities? If so, which ones and how much are they worth? Based on these questions, we have organized these ambiguities in four clusters: the coverage of liabilities, the scope of government, valuation and the inclusion of assets.

Liabilities coverage: what is debt and what is not?

²⁷ Jerven 2013.



Not all public liabilities count as government debt. International standards differ in the liabilities included in the definition of government debt and this can have substantial consequences for the numbers that are published. The OECD's Economic Outlook debt figures include financial derivatives, and excludes unfunded and underfunded pension liabilities for certain countries.²⁸ The National Accounts at a Glance publication on the other hand excludes financial derivatives, but includes unfunded and underfunded pension liabilities for the countries that report them.²⁹ The European debt definition that is used to evaluate countries' fiscal performance (known as "Maastricht debt") is more restricted than other international definitions, among other things not including derivatives or special drawing rights.

International standards distinguish four tiers of government debt instruments. D₁ constitutes of debt securities and loans, D₂ adds currency, deposits and special drawing rights, D₃ includes accounts payable and D₄ finally takes insurance, pensions, and standardized guarantee schemes into account.³⁰ Not all countries report all levels. European countries publish D₂ without special drawing rights, whereas other countries report D₃ and very few report D₄. The level of liabilities reported can matter for international comparability, as the following graph³¹ shows.

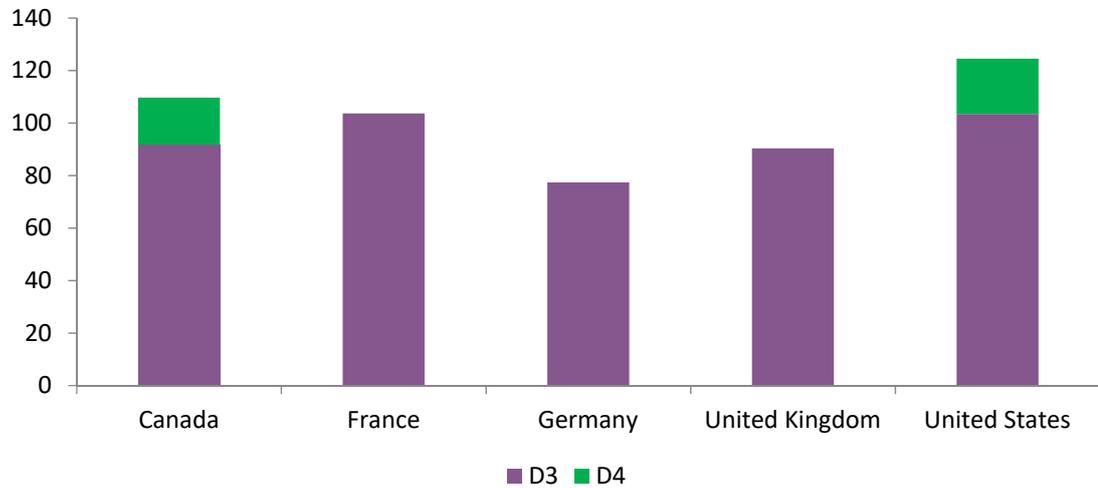
²⁸ Misleading or risky government use of financial derivatives can be a lightning rod for public anger about juking the stats and financial mismanagement. Overall, different approaches to accounting for derivatives in government books rarely make an enormous difference. In isolated instances, it can be significant, however; in the Italian case, alternative valuation approaches for derivatives saw public debt vary by 2 percentage points of GDP. Cottarelli 2017.

²⁹ Australia, Canada, Iceland, New Zealand, Sweden and the United States were for a long time the only countries reporting unfunded and underfunded pension liabilities. Since 2017, European countries are obliged to report public pension liabilities on a triannual basis to the EU's statistical agency, Eurostat. Pension liabilities will however explicitly not be included in Maastricht debt.

³⁰ Dippelsman, Dziobek, and Mangas 2012.

³¹ Germany does not report accounts payable, therefore D_{2a} is used. France and the UK report a value of zero for accounts payable, whereby d₃ equals D₂/D_{2a}.





Source: OECD database, Quarterly Public Sector Debt (2013 data)

However, even these four categories do not cover all liabilities. Liabilities can be direct or contingent, and implicit or explicit.³² Contingent liabilities are uncertain, they depend on the occurrence of a future event, for example a financial crisis that triggers state guarantees for banks. A direct liability, in contrast, has a certain outcome. Governments are obliged to pay out bondholders at maturity, or pay back loans. A liability is explicit if it has a legal or contractual basis. Implicit liabilities lack that basis, but can instead be built on governments' moral obligation.

Which of them should be included in government debt figures? It is unlikely that governments would stand by idly in case the country was flooded. But should – and can – this contingent and implicit liability be quantified and included in debt figures? And what about state guarantees to the financial sector? In 2008, Ireland's government guaranteed the deposits and debt of six financial institutions worth roughly 440 billion euro, three times the size of Ireland's GDP. When those guarantees were actually called upon, they let government debt soar.

³² Brixi and Schick 2002.



The central disputed liability is pension obligations. Many governments operate Pay-as-you-go pension schemes, in which current workers pay for current retirees. These liabilities can possibly reach high figures, as much as 200 to 400 percent in of annual GDP in case one also includes social security pension schemes.³³ Future pension burdens due to ageing populations can put severe pressure on the government's budget. But should they be included in headline debt figures? After all, in theory the government can renounce its promises anytime. Still, governments are unlikely to renege on their pension obligations, according to OECD statistician Jorrit Zwijnenburg:

If someone does something year after year, it may creates a kind of expectation that cannot easily be refuted. Despite the fact that it does not concern a legal obligation, from my point of view this expectation should then still be reflected in the table as a liability, because it is not so easy to forego. One may perhaps be able to adjust the payout slightly, but to completely ignore the liability for that reason does not make a lot of sense. In that respect, a change from 100 to 90 percent is completely different from a replacement of 100 percent with 0 percent.³⁴

The unclear solidity of pension promises makes it hard to put a number on them. The measurement problems do not end there, however. Putting a present day value on pension liabilities requires assumptions about, among others, life expectancy, fertility rates, wage growth, immigration and the discount rate, all of which become harder and harder to predict for farther futures.³⁵ The line between hard liabilities and much more vague promises is simply unclear.

The beginning and end of government

The second category of conceptual ambiguities concerns the delineation of government. In the words of OECD and EU statistician François Lequiller:

³³ OECD (2004). Lessons from the OECD Workshop on "Accounting for Implicit Pension Liabilities" (Paris, June 4, 2004)

³⁴ Interview with Jorrit Zwijnenburg in Paris on 16/01/2017

³⁵ Goebel 2017.



the problem with public finance is that you have many grey zones. Is this inside the general government or outside? You can find arguments for both solutions.³⁶

Classification guidelines are hard to implement in practice, as many developed countries have myriad organizations that are somewhere in a blurry area, for example public-private partnerships through which governments and private firms provide public services.³⁷ Often is unclear just who bears how much risk and thus to whom the debt should be attributed. Many European countries tried to take advantage of vague government boundaries in the run up to the euro in the 1990s. Governments resorted to creative accounting tricks in order to meet the debt and deficit thresholds, which were often very difficult to classify and led to heated (statistical) debates.³⁸ In 2009 Greece's debt-to-GDP ratio increased by 7.8 percent when Eurostat reclassified several public enterprises.³⁹

What can matter for international comparability and analyses, is the level of government debt that is reported. In many countries, the debt of the central government is significantly lower than that of the general government, which also includes municipalities and states or provinces. Comparing central and general government debt leads to immediate mismatches.⁴⁰

In line with state design in countries, the buildup of government debt across these levels can differ. Most often, countries report "general government debt", but US American government for example highlights "central government debt" in its communication.⁴¹ In light of the federalist American political system, that is hardly surprising, but it does make data hard to compare and normally goes unnoticed when we compare debt figures across countries.

Reinhart and Rogoff used central government debt figures in their analysis of the link between debt levels and economic growth. However, central government debt can show a very different picture than government debt in general, given the enormous subnational liabilities some countries have. The graph below compares the composition of general

³⁶ Interview with François Lequiller in Paris on 16/01/2017

³⁷ <https://ppp.worldbank.org/public-private-partnership/overview/what-are-public-private-partnerships>

³⁸ See Koen and van der Noord (2005) for examples and discussion of the fiscal gimmickry and creative accounting by European governments. Savage (2005) also gives an in depth analysis of the statistical consideration of high profile, controversial classification cases.

³⁹ Mabbett and Schelkle 2015.

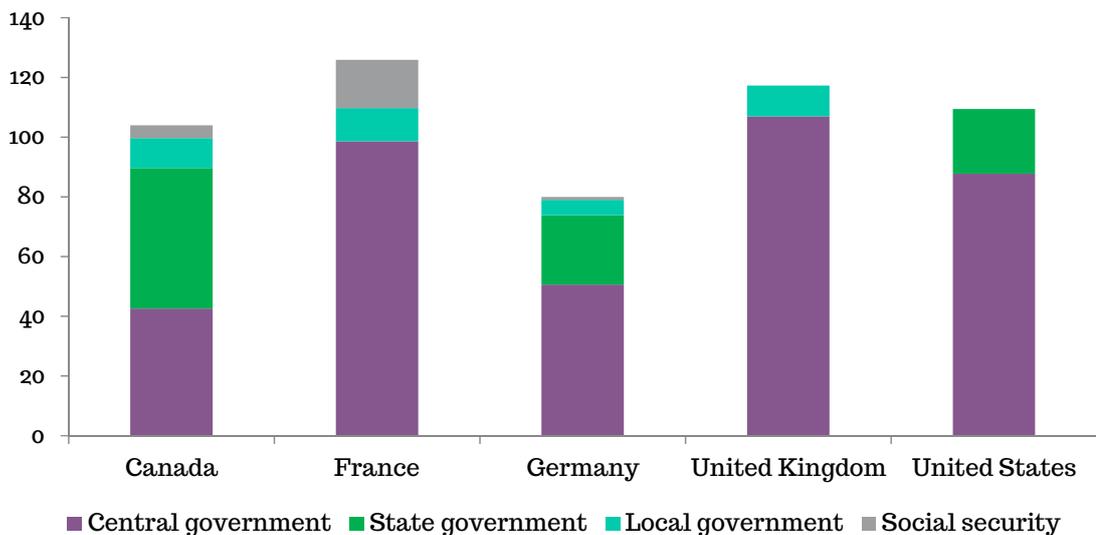
⁴⁰ OECD National Accounts Database (2013)

⁴¹ Cottarelli 2017.



government debt for the same five countries as above. Canada, Germany and the US have large levels of state level debt. Canada's state debt is 47.1 percent, nearly half of the country's total debt in that year. A focus on central government debt would fundamentally alter the inter-country comparison. UK debt would be higher than France; Germany would look better than Canada.

Public debt by level of government



Data source: OECD Governments at a Glance 2015

Subnational debt can be crucial to the stability and sustainability public finances. Debt accumulated by subnational governments can be hard to detect from the outside yet be very consequential and a severe burden for citizens.⁴² In the words of Zsuzsanna Lonti, statistician at the OECD Governance Directorate:

In the crisis a lot of things happened at the subnational level and you just cannot ignore it. If you talk about the central government, then you are talking about just half or less. But it is very hard to get those data.⁴³

⁴² Goebel 2017.

⁴³ Interview with Zsuzsanna Lonti in Paris on 17/01/2017. Several countries do not provide all lower level debt. For Chile, Iceland, Korea, Mexico and New Zealand not all data is available.



That said, it is not obvious that public debt held by different levels of government should always be lumped together. Even when individual states or municipalities face bankruptcy, central government debt may hardly be affected. Which level of aggregation is the right one depends entirely on the specific question at hand.

Valuation

The third conceptual ambiguity is one of the key causes of differences in international figures. What is the appropriate valuation method for public debt? Generally speaking, three main options for valuing liabilities exist: face value, nominal value and market value. The face value of a liability is the value stated at issuance, the amount that will be paid out to the holder at maturity. Nominal value is face value plus accrued interest. Market value is the price at which a liability was most recently traded (Bloch and Fall, 2015). International organizations differ in their method of valuation and countries differ in their reporting. The EU prescribes nominal value, the IMF uses both. The OECD again reports the figures in market value, but not for all countries. Government debt figures of countries like the Czech Republic, the US and Luxembourg are in face value; Korea and Japan in turn only provide the OECD with market valuation.⁴⁴

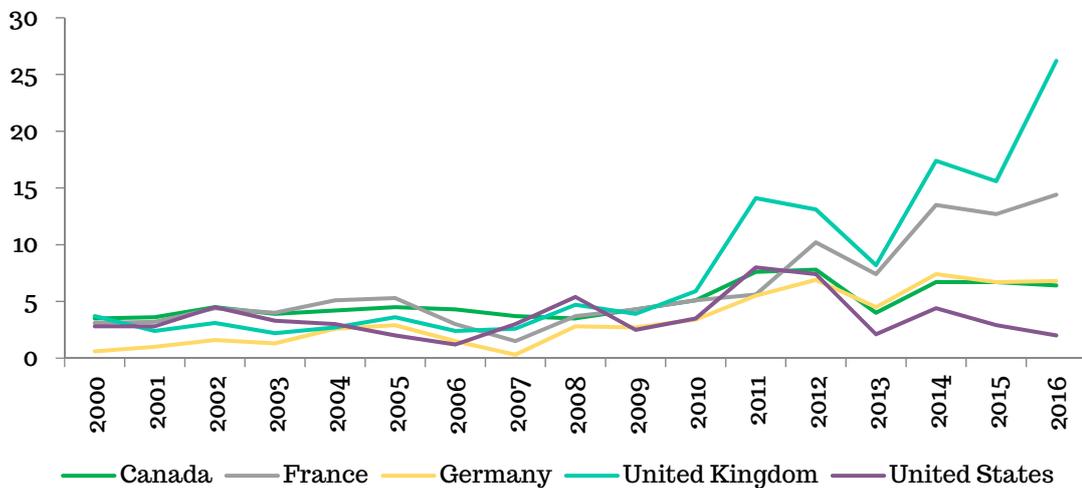
Valuation can result in substantial differences. The graph below depicts the spread between nominal and market value for our five countries between 2000 and 2016. Spreads of Germany, Canada and the US peaked during the crisis, but never crossed the 10 percent mark and seem to have relatively stabilized in recent years. The difference between nominal and market value of France and the UK on the other hand kept rising, with the UK spread reaching a high of 26.2 percent in 2016. In other countries, the difference can be even more tremendous. Greek public debt in 2011 at nominal value stood at 171.9 percent of GDP. Its market value was 98 percent of GDP.

American investor Paul Kazarian publicly questioned what the appropriate valuation of his investment in government debt instruments was. The owner of private equity firm Japonica Partners became one of the largest private owners of Greek government bonds. In the years following his acquisition of three billion euros, Kazarian and his team of about 100 economists, accountants and lawyers, campaigned to convince the world that Greek debt is



not as high as we think. If properly calculated, he argued, in 2015 Greek debt stood not at the official 177 percent of GDP, but around 70 percent; maybe it even was no more than a tenth of the official 318 billion euro figure. Greek debt should not be expressed in nominal value, he avowed, but in market value, just as the International Public Sector Accounting Standards prescribes.⁴⁵ This calculation without doubt had a self-serving side to it. Nevertheless, the public debate (and confusion) that followed illustrates that even elusive dimensions of debt measurement such as valuation techniques can be both consequential and politically salient.

Difference (% of debt-to-gdp ratio) between nominal and market value of public debt



Data: Bank of International Settlements Statistics database

Assets

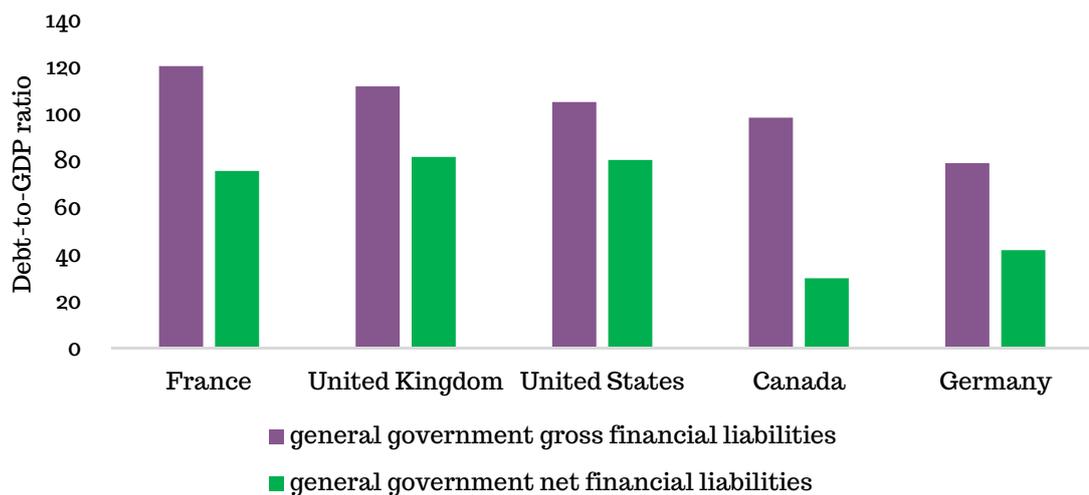
The final conceptual ambiguity to be discussed here is whether or not government assets should be set off against public liabilities. This is an important discussion at international organizations, which are moving more towards the publication of net figures alongside the headline indicator. Government debt numbers are usually gross – debt is not offset against

⁴⁵ Landon Thomas jr. (2015, February 20). “Greek Debt Vastly Overstated, Investor Tells the World,” *The New York Times*.



government assets. However, some argue that include assets could lead to a better measure of government health and that net figures are better suited to assess public finance sustainability.⁴⁶ A country with many assets might fiscally be in a different shape than a country with fewer assets, as Alessandro Lupi, statistician at the OECD describes: ‘If a country could for example sell the assets, it has more capacity to honor the debt. They could dismiss the assets and they could have a smaller debt.’⁴⁷

Accounting for assets can substantially change the actual figures as well as the ranking across countries. The graph below shows two different measures of government indebtedness: gross financial liabilities and net financial liabilities, which is net of financial assets. Whereas France has the highest gross financial liabilities, the UK and the US have higher net financial liabilities. Canada’s ratio falls from 98.4 percent of GDP to 30 percent if we consider financial liabilities from a net perspective.



Source: 2013 data, OECD World Economic Outlook 102

However, others point to problems with including assets and the difficulty of determining which assets should count and how to measure these. Financial assets can be relatively

⁴⁶ Koen and van den Noord 2005.

⁴⁷ Interview with Alessandro Lupi on 17/01/2017 in Paris



straightforward, but non-financial assets such as land, hospitals and bridges are not so liquid and are more difficult to value adequately, if at all. Furthermore, privatization or the sale of assets is not always so easy.⁴⁸ Selling assets during a liquidity crisis can result in lower prices. Data availability further complicates the use of net debt indicators. The valuation of non-financial assets is often not harmonized, which makes the data difficult to compare. The difficulties of measuring assets were also a reason why the European Union opted for a gross debt indicator in its fiscal rules framework.⁴⁹ According to statisticians, net government debt may be a useful supplementary indicator for policymakers, financial analysts and rating agencies, but it is not meant to replace the headline government debt indicator.

Taking the ambiguities that we have outlined together, it is clear that debt statistics suffer from fundamental measurement problems. These are not rooted in careful statistical practices or poor standards, but in the very fuzziness of the idea of “public debt” as a clearly delineated concept itself.

The implications of fuzzy debt

So how does this fuzziness of debt matter in real life and politics? Some of debt’s effects materialize no matter what anybody thinks the aggregate value is. For many other effects, however, it does matter what citizens, policymakers, investors, and researcher *think* debt levels are. In that case, the way in which we calculate debt figures shapes the way in which debt operates in the global economy. The main effects of debt calculation materialize in four domains: public accountability, investor perceptions, as yardsticks for public policy, and academic analysis.

Public accountability

Debt figures should allow citizens to monitor the financial burden that governments place on their shoulders. Barring a default, governments’ use of the printing press or unusual natural resource revenues, debt eventually have to be paid back out of tax revenues. Citizens cannot assume that government debt policies are always in their interest. Obviously, the

⁴⁸ Cottarelli 2017.

⁴⁹ Savage 2005.



spending of borrowed money can benefit some citizens more than others. Governments are prone to use discretionary policies to enhance their chances for re-election.⁵⁰ On top, government borrowing constitutes intergenerational redistribution from the young to the old, from the future to the current generations.⁵¹

To make informed political choices, citizens need to know how they should understand the figures they confront. Public perceptions of economic conditions can play an important role in determining the outcome of elections.⁵² While the specific role of public debt indicators in forming these perceptions remains to be researched, it is known that voters on average do not like high spending governments.⁵³

Citizens therefore depend on statistics that are strong, reliable and independent in order to hold politicians to account.⁵⁴ If, however, debt figures do not represent what citizens think they do, this accountability mechanism, which is essential to the relationship between citizens and policy makers in a democracy, no longer functions well. Without an effective tool to monitor public debt, it is impossible for citizens to hold politicians to account for counterproductive policies and really monitor what governments are doing with 'their' money. This monitoring of public debt becomes particularly acute when citizens suspect that governments spend borrowed money inefficiently, on political pet projects or to buy support from specific stakeholders or constituencies.

Take the US debt ceiling as an example, which specifies the maximum amount of debt that can be taken on by the central government. If the ceiling is reached, the US treasury will need to take extraordinary measures to avoid default, for example delaying benefits payment or government employees' salaries. Over the years, on several occasions the debt ceiling was within reach, triggering bitter political fights in Washington. But how this debt ceiling actually measured? What does the government owe? Attempting to answer this question, economists from the Chicago Federal Reserve Bank encountered 'a bewildering array of different measures of U.S. federal government debt.'⁵⁵ They give an overview of all

⁵⁰ Kopits 2001.

⁵¹ Buiter et al. 1993.

⁵² Blendon et al. 1997; de Vries, Hobolt, and Tilley 2017.

⁵³ Eslava 2011 (Mendeley reference)

⁵⁴ Savage 2005.

⁵⁵ Friedman and Wright 2016.



these different figures floating around. Gross general government debt at 91.4 percent and gross general government liabilities reached 118.6 percent. But the debt that was *actually* subject to the ceiling stood at 102.5% of GDP. Debt subject to the ceiling is calculated differently than the indicator that is most cited in the media, gross public debt outstanding of the federal government. The difference is small, reaching a high of 2 percent of GDP in 1991. However, this excludes subnational debt. Including state and local debt would add nearly 3 trillion US dollars to the figure, 17.7% of GDP. Adding non-debt liabilities, such as accounts payable, derivatives and state and local pension funds would add another 27% of GDP.⁵⁶

If economists are bewildered by the variety of different debt measures, it will be even harder for citizens to judge the state and health of public finances adequately. Unable to monitor whether and why the debt ceiling has been reached, it is impossible for citizens to hold politicians to account for counterproductive policies.

Investor perceptions

Public debt figures also matter for investors and financial markets. Public debt levels are one of the primary data points that investors consider when they lend governments money or buy their debt on secondary markets.⁵⁷ Credit rating agencies also heed these figures when they establish sovereign default probabilities.⁵⁸ A government's ability to service its debt directly influences the interest rate that investors will charge it.⁵⁹

To be sure, it is not clear how exactly investors or credit rating agencies translate public debt figures into default probabilities.⁶⁰ Like other market segments, markets for government debt can suffer from extensive herd behavior. Indeed, debt figures can be performative: once they look so dire as to damage investor confidence, they can trigger the debt crisis that investors have previously dreaded.⁶¹ The subsequent crashes can be debilitating.⁶² In the so-called Latin American debt crisis, the Mexican default in 1982 changed perceptions of the viability of other countries' debt, as well – even though their figures had not changed. More recently, both optimism and pessimism about Southern European countries' ability to repay

⁵⁶ Ibid.

⁵⁷ Mosley 2003.

⁵⁸ For the rating agencies, see Sinclair 2005.

⁵⁹ Baldacci and Kumar 2010.

⁶⁰ Leins, 2018, *Stories of Capitalism*

⁶¹ Performativity of financial markets has received much attention since the global financial crisis. Soros has offered one of the most succinct and accessible accounts of the core argument. See Soros 2008.

⁶² Cottarelli 2017.



their debt has often moved in sync even when new information had become available for only one of them. How exactly “market sentiment” operates remains opaque, but that debt figures matter –sometimes quite drastically- is obvious enough.

What remains unclear is how investors interpret data and to which degree they understand its conceptual ambiguities. A misreading of the figures can mean that investors charge sovereign interest rates that are in fact out of line with their genuine preferences. It may also suggest that markets may malfunction either by tolerating unsustainable debt accumulation or by excessively harsh treatment of it. We cannot simply assume that debt statistics offer neutral and self-explanatory information to link international investors and sovereign governments.

Academic analysis

While investors may be interested in debt dynamics to inform their capital allocation, academics have a broader mission: they investigate both the distributive and aggregate effects of smaller and bigger public debt loads, and because they find debt to matter, they also investigate the origins of varying debt levels. Such research, again, builds on debt statistics.

Economists have claimed to have identified a range of adverse macroeconomic effects of high public debt.⁶³ Most broadly, economists argue that debt hampers economic growth and to discourage capital accumulation.⁶⁴ It can increase inflation, long-term interest rates, and expectations of distortionary taxation; it can also dampen private investments and growth-enhancing primary spending.⁶⁵

Because of the presumed consequences that excessive debt loads can have for countries, researchers have also inquired into their drivers. The political structure is said to matter: stable and majority-party governments have proven more successful in lowering the budget the budget deficit than divided governments. The size of the general government sector as a share of GDP is also attributed to higher levels of debt and deficits. Political orientation could also matter: left wing parties are found more likely to build up large levels of debt than right

⁶³ At this point, we remain agnostic about the usefulness of these analyses in other respects; our central concern here is simply the quantitative basis on which the analyses are founded.

⁶⁴ Checherita and Rother 2010.

⁶⁵ Reinhart and Rogoff 2009.



wing parties.⁶⁶ Research also points to macroeconomic drivers. An increase in unemployment is for example linked to rising levels of debt.

These results may be quite sensitive to the data problems we have outlined above – either because scholars would use data that in fact is not fit for purpose because of conceptual ambiguities, or because the quality of the data is simply poor. Either way, it would go beyond the confines of this article to establish how sensitive academic results are to the ambiguities we have outlined above and how the findings would differ if alternative debt figures would have been used.⁶⁷ However, the influence of data discrepancies could be substantial and invite faulty conclusion. Such results will be affected particularly when hard limits are attached to them.

In 2010 Reinhart and Rogoff famously argued that 90 percent public debt as a percentage of GDP constituted an upper “safe” limit.⁶⁸ Debt-to-GDP ratios above 90 percent would lead to lower levels of economic growth, the authors argued. The method used by the authors has already sustained significant criticism, leading to a refute of their claims. In light of our argument, the data used deserves critical examination as well. Reinhart and Rogoff use central government data, which, as illustrated in section 3 can be very different than the often cited headline indicators based on general government debt. As shown there, central government is substantially lower for countries with decentralized government structure relative to the general government figure. It is hard to imagine that such large differences in numbers would have had no effect on the findings. Depending on how you measure public debt, a country such as Canada can be far above or very far below the 90 percent line. It will be for future research to establish how much of our academic knowledge about debt dynamics hangs on a careless reading of the data.

Yardsticks for public policymaking

We do not know just how strong governments’ intrinsic motivations are to contain debt – certainly considering political short-term benefits of debt-financed expenditures and the ability to delay the reckoning.⁶⁹ That said, governments’ willingness to implement unpopular policies in the name of reigning in public debt shows that at least in some

⁶⁶ Roubini and Sachs 1989.

⁶⁷ See, however, other attempts to model the sensitivity of research results to data problems, e.g. in Kerner, Jerven, and Beatty 2017; Linsi and Mügge 2017.

⁶⁸ Reinhart and Rogoff 2010.

⁶⁹ And we also don’t know for sure just how influential economic theory is on government thinking. Hirschman and Berman 2014.



situations, worries about debt animate policy choices – and these worries again will build on debt figures as the only way in which debt can actually be made “visible”.

The most direct consequence of fuzzy debt, however, may lie with the policymakers and politicians who actually steer fiscal policies. Debt indicators can be performative: governments adjust borrowing strategies to look good in the figures. Cebotari for example found that

contingent liabilities are attractive to politicians who, in the face of hardened budget constraints, find them to be a "cheap" instrument for achieving their objectives.⁷⁰

In the run-up to Economic and Monetary Union (EMU), many countries sold off government assets, including companies, because they could use the proceeds to pay down their debt or lower their deficit – while the ownership of the assets in question had been impossible to set off against public liabilities. Some of these were very controversial. Often, these measures lower gross public debt, but not, or much less, government net worth, the latter which is said to be a better indicator to assess public finance sustainability.⁷¹ Once the Eurozone crisis had engulfed the union, rescue arrangement for financial institutions tried, where possible to avoid unnecessary damage to headline debt figures.⁷² In short, governments frequently care as much about how the official figures as they do about the substantive impact.

There are other ways in which governments may hide de facto liabilities. Public private partnerships are an option for public service provision that, at first sight, spares government finances – even if risks persist, as recent corporate failures in the UK have yet again demonstrated. The same applies to state guarantees. At least in the headline figures, they look as if they were ‘for free’. The financial crisis has exposed how wrong that sense can be.

Are multiple indicators the solution?

An apparent solution to these problems would seem to lie in a plurality of debt indicators. As one statistician put it, “we should have more indicators with methodological notes, not only one.”⁷³ And indeed, the biannual OECD Governments at a Glance publication, provides readers with a variety of indicators.

⁷⁰ Cebotari 2008.

⁷¹ Koen and van den Noord 2005.

⁷² Gandrud and Hallerberg 2014.

⁷³ Interview with Isabelle Ynesta in Paris on 16/01/2017



Aware of the conceptual complexity of debt, international organizations have indeed produced more and more indicators over the years. In the case of government debt, the shift has been towards structural balances (rather than snapshots) and governments' net worth. Statistical yearbooks come with extensive methodological notes that describe differences across countries and how those may hamper comparability. However, the question is how useful this is in practice. As an OECD statistician recounts:

Statisticians try to be clear as much as possible when they produce ratio on government debt, but the issue is that very often users don't read the methodological notes which describe the indicator, they simply download the data, make the analysis and write conclusions without taking into account the financial instrument coverage, the valuation used, the sector delineation...etc. . For instance, Maastricht debt and SNA 2008 debt, are not comparable because the instrument coverage and the valuation of the latter's are different.⁷⁴

A plurality of debt figures confronts citizens with particular problems. Without significant background knowledge, alternative debt figures are very hard to interpret. It is simply unrealistic to expect citizens to determine for themselves whether public debt measured at market or at nominal values should be their focus when they judge political performance.

Not just in public discourse but also in policy circles, there are clear limits to the usefulness of multiple indicators. With the possible exception of academic research, when public debt figures are used there is a strong pull in the direction of a single, or very few headline indicators. As Jorrit Zwijnenburg describes:

I think users are often a bit scared to receive an entire bucket of data. If a user then has to decide which things to take into consideration, which not, which instruments to include, which not, what type of valuation, nominal, market, face value, whether to include a piece of accrued pensions or not, this may often lead to a lot of confusion. In that regard, I think a lot of them rather just receive a single number, often the most commonly used indicator, and work with that.⁷⁵

⁷⁴ Interview with Isabelle Ynesta in Paris on 16/01/2017

⁷⁵ Interview with Jorrit Zwijnenburg in Paris on 16/01/2017



In theory, the fuzziness of debt creates space for politicians to highlight measures that either flatter or dramatize the fiscal situation. In practice, the room for such fudging is often limited as headline debt indicators are highly institutionalized and especially in EU-context, reported data is scrutinized by statisticians. Instead, the more relevant danger is that policymakers pick and choose from a dashboard of indicators those that chime with their political interest.

There is a final reason, independent from the difficulty of interpreting complex data, that mitigates against a plurality of custom-tailored indicators: the ambition to compare countries with each other. Ideally, a single definition and statistical routine applied to different countries would generate a number that highlights the same property of that government's financial situation. Differences in pension systems, debt structures, public assets and so on frustrate that goal, however. Some countries might not provide the figures necessary for such a comparison. For example, many EU member states have long remained silent about their pension liabilities; Korea and Japan do not report the nominal value of their debt, and Germany withholds data on other accounts payable. Municipal debt is hard to compile in even more countries. The ambition to compare across countries limits the room for fully adapting debt statistics to national circumstances.

That confronts the producers of statistics with a dilemma: 'you have to build indicators that are relevant, which are useful for economic policy. We are not in a virtual world of statistics, statistics are made to be used'⁷⁶; at the same time, 'our goal is to deliver comparable statistics across countries.'⁷⁷ Flooding the political apparatus with relatively hard to interpret data is therefore not the silver bullet with which to do justice to the fuzziness of debt figures.

Conclusion

When citizens, policymakers and researchers debate public debt, they commonly treat it as a self-evident given, something that is out there and measured more or less accurately. We have offered a very different perspective. Debt is fuzzy – both in its conceptual delineation and in its actual measurement. The debt figures we use are not a direct reflection of fiscal conditions. Instead, they are shaped by unconscious conventions, political opportunism, measurement problems and a range of other factors.

⁷⁶ Interview with Jorrit Zwijnenburg on 16/01/2017 in Paris

⁷⁷ Interview with Isabelle Ynesta on 16/01/2017 in Paris



The fuzziness of debt means that whenever we use those figures, we have to ask just what they measure and to what degree they are in fact fit for purpose. During the Eurozone crisis, public debt figures have been batted about in policy circles, academia and the media with momentous consequences for the countries concerned. With hindsight, it is unclear to what degree the protagonists in those debates were aware of the conceptual ambiguities and measurement problems behind the figures that stood so central in the crisis.

This paper raises questions beyond its contribution to our understanding of public debt. To conclude, we highlight four that strike us as particularly important and fruitful avenues for future empirical research. First, to what degree do different stakeholders appreciate the conceptual nuances behind debt data? We have suggested above that citizens for example may misinterpret reported figures. Past research on inflation has indeed suggested that public interpretations of economic concepts may diverge widely from how experts understand them.⁷⁸ This question obviously matters to the degree that citizens use the voting booth to punish politicians for what they may see as irresponsible profligacy or unnecessary austerity. We may ask the same question for investors and credit rating agencies as they gauge the solidity of public finances around the world.

Second, to what degree do politicians use alternative debt measures opportunistically? Just how widespread is political arbitraging of them, either to sway a public audience or to abide by official rules while flouting their spirit? Third, it will be crucial to establish how sensitive academic insights are to alternative debt measures.

Finally, if debt measures are indeed political and academically consequential, why do we use the ones we use? Does political opportunism guide formula design? To what degree do institutional legacies matter, or intellectual dynamics among experts? Answers to these and the previous questions will allow us to build an understanding of public debt that does justice to its social construction and inevitable fuzziness.

⁷⁸ Shiller 1997.



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Appendix

2009 general government debt/GDP - difference between two 2014 IMF publications

	IMF GFS YB 2013	Data from IMF WEO	
	(pub in 2014)	Apr 2014	Difference
Australia	16.7	40.6	23.9
Austria	69.2	73.1	3.9
Belgium	95.7	99.8	4.1
Canada	81.3	100.6	19.3
Czech Republic	34.2	33.5	-0.7
Denmark	40.7	49.3	8.6
Estonia	7.1	12.8	5.7
Finland	43.5	51.5	8
France	79.2	91.4	12.2
Germany	74.5	77.5	3
Greece	129.7	137.9	8.2
Hungary	79.8	86	6.2
Iceland	88	120.3	32.3
Ireland	64.4	67.8	3.4
Italy	116.4	132.2	15.8
Luxembourg	15.5	15.5	0
Netherlands	60.8	67.6	6.8
New Zealand	25.7	53.4	27.7
Norway	43.3	49	5.7
Portugal	83.7	94	10.3
Slovak Republic	35.6	39.6	4
Spain	54	63.1	9.1
Sweden	42.6	51.5	8.9
Switzerland	49.7	49.3	-0.4
UK	67.1	73	5.9
USA	86.1	105.1	19
Japan	210.2	204.1	-6.1

Sources: IMF Gov't Financial Statistics YB 2013, IMF World Economic Outlook Apr 2014

