

## **CHAPTER 2. THE CURRENT LANDSCAPE**

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### **I. INTRODUCTION**

1. In February 1989, workers in New York were putting the finishing touches to a very special clock. The brainchild of New York real estate developer Seymour Durst, the 11-by-26 foot digital clock cost \$100,000 and was erected 1 block from Times Square. The clock was the US National Debt Clock and since then, apart from a brief period between September 2000-July 2002 when debt was falling, the clock, and its replacement installed in 2004, has steadily tracked the rise in US debt, from \$2.7trillion when the clock was unveiled in February 1989, to \$21.4 Trillion at August 29, 2018 when this draft chapter was finalized.

2. According to Mr. Durst's son, his father had been obsessed with debt since the early 1980s. In 1980, during the holiday season he sent cards to members of the US congress which included the message "Happy new year. Your share of the national debt is \$35,000." Mr. Durst's idea has inspired others, and a google search for "debt clock" quickly takes you to numerous websites with debt clocks for countries all over the world. There is just one problem with all of these clocks, which is this. *What do they measure?*

3. Mr. Durst's clock tracks a concept of debt that the US Treasury calls "Total Public Debt Outstanding". This figure was \$20.49trillion on December 31<sup>st</sup> 2017. But there are other estimates of debt for the USA. The IMF World Economic Outlook (WEO) Database publishes an aggregate called "general government gross debt". The April 2018 database presents this number at the end of 2017 as \$20.9trillion – a difference of \$400billion (approximately 2 per cent of GDP). The IMF also publish data on government liabilities in the Government Finance Statistics (GFS) database, drawing on data reported to the IMF's Statistics Department by the US Bureau of Economic Analysis and Federal Reserve Board. This database shows total liabilities of the US general government of \$24.135trillion, \$3.235trillion higher than the WEO number, and \$3.645trillion higher than on the debt clock (almost 19 per cent of GDP).

4. Finally, academics such as Larry Kotlikoff and some politicians have claimed the real number is higher still. Senator Ben Sasse, a Republican from Nebraska, made waves in an April 2017 town hall meeting in Elkhorn, Nebraska, by asserting that the real value of public debt was between \$70-75trillion – more than three times the value shown on the debt clock during 2017. The Washington Post factchecked this assertion, and awarded Mr Sasse "one Pinocchio" on their fact checking scale (which runs from one to four pinocchios), which they say could be viewed as being "mostly true". Kotlikoff was widely quoted in 2015 as saying

the true debt figure for the USA then was \$210 trillion – which if true would clearly mean Mr. Durst should have installed a significantly bigger clock.

5. The truth is, the value of debt is hugely dependent on three factors (i) the institutional coverage of the debt; (ii) the instrument coverage of the debt; and (iii) the valuation of the debt.

6. Mr. Durst's clock, which tracks "Total Public Debt Outstanding" only tracks the debt of the US Federal Government, but this omits the significant debts of state and local governments in the USA, and also omits the debts of other public entities, most notably the US Central Bank but also government sponsored enterprises like Fannie Mae and Freddie Mac. The WEO and GFS data both include debts of all levels of government in the USA, not just the Federal Government, and it would also be possible to compile even wider measures of debt to include the liabilities of the Federal Reserve and Government Sponsored Enterprises (like Fannie Mae and Freddie Mac).

7. Mr. Durst's clock also only includes debt in the form of public debt securities, (including Treasury Bills and Bonds, Treasury Inflation Protected Securities, United States Savings Bonds), but the US Federal Government (and state and local governments) have other kinds of liabilities, most significantly government employee pension related liabilities and other payables. Federal Reserve Board data for the USA shows that public sector pension funds had liabilities of around \$10trillion at the end of 2015, about half the size of federal, state and local debt securities.

8. Total Public Debt Outstanding also includes intra-government holdings of debt. Most significantly this includes securities held by government trust funds, including assets of the Old-Age and Survivors Insurance Trust Fund (more commonly referred to as the Social Security Trust Fund). Eliminating these intra-government holdings of debt by consolidation to just show debt held by the public would have reduced the numbers on the debt clock by over \$5.5trillion in 2017. These intra-government holdings are eliminated in the WEO and GFS databases. Indeed, the US Treasury themselves publish a consolidated number on their website alongside Total Public Debt Outstanding which they simply call "Public Debt".

9. Mr. Sasse's estimate of \$70-75trillion was reached by further extending the definition of debt, not just to include items on the government balance sheet as recognized by statisticians, but also including off balance sheet commitments and contingent liabilities including payments of Social Security, Medicare and Medicaid and other government programs, as well as federal deposit insurance and other potential obligations.

10. Kotlikoff and Auerbach's preferred method is probably the basis of Mr. Sasse's number, and is referred to as the so called "infinite horizon fiscal gap" approach. It defines debt as the difference between the present value of all of government's projected financial obligations, including future expenditures, and the present value of all projected future tax and other receipts, including income accruing from the government's current ownership of

financial assets. This method is hugely sensitive to the underlying assumptions, not least the discount rate.

11. Finally, valuation of debt matters. The US Treasury says that Total Public Debt Outstanding is valued at the “face amount or principal amount of marketable and non-marketable securities currently outstanding”, but data in the GFS and WEO databases are valued at the market value. This makes a significant difference, depending on interest rates, bond yields, average times to maturity of debt and other factors. In 2017, as a result of a number interlinked factors (including the global savings glut, ongoing deleveraging in some countries, increasing maturities of US debt and a reduction in the number of AAA rated countries), US debt at market value is considerably higher than debt at face value. US consolidated Federal Government debt in the form of debt securities, at face value in the US Treasury website<sup>1</sup> was \$14.8trillion at the end of 2017. According to the GFS database, US federal government debt in the form of debt securities, at market value, was \$16.4trillion.

12. What this introduction should hopefully indicate, is that in any discussion of sovereign debt, public debt, national debt or government debt, the definition of debt matters enormously. What kind of liabilities are included, belonging to which entities, and how they are valued is the difference between debt for the USA being as little as \$15trillion or more than \$70trillion. Indeed, it might be more accurate to say that there isn’t a single measure of sovereign debt, but a number of complementary measures with different analytical values that policy makers can use to understand their fiscal position and the sustainability (or not) of their fiscal position. Section II of this chapter discusses these key concepts of institutional coverage, instrument coverage and valuation, which are critical to any discussion of sovereign debt.

13. Notwithstanding the difficulties caused by the different definitions of debt, it is important to recognize that governments can also hold considerable assets. In addition, there are the state-owned enterprises (SOEs) or public corporations, outside the standard government accounts but nevertheless controlled by the state. All together, these elements provide the most comprehensive view of public wealth, in the form of a country’s public sector balance sheet (PSBS). In most countries, the PSBS is little understood, poorly measured, and only partly managed, with analysis instead focused on “standard” fiscal flows—revenues, expenditures and deficits—and gross debt. This misses large swaths of government activity and can fall victim to illusory fiscal practices. Section [III] of this chapter will illustrate the main components of the PSBS, building on IMF (2018).

14. Finally, whatever the level of debt, the composition of the debt, in terms of the currency its issued in, the maturity profile, and the nature of the creditor to whom debt is

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<sup>1</sup> [https://www.treasurydirect.gov/govt/reports/pd/pd\\_debttothepenny.htm](https://www.treasurydirect.gov/govt/reports/pd/pd_debttothepenny.htm)

owed can be very important for debt sustainability. Section IV of this chapter discusses the composition of debt from a debtor (supply) and creditor (demand) perspective.

## II. MEASURES OF SOVEREIGN DEBT

### A. Institutional Coverage of Debt

15. This book is about “sovereign debt”, but this is a slippery concept. Online sources have numerous definitions, including debt of the national government<sup>2</sup>, debt of the central government<sup>3</sup>, government debt in a currency other than a government’s own national currency<sup>4</sup>, or debts owed or guaranteed by the national government<sup>5</sup>. Some consider sovereign debt to include just the liabilities of the central government, some extend this concept to also include the debts of the Central Bank. Finally, some people use the term *sovereign debt* interchangeably with the term public debt<sup>6</sup> and public debt interchangeably with the term government debt<sup>7</sup> but these may not refer to the same thing.

16. Assuming that sovereign debt is only the debt of government, what is the definition of *government*, given the nature and structure of government differs significantly across countries? Consider the G7 economies, within this group of the seven largest advanced economies in the world are three countries with Federal systems of government (Canada, Germany and the USA; and 4 countries with more centralized systems (France, Italy, Japan and the UK). As a consequence of this, comparing the debt of the Federal Government of Canada, or Germany or the USA with the debt of the Central Government of the other four G7 countries will be highly misleading. Instead, most statisticians would argue that debt should be compiled for the **general government**, a broader concept that includes all government entities whether these are national governments with jurisdiction over the entire country; state, provincial or regional governments (such as Ontario, Texas or Western Australia); or local governments and municipalities. General government also includes a group of entities called social security funds, which administer social insurance schemes for pensions, health and unemployment benefits.

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<sup>2</sup> <http://lexicon.ft.com/Term?term=sovereign-debt>

<sup>3</sup> <https://www.investopedia.com/terms/s/sovereign-debt.asp>

<sup>4</sup> <https://www.collinsdictionary.com/dictionary/english/sovereign-debt>

<sup>5</sup> <https://blogs.imf.org/2017/02/23/dealing-with-sovereign-debt-the-imf-perspective/>

<sup>6</sup> <https://www.thebalance.com/what-is-the-public-debt-3306294>

<sup>7</sup> <https://www.focus-economics.com/economic-indicator/public-debt>

17. This concept of general government is defined in statistical manuals like the UN System of National Accounts 2008, the IMF Government Finance Statistics Manual 2014, the IMF Public Sector Debt Statistics Guide for Compilers and Users 2011 and is used by the European Union in their regional statistical manual, the European System of Accounts 2010, which is the statistical underpinning for Maastricht Debt – defined as general government consolidated gross debt.

18. Government units, in the statistical manuals, are defined as legal entities established by political processes that have legislative, judicial, or executive authority over other entities within a given area with responsibility for provision of public goods and services, to redistribute income and wealth, that engage primarily in non-market production and that are financed primarily out of taxation, or other compulsory transfers. While this definition is relatively easy to apply for many government units, at the borderline, there are numerous grey areas. General Government in many countries includes entities that a lay person might not consider to be part of government, such as public transport companies, publicly owned financial institutions (such as EXIM or Development Banks), or other state owned enterprises.

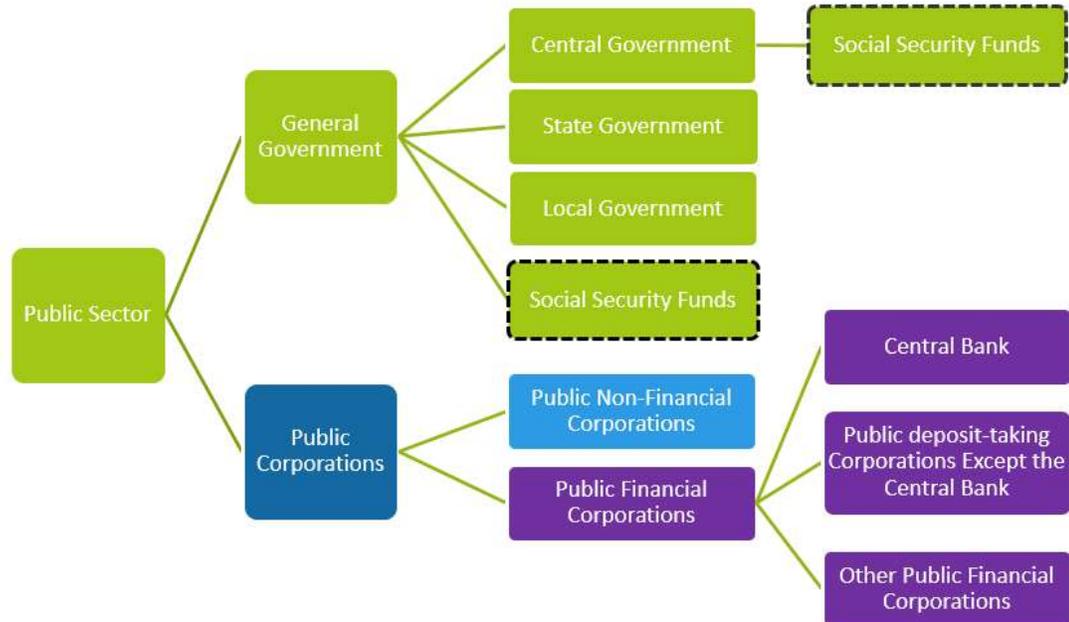
19. In addition to government units, the manuals recognize the existence of a wider public sector. This include entities under public control that do not meet the definition of a government unit. These entities are typically said to be engaged in market production, selling goods and services to households and businesses on a market basis. Often referred to colloquially as state owned enterprises or public enterprises, statisticians refer to these publicly owned and / or controlled non-government entities as *public nonfinancial corporations* or *public financial corporations*.

20. They can take any form, and operate in any industry. Globally, there are publicly owned airlines and banks, construction firms and development banks, electricity corporations and forestry agencies, oil and gas producers, public transport providers, telecommunications firms, water and sewage companies as well as many more. The size and complexity of the public sector varies considerably, across countries and over time. In China and Russia, the public sector is extensive and covers many or almost all of the main parts of the economy. In other countries public ownership is much less extensive. In the UK the public sector in 2018 looks considerably different to the public sector in 1980, following waves of privatization (see Box 2.1)

21. Entities are considered to be public units if they are controlled, rather than owned by the government (reflecting government's unique ability to intervene in an economy), but while this is often easy to recognize, at the borderline things again can be tricky.

22. Together, these units make up the statistical view of the public sector, illustrated in Figure 2.1

**Figure 2.1 - Public Sector and its Main Components**



**Box 2.1 - Gaming the Perimeter -Network Rail (UK)**

During the 1980s and 1990s, the UK Government under Prime Ministers Margaret Thatcher and then John Major privatized a large number of formally state owned enterprises. British Sugar in 1981, British Telecom in 1984, British Gas in 1986, British Airways and the British Airports Authority in 1987, British Steel in 1988, Water Companies in England and Wales in 1989, Regional Electricity Companies in 1990, Scottish Power in 1991, British Coal in 1994 and many more.

In 1996 the government concluded the privatization of the UK's mainline railways (other than those in Northern Ireland) via a complex privatization whereby the old British Railways Board was split into a number of separate companies. These companies included separate units responsible for managing the infrastructure, for managing the passenger rolling stock, 6 separate freight companies, six track renewal units, 7 infrastructure maintenance units and a number of other companies.

The infrastructure company was Railtrack PLC, which debuted on the London Stock Exchange in May 1996. Very quickly things began to go wrong. Fatal rail crashes outside London at Southall (in 1997), Ladbroke Grove (in 1999) raised questions about the company's management of the network. In October 2000 there was a further crash, killing four passengers, at Hatfield. In response to this incident extensive speed restrictions and track replacement works were instigated causing major disruption. This disruption and spiraling costs caused the company to enter administration. The new Labour Government

ultimately pulled the plug on Railtrack and in October 2002 placed control over the infrastructure under a new company, a not for profit entity called Network Rail.

Network Rail was carefully established by the government to be classified outside of the public sector, with close attention given to its governance arrangements, and limitations to the control of government over the entity. Consequently, despite the extensive subsidies being provided to the firm, the UK Office of National Statistics (ONS) classified Network Rail as part of the private sector from shortly after its creation, from March 2003. Network Rail remained classified outside of the public sector for the whole of the 2000s, even as its debt steadily climbed.

By the end of 2007, at the start of the global financial crisis, Network Rail Ltd had amassed liabilities of £25bn, including £18.5bn of loans. At the time, the UK's headline fiscal measure, public sector net debt, stood at £535.7bn or 37.8 per cent of GDP. The careful structuring of Network Rail had enabled the UK government to keep debt of more than 1 per cent of GDP off the books!

By 2011, the classification of Network Rail was coming under strain. In January 2011 the European Union Statistical Authority (Eurostat) raised the issue of the classification during its EDP Dialogue Visit. In 2013, Eurostat raised the issue again, and this time noted that the previous classification had been reached while using an older statistical manual, but Eurostat noted the existence of new guidance, in the form of ESA 2010 and other accompany guidance. Meanwhile Network Rail's debt had continued to rise. By the end of 2012 its liabilities had climbed to over £39bn, including £29bn of loans – almost 2 per cent of GDP. Faced with new guidance, and a skeptical Eurostat, the ONS reached a new conclusion. Applying the new guidance, ONS decided that Network Rail should be classified as part of the public sector, given the extent of government financial support and risk exposure. Not only that, the company should be classified as part of general government. In December 2013 ONS announced its decision, which was applied retroactively back to April 2004.

With the stroke of a statistician's pen, UK public sector and UK general government debt through much of the Labour Government was rewritten, following changes to the underpinning statistical manuals. By the time Network Rail was reclassified, the UK's debt had already ballooned as the financial crisis effects continued to be felt, such that the inclusion of Network Rail's debt, and even larger debts (such as those of registered social landlords) were reclassified as public sector debt, but had these classification decisions been applied during the mid 2000s, it's likely that UK rail policy would have been significantly different if "putting things on the Network Rail credit card" had also meant that being recording as government or public sector debt.

23. The Central Bank presents a final, special case. By long standing convention, the National Central Bank is not classified inside the general government, but instead classified as a public financial corporation, even though in many ways it resembles a government unit. In some countries Central Banks are said to be “independent”, in others, the Central Bank has much less operational independence. However Central Banks can and do issue debt of their own, and have considerable liabilities.

24. This has important implications for government or sovereign debt, and makes country comparisons difficult between countries where Central Banks issue their own bonds and debt instruments to manage liquidity, and the majority of countries whose Central Banks do not do this and instead use government issued instruments like Treasury Bills to manage liquidity.

25. In addition, the exclusion of the Central Bank from general government also has implication for sovereign debt if the Central Bank acts as a creditor to the government, and while historically this has often been the case in developing or emerging market economies, in recent years this has become a feature of advanced economies too, especially in those countries that have engaged in quantitative easing.

26. Returning to the USA, after 10 years of QE, a significant part of the US public sector debt is actually now held by the US Federal Reserve. In Q1 2018 the Fed held \$2.4 trillion of Federal Government securities, 14 per cent of the total stock. The Fed held a further \$1.7 trillion of Fannie Mae or Freddie Mac debt securities, around a quarter of Fannie and Freddie’s total debt.

27. In the UK, the Bank of England Asset Purchase Facility (the entity established by the Bank of England as the vehicle for QE) holds UK government gilts worth £435billion, this is around 20 per cent of the total UK gilts owed by the UK government and means that a large part of the UK general government debt is owed to the wider public sector.

28. The Bank of Japan, which has also engaged in significant QE over a long period, holds Japanese Government securities worth ¥457trillion, this is almost half of the Japanese general government liabilities in the form of debt securities, which stood at ¥996 trillion at the end of 2016.

29. So, in conclusion, sovereign debt or national debt reported at the national level can vary considerably. While some countries compile debt for the central government only, in others debt is compiled for general government, or the wider public sector, or some hybrid coverage. However, for users of debt data it is important to understand what the coverage is, to what extent data has been consolidated by eliminating intra-public sector holdings, what might be lurking outside the reporting perimeter, and how countries compare to their peers.

## **B. Instrument Coverage of Debt**

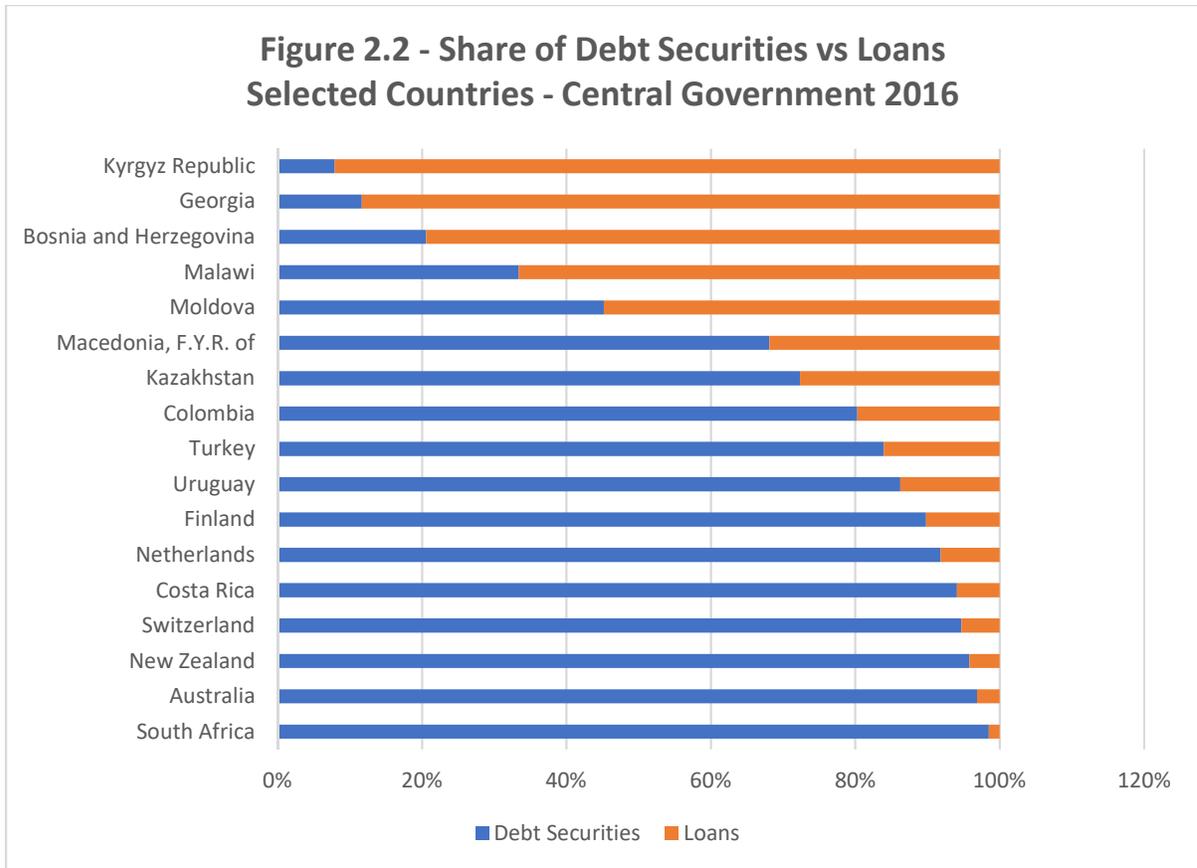
30. Discussion of sovereign or government debt has typically focused on two main types of borrowing by governments, borrowings in the form of debt securities, such as US Treasuries, German Bunds, or UK Gilts, and borrowings in the form of loans, including loans from domestic and foreign commercial banks, and bilateral loans from foreign governments and their lending arms (such as development banks), as well as from international financial institutions like the European Investment Bank, or World Bank.

31. Debt securities are the most common form of debt for most advanced and emerging market countries. Typically issued by public auction, a debt security is a promise to repay an amount at maturity, and will typically include a fixed interest rate, regular interest payments (coupons) and they come in many different varieties.

32. Debt securities can be short, medium or long-term instruments (securities of under 1 year are typically referred to as Treasury Bills), can be issued at their face value (“at par”), for less than face value (“at a discount”), or for more than their face value (“at a premium”). Some instruments are index linked (either the coupon, the principal or both) to the value of the Consumer Price Index, or other indices. Debt instruments can be issued in domestic or foreign currencies. Finally, debt securities can be issued to domestic creditors, or to external creditors, for example through the Eurobond market.

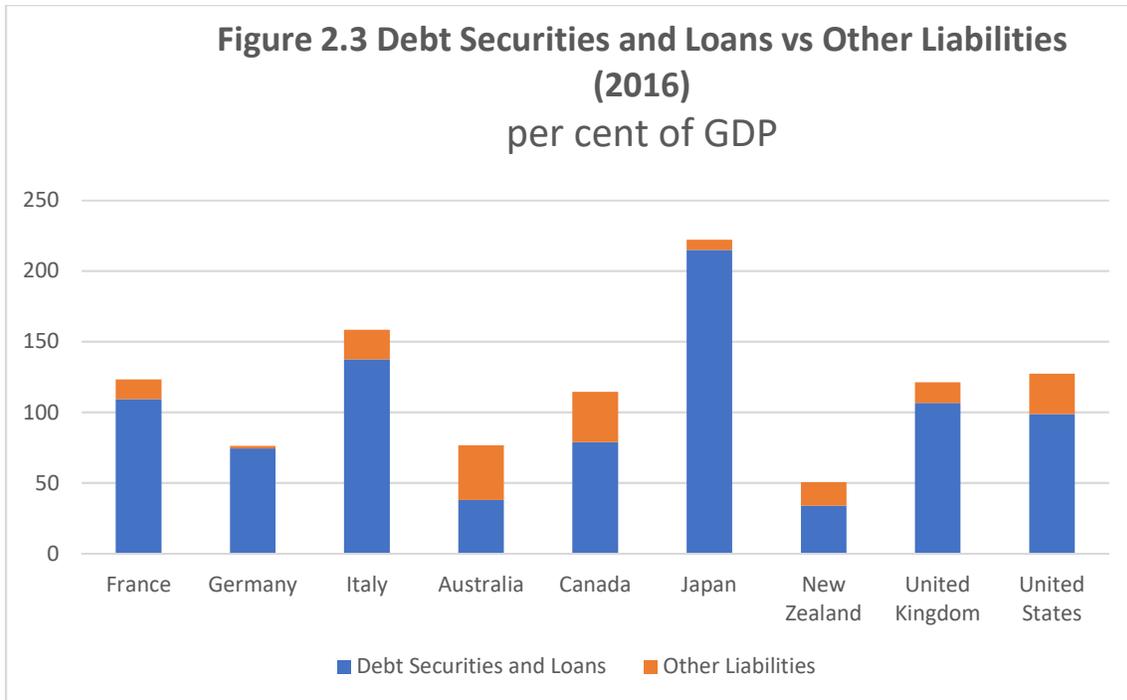
33. As we will discuss further below, the nature of bonds issued has an impact on the measurement of debt, depending on how debt is being valued. In addition, as discussed in Part IV, the maturity profile, currency of issuance and residency of creditor can all have important implications

34. For low income countries, with poorly developed financial markets, or indeed no access to credit markets, debt securities are not an option. Instead borrowing is in the form of loans, often on highly concessional terms, from bilateral or multilateral lenders, as shown in figure 2.2.



35. The fundamental distinction between a debt security and a loan is that debt securities are designed to be tradable or *negotiable* whereas loans typically are not, so debt securities will often be redeemed by someone other than their original purchasers.

36. However, the accounting and statistical communities recognize that a government can incur additional liabilities, such that focusing just on debt securities and loans could mean missing considerable government liabilities.



37. Examples of other liabilities, for government and the wider public sector, include currency and deposits, other accounts payable, financial derivatives and in many countries, pensions.

38. Currency and deposits are an integral part of the balance sheet of some governments, and certainly the wider public sector. For the wider public sector these include the deposits held in public sector banks, or reserves held with the Central Bank, or currency issued by the bank, but it is not unknown for governments themselves to have currency and deposit liabilities, for example this might include requiring state-owned enterprises to deposit their own funds in the government's single treasury account. The European Union's Maastricht debt includes liabilities in the form of debt securities, loans *and currency and deposits*, and while currency and deposits are small in most EU member states, in 2016 they were much more significant in Ireland (8 per cent of GDP) Italy (14 per cent), Portugal (15 per cent) and the UK (9 per cent)

**Box 2.2 Currency in Circulation and Central Bank Reserves – Debt or Non-Debt?**

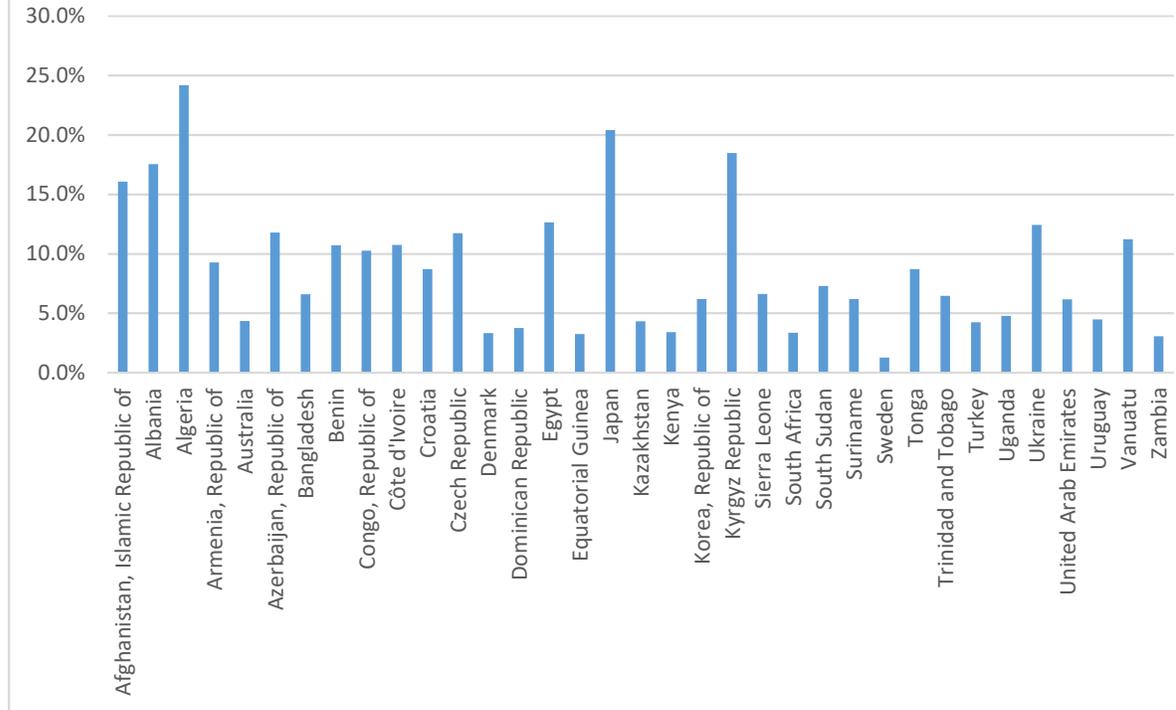
A significant form of balance sheet liability in most countries is the Monetary Base, comprised of currency in circulation (notes and coins) and central bank reserves, but is this really debt?

To the extent that debt is only compiled for general government, and excludes the Central Bank, then this question can be sidestepped. But if you are compiling public sector debt, as is the case in a number of countries, then this is a valid question.

The treatment of notes and coins as a liability and as debt of the issuer is arguably a legacy of the gold standard, when notes and coins were convertible to gold, but in today's fiat currency world, this is obviously no longer the case, and there is a good argument for treating notes and coins like gold – as a financial asset with no matching liability. However, the current treatment of notes and coins as public sector liabilities

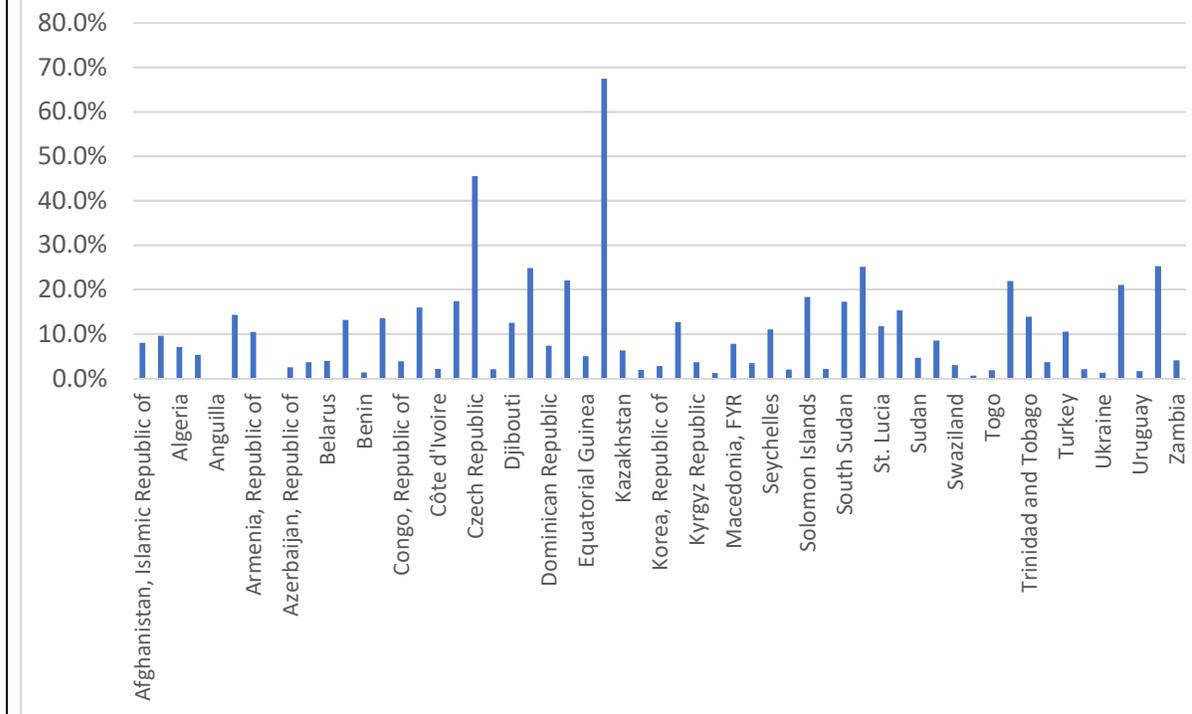
Whether currency in circulation is debt matters, clearly, but it would be less of an issue if all countries had similar amounts of currency in circulation, in reality it varies considerably in size. At one extreme are cash reliant countries with poorly developed banking systems, such as Afghanistan, Algeria, or the Kyrgyz Republic, with currency in circulation of 16, 24 or 19 per cent of GDP respectively. At the other extreme are advanced economies with highly developed cashless economies, such as Denmark, or Sweden, where currency in circulation is just 3.3 or 1.3 per cent of GDP respectively. But there are exceptions to this general rule, such as Japan. Japan has currency in circulation of over 20 per cent of GDP. This is not due to lack of development of Japan's banking system, but cultural factors including low crime rates, high levels of trust and a long-standing preference for cash.

**Figure 2.4 Currency in Circulation end-2017  
per cent of GDP**



Central Bank reserves, the other major component of the Monetary Base raise similar questions about whether they are really debt, especially in those countries with actual or de facto reserve requirements. While these appear on the Central Bank balance sheet as currency and deposit liabilities, and therefore would appear in a broadly defined measure of public sector debt, they are not the same as debt securities or loans, and again, vary significantly in size. Whereas the average central bank reserves are around 10 per cent of GDP, in some countries they are considerably higher, at 46 per cent of GDP in the Czech Republic, and 67 per cent in Japan.

**Figure 2.5 Central Bank Reserves 2017  
per cent of GDP**



Finally, the question of whether central bank reserves are debt or not raises questions about the impact on debt of Quantitative Easing. Over the last decade, since the financial crisis, Central Banks in Japan, the UK, and the USA have acquired significant holdings of their own government bonds. While this has not reduced government debt, the composition of public sector debt has changed, reducing the amount of debt in the form of debt securities, to a much higher proportion of central bank reserves. As a result, if you were to use a broad sectoral coverage of debt that included both the government and the central bank, but a narrow instrument coverage of debt (just debt securities and loans), then QE would have resulted in a lowering of public sector debt. Using a narrower sectoral coverage, or broader instrument coverage would mean QE had no impact. Again, this demonstrates how much these factors matter to our understanding of sovereign debt.

39. Governments, like most entities, also carry, at any point in time, amounts of accounts payable, short term obligations to pay suppliers or other creditors. When expenditure is recorded on an accrual basis, any expenditures recorded where payments have not yet been made are recorded as giving rise to an account payable on the government balance sheet. These vary significantly in size, from 3 per cent of GDP in Latvia, to double digit amounts in France (12 per cent) or Canada (18 per cent). For countries that record their government spending on a cash basis, not recording accounts payables in the stock of debt enables them

to run up, but not reveal, mounting domestic arrears on these payables, that would be recorded as expenditures and liabilities in accounts payable under accrual based accounting, that most governments require their private sectors to produce.

40. Government's (and corporations) are also continually coming up with new schemes to deliver public policy that can have the effect of hiding debt off the balance sheet, and whether intentional or not, these schemes can massage the publicly available debt numbers. To take one well known example, during the late 1980s, governments in the UK and USA began to develop a new model for the construction of public infrastructure, the public private partnership. Under this model a private sector partner would build an asset and lease the asset to the government over a long term contract. Government would get the benefit of a new hospital, prison or school, but the debt would be incurred by the private partner and no debt would appear on the government balance sheet. Today there are 1000s of PPP style contracts across dozens of countries, which have funded \$billions of new infrastructure. New guidance has been developed, by the IMF, by Eurostat, by the International Public Sector Accounting Standards Board and national authorities to provide guidance on whether or not to record these contracts as government liabilities, essentially as finance leases, and therefore a form of loan, but many countries do not follow these rules in their own debt statistics.

41. Finally, government's may have significant liabilities in the form of employment related pension entitlements for government or public sector employees, as well as broader obligations or fiscal risks, which while not typically recording on a government's balance sheet, are often recorded as memorandum items or as contingent liabilities such as government guarantees. These are discussed in more detail in Part III.

42. In short, narrowly focused debt statistics, that only include traditional debt securities and loans may not tell the full story of government debt. For some countries, narrowly focused debt will omit significant amounts of currency and deposit liabilities, or stocks of accounts payables that could add significantly to stock of debt. While not debt securities and not loans, these are very real claims on the government that a more comprehensive instrument coverage would reveal.

### C. Valuation of Debt

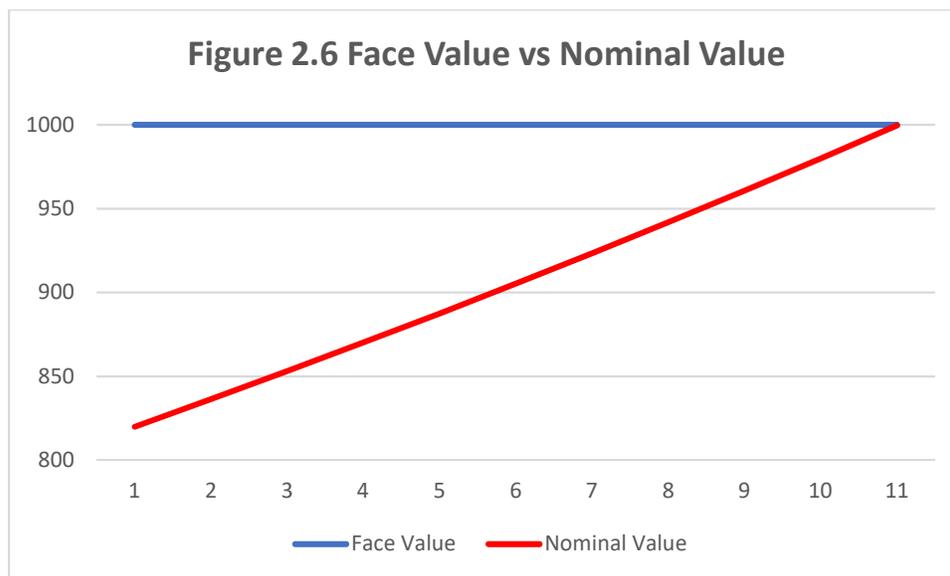
43. A final important factor in thinking about sovereign debt is the valuation of that debt, especially, but not only, in relation to government debt securities. Broadly speaking, debt can be valued in three main ways, but which valuation is used can have a significant impact on the value of debt stock.

44. For most countries, debt is valued at *face value*, or the value to be repaid at maturity. Some countries report debt at *nominal value*, defined as the principal sum borrowed plus interest accrued and not yet repaid. In National Accounts, the basic principle is to value debt

at the *market value* – which is the value for which a bond will change hands in the secondary market (and which can be readily observed in the case of government bonds with well developed capital markets, such as the bonds for most advanced economies.

45. At maturity of a particular instrument, all of these valuation methods will arrive at the same ultimate point, but during the lifetime of the bond these different valuations can diverge significantly. In addition, valuation has a major impact depending on the nature of the bond that is issued.

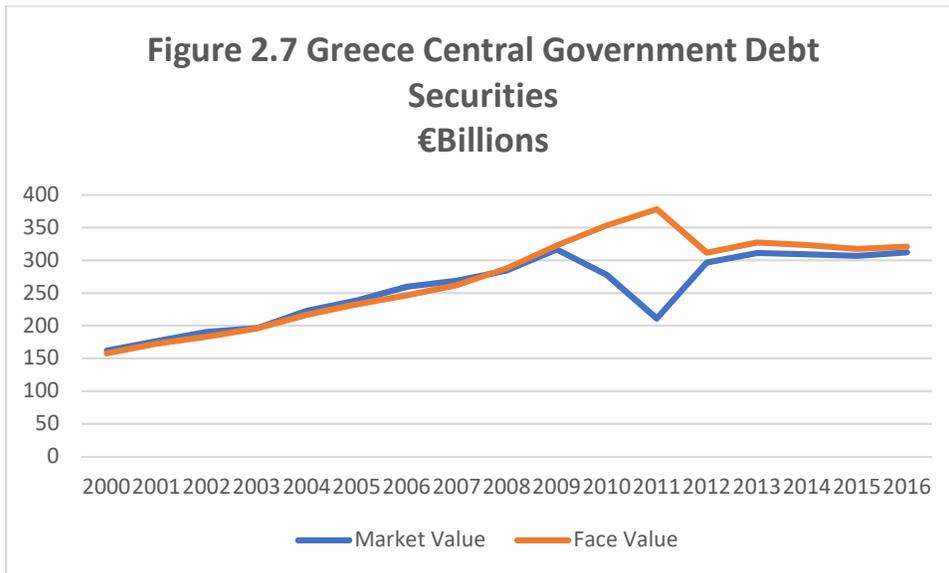
46. Consider bonds issued at a discount, or even a deep discount. Examples of these include Treasury Bills, which typically have short term maturities, but other longer term instruments are not unknown. These bonds may pay a small coupon, or no coupon at all. Instead investors pay a discounted amount at issuance, and then receive the face value of the instrument at maturity. The difference between the issue price and redemption amount is essentially equivalent to the interest. Now consider the difference between face value and nominal value of such instruments. At issuance, the nominal value is lower than the face value, but over the life of the instrument, the nominal value increases as interest accrues before meeting face value at the time of maturity.



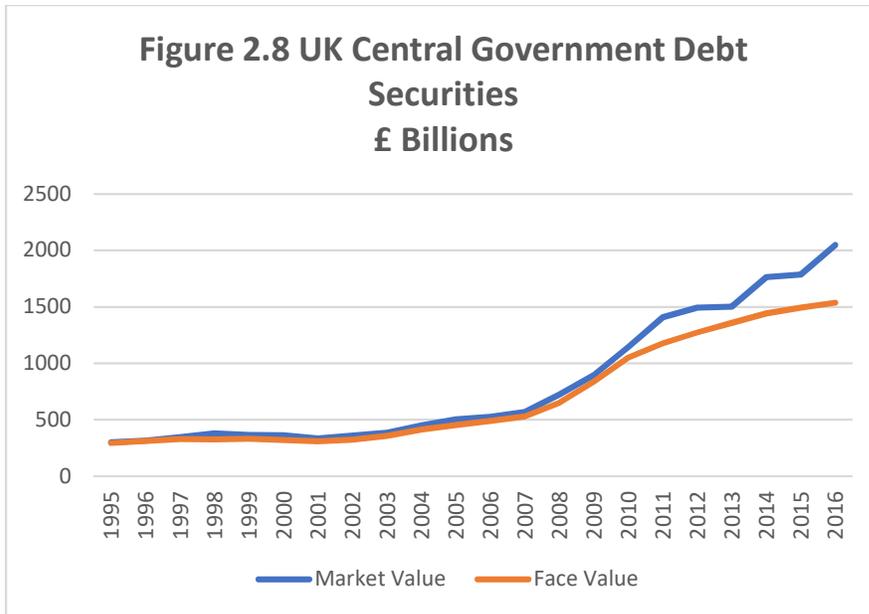
47. Depending on the local public debt law, and definitions in use for headline measures of debt, government debt management offices may have incentives to issue more or less of particular types of debt instrument. From an investor's perspective, as long as the government is deemed solvent, and as long as the eventual yield is satisfactory, because they will typically record the debt at fair or market value in their financial statements, they will be indifferent to the types of instrument issued, but the ability to game the debt through issuance of different kinds of debt instruments, means users need to be aware of the valuation basis of debt, and the types of debt being issued.

48. Notwithstanding the differences between face and nominal value as a result of differing instruments, differences between face or nominal and market value can emerge, either during periods of market panic (as investors fret that a government may default) or conversely during a flight to safety, when the price of government assets are bid upwards by investors seeking safe haven investments.

49. Figure 1 shows the first scenario, in relation to Greece. During the global financial crisis, and at the height of the Greek debt crisis in 2010 and 2011 the market price of Greek government debt securities plummeted, even as debt at face value continued to rise.



50. Figure 2 shows the second scenario. Throughout the 1990s until the financial crisis, UK debt securities were little different at face and market value, but since the financial crisis a global shortage of safe assets, coupled with QE in the UK has seen the market price for UK gilts increase, such that by the end of 2016 UK central government debt securities were worth considerably more at market value than at their face value. The same thing has happened in the USA.



51. The valuation of debt therefore matters, but not just in debt securities. While its not uncommon for debt securities to be valued at face, nominal or market value, Other kinds of liabilities are valued in different ways, and while valuation of some liabilities, such as currency and deposits, or loans, or even accounts payable is relatively straightforward, for pension entitlements, as discussed in Part III, valuation is extremely sensitive to the method of calculation.

52. Valuation is critically important to measures of sovereign debt, whether narrowly constructed, using just debt securities and loans, or broader measures including all government liabilities but especially if the estimate includes pension entitlements (as discussed in Part III). At the least, users of debt data should aim to understand what valuation is being used, for which instruments and the extent to which a different valuation could provide different insights.

### III. THE PUBLIC SECTOR BALANCE SHEET

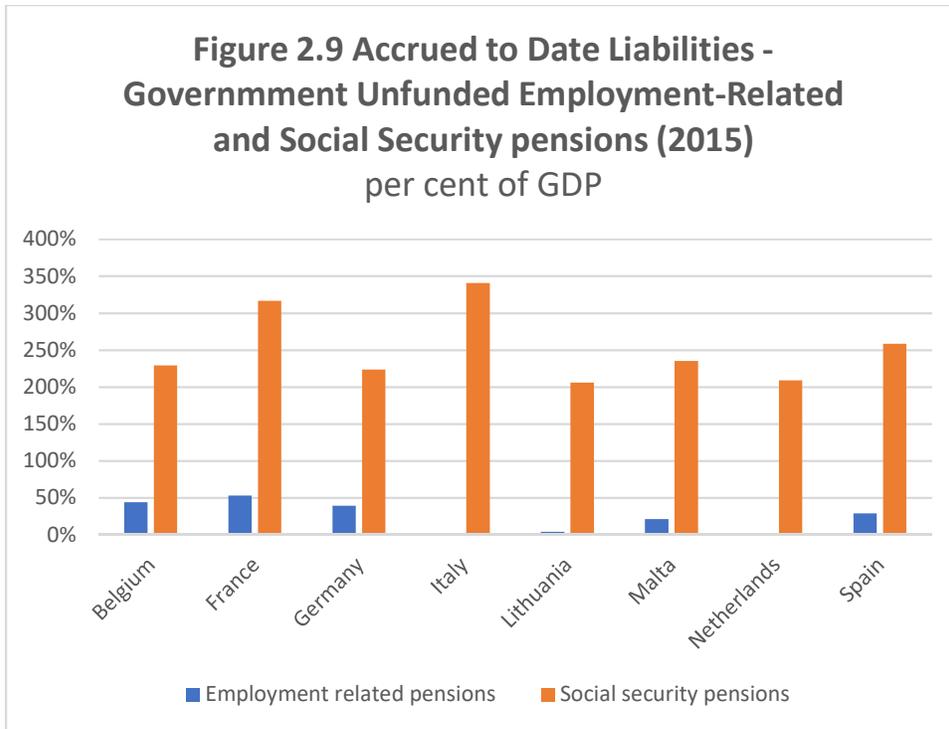
53. Discussions of sovereign debt focus on an important part of the government balance sheet, but this is only part of the story of a government's financial health. Financial statements for multinational enterprises or other large companies will typically include not just information on debt, but the whole balance sheet, as well as an income statement, cash flow statement, statement of changes in equity and extensive notes to the accounts with disclosures on material risks, including contingent liabilities. It is possible to compile similar information for government or the wider public sector that will provide a broader picture of the state of a nation's finances. Compiling this data through time, to compile an intertemporal balance sheet, also provides clarity on trends and aids analysis and understanding.

#### A. Non-Debt Liabilities

54. As discussed in Part II, besides traditional debt liabilities (debt securities and loans), government or public sector liabilities also include other "non-debt" liabilities. These consist mainly of other accounts payable, currency and deposits, or, most significantly, pensions.

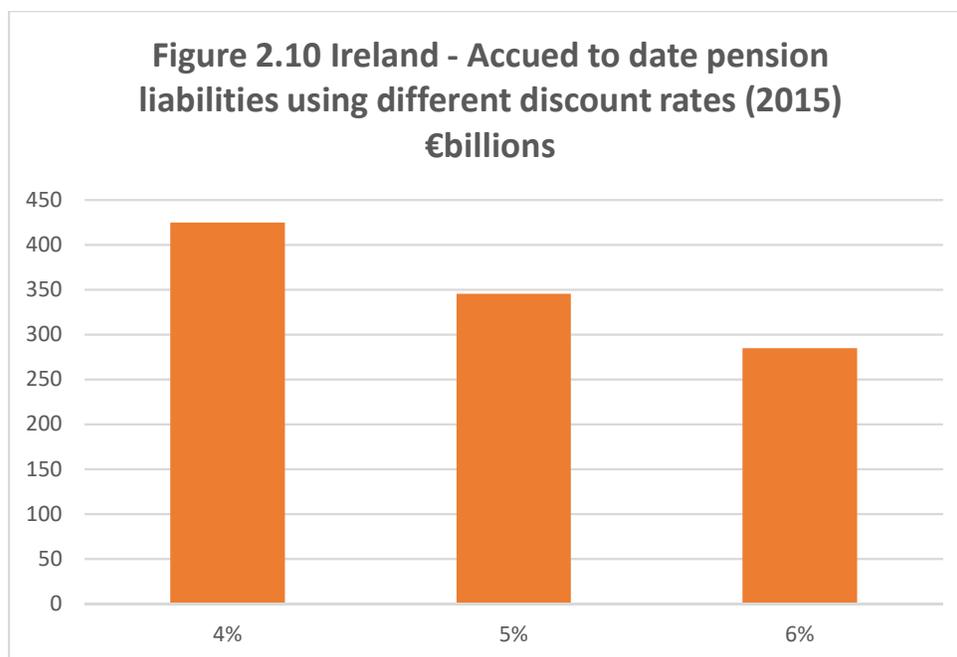
55. Currency and deposits and other accounts payable were discussed in Part II, but pension liabilities, while not always often thought of as sovereign debt, can be as large or larger, depending on the valuation, than traditional concepts of sovereign debt in many countries. Government pension obligations can be relation to unfunded pensions schemes managed by the government or to shortfalls for funded schemes for public sector employees. These liabilities, which can be difficult to measure, can be very large. At the end of 2015, Belgium estimates that employment related pension liabilities for government employees stood at €181 billion, or 44 per cent of GDP.

56. In addition, under most international statistical and accounting rules, the government balance sheet doesn't even include liabilities of social security, state, or national pensions that are apply to the whole population and which are funded on a pay-as-you-go basis or out of general taxation. This is because such social security schemes are not deemed a contractual obligation by statistical and accounting guidance, and can often be changed or amended by the government but for many households there are strong expectations that these will be paid, especially households already in retirement. In 2015 Germany estimated that liabilities of its social security schemes totaled some €6.8 trillion, or around 226 per cent of GDP. Figure XX shows the value of accrued to date liabilities of unfunded, employment related pensions and social security pensions in 8 EU member states, at the end of 2015. These types of figures, if included inside gross debt, would dramatically change perceptions of gross debt for these countries, anchored as they are by the Maastricht debt threshold of 60 per cent of GDP.



57. Valuation matters with pension liabilities as much, if not more, than with debt liabilities. Pension liabilities, whether employment related pensions on the government balance sheet or social security obligations disclosed elsewhere, are difficult to value. They are conventionally valued by actuaries as the discounted value of future pension payments. This means bringing together real information on the participants in a pension scheme, with assumptions about future mortality rates, wage growth and a discount rate. Small changes in these assumptions, especially the discount rate, can have significant impact on the resulting liabilities.

58. EU countries are required to compile estimates for accrued to date liabilities of their various national pension systems, using a unified and consistent set of assumptions including a discount rate of 5 per cent. Countries are also asked to report sensitivity analysis, calculating the liabilities using a 4 and 6 per cent discount rate. The impact is significant. Taking Ireland as an example, under the central case, liabilities associated with its government employment related pensions and social security schemes at the end of 2015 stood at €345bn (132 per cent of GDP). Under a 1 percentage point higher discount rate, liabilities fall to €284bn (108 per cent of GDP). By contrast using a 1 percentage point lower discount rate would see liabilities rise to €424billion, (162 per cent of GDP).



59. Finally, some governments also manage their debt using a final type of instrument, a financial derivative. While not common, and not a large part of debt, some government debt management offices use hedging instruments to manage exchange rate or interest rate risk.

## B. Contingent Liabilities

60. Some sovereign debt definitions also include contingent liabilities, such as publicly guaranteed debt. Contingent liabilities are liabilities that materialize when one or more events occur, but which otherwise reflect either liabilities of nongovernment units, or potential obligations that may or not materialize.

61. The balance sheet approach can also help bring out contingent liabilities. Extending the coverage to the public sector brings contingent liabilities from public corporations into the balance sheet. However, a range of other contingent liabilities remain outside. These include contingent risks from the private financial sector (such as explicit guarantees through government deposit protection schemes as well as implicit guarantees for “too big to fail institutions”), PPPs, natural disasters and legal risks. The potential impact from these contingent liabilities on public finances can be informed by other assessments, such as FSAPs, fiscal transparency evaluations and countries’ fiscal risk statements. Bringing out these risks of the realization of contingent liabilities on public finances can provide guidance on the size of buffers that may be needed to avoid pro-cyclical policy adjustments during a crises, the channels through which fiscal risks propagate, and where risk management efforts should be directed (IMF 2016a).

62. Contingent liabilities can be large and consequential, but may be hard to quantify precisely. In some cases, the government’s exposure to contingent liabilities can be quantified. In others, quantification may be hard (open-ended schemes) or best not be published, in order not to affect the government’s negotiation position. In addition to explicit contingent liabilities, there are often implicit liabilities, such as political or public pressure to stand behind certain institutions, even for liabilities that are not explicitly guaranteed. In the USA, although there were many explicit statements to the effect that the debt of Fannie Mae and Freddie Mac were not guaranteed by the US Federal Government, prior to the crisis these two mammoth government sponsored entities were issuing AAA rated mortgage backed debt securities (backed by increasingly risky underlying loans), despite being considerably riskier propositions than the US Government and at the height of the financial crisis these two units, both far too big to fail, were ultimately rescued by being placed into “conservatorship” by the US Treasury.

**Box 2.3 How Contingent Liabilities gave the Celtic Tiger<sup>8</sup> a heart attack**

At the start of the 1990s, Ireland was a poor country by West European standards, with high poverty, unemployment, inflation, and low growth. Then, something dramatic happened starting in the mid-1990s. Between 1995-2000 the Irish economy expanded at an average rate of 9.4 per cent and continued to grow at an average rate of 6 per cent until 2007 earning the country the nickname the “Celtic Tiger”. In 2008, the Tiger had a massive heart attack.

Starting in 2008, Ireland had to contend with an interlocking sovereign–banking–real economy crisis. After facing heavy losses on property-related assets in the spring of 2008, Irish banks suffered a run on wholesale funding in the Fall—prompting massive recourse to Eurosystem liquidity support.

In response, the government issued a blanket guarantee from September 2008, transferred large distressed property development and commercial real estate assets from banks to the National Asset Management Agency (NAMA) from April 2009, and provided large scale support for two failed banks (Anglo Irish and Irish Nationwide Building Society), and large equity injections in other banks (IMF, 2012).

The materialization of these contingent liabilities together with a full-fledged economic bust ultimately led the authorities to request a bailout. A steep decline in construction activity drove the country into recession from 2008 with the sharp world trade contraction in 2009 adding to the shock to Ireland’s highly open economy. The fiscal deficits ballooned and public debt shot up from 25 per cent of GDP in 2007 to over 90 per cent by 2010 (IMF, 2012). Confidence in the country’s fiscal position crumbled, primarily as a

<sup>8</sup> This description of the Irish case is based on IMF reports. It borrows heavily from the 2012 Article IV report (IMF 2012). Other key sources included Ireland’s Fiscal Transparency Assessment (IMF 2013) and IEO (2016).

consequence of the close sovereign–bank interlinkages. Deepening uncertainty about the ultimate scale of the banking sector losses, and hence growing doubts about public debt sustainability, drove a brutal switch in market sentiment in the Fall of 2010, cutting the sovereign off from market financing. In December 2010, the Irish government requested EU and IMF financial support. The total financing package of euro 85 billion (about US\$113 billion at the time) was provided jointly by the EU Financial Stabilization Mechanism/European Financial Stability Facility, bilateral partners, the IMF and the government’s own resources. With an estimated fiscal cost of some 40 per cent of GDP, Laeven and Valencia (2012) consider Ireland’s banking crisis the second costliest in advanced economies since at least the Great Depression.

### C. Public Assets, Net debt, and Net Worth

63. In 2016, Norway GG debt was 36 per cent of GDP, low compared to many other advanced economies. However, Norway’s net debt was -85 per cent of GDP. meaning Norway didn’t have net debt, instead it had net assets of 85 per cent of GDP. In fact, Norway’s financial situation is rosier still, Norway’s net financial worth (all financial assets minus all liabilities) is 290%, Norway’s net worth (including all nonfinancial assets) is over 350% of GDP. While Norway is an outlier, the traditional focus on government liabilities is nowhere near the whole story of a government’s financial position.

64. An assessment of public wealth should look beyond debt. To be comprehensive, it should incorporate government assets and non-debt liabilities, as well as assets and liabilities of the broader public sector outside of general government. This section will focus on these elements of the public sector balance sheet.

65. To fully understand a government’s financial position one should look at its entire balance sheet, much like one would look at a corporation’s balance sheet to assess its financial position. Looking beyond sovereign debt at a country’s public sector balance sheet (PSBS) brings out government assets and non-debt liabilities, as well as the assets and liabilities of public corporations.

66. The constituent parts of the public sector balance sheet are large, consequential and vary over time. They embody the assets and liabilities of the general government as well as those of the public corporations. Assets include financial assets, and non-financial assets.

67. *Financial assets* typically include cash deposits, government loans to other sectors, as well as equity in public and private corporations, as well as debt security holdings of pension and sovereign wealth funds, which average [x] per cent of GDP. These assets may be marketable and relatively liquid (particularly if they are listed and traded in deep markets), but they may also be hard to value (such as equity in state owned enterprises) or hard for the

government to access (if the assets are explicitly tied to pension, social security, or other obligations, or held by subnational government units they may not be available to finance other funding needs). Some financial assets can be relatively volatile, due to substantial revaluations as asset prices fluctuate.

68. *Non-financial assets* typically include buildings, infrastructure, land and natural resources. Many of these comprise the public capital stock, and play an integral role in delivering economic and social outcomes. Existing government data are often missing or poorly reported, with serious valuation issues (Bova et. al., 2013). For commodity producers, these can represent the largest asset on the state's balance sheet.

69. As discussed in the previous section, coverage of data is important. If debt data extends beyond the general government to the entire public sector, then the balance sheet should also be extended to include the assets of *public corporations*. This brings the assets, liabilities and operations of public corporations into the picture.<sup>9</sup> It strengthens fiscal analysis, as in many countries public corporations represent a significant source of fiscal risk, either through explicit or implicit guarantees, or, in some cases, a direct draw on the public purse (Bova et. al., 2016). Bringing these entities into the balance sheet explicitly recognizes the risks stemming from the sector, and shows the full scale of assets and liabilities that the government controls. It also allows for a more comprehensive understanding of the risk factors across the balance sheet, providing opportunities for better asset and liability management. The public corporations sector includes both financial and non-financial corporations. The central bank is included in the former, but is separately identified, due to its unique policy role, and the fact one of its largest liabilities – issued currency – has no ongoing cost.

70. Including natural resource assets introduces a greater rigor to the management of the public's wealth. In standard fiscal analysis, sales from natural resource extraction are treated as a revenue, increasing the net worth position of the state. The balance sheet approach instead recognizes them as an asset, which once extracted and sold represents a conversion of one asset (resources) for another (cash). Apart from extraction costs, this conversion is net worth-neutral. The ultimate impact on public wealth is then determined by what the government does with the cash receipts. If revenues from sales of natural resources are used to fund ongoing expenditure, net worth decreases, whereas if they are used to purchase other assets (financial or non-financial), net worth remains broadly unchanged. Estimates used here for the stock of mineral and energy resources correspond to the net present value of the expected pre-tax cash flows resulting from their commercial exploitation.

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<sup>9</sup> The equity value of public corporations is included within general government accounts, as part of financial assets. Thus, the inclusion of public corporations within the public sector has no impact on net worth.

71. Extending the perimeter of the balance sheet to the public sector requires a consolidation of cross holdings of assets and liabilities by different public sector entities. These are country specific, but the largest cross holdings are typically government deposits at the central bank, financial corporations' holdings of government securities, the government's equity stake in public corporations, and loans between different public corporations. These cross holdings can be a channel through which fiscal risks spread, as issues that emerge in one entity can cascade through to others.

72. As with the valuation of debt and pensions, the valuation of assets matters, and is not straightforward. Valuation can be a challenge, particularly for nonfinancial assets that are rarely traded, and with differing approaches taken for different components of the balance sheet across countries—in part due to differences in accounting standards. Asset valuations are also more volatile than debt, and can be highly correlated with the economic cycle—meaning their values can be at their nadir when financing needs are most pressing.

73. In addition, many assets are illiquid or not marketable, and would not be available to meet rollover or deficit financing needs in the short term. Financial assets are mostly marketable and relatively liquid, with the exception of direct loans and non-listed equity holdings in public corporations, which may also be less reliably valued. However, some financial assets may be explicitly tied to pension or social security obligations, and may not be available to finance other funding needs. Non-financial assets include buildings, infrastructure and land. Many of these comprise the public capital stock, and play an integral role in delivering economic and social outcomes. They are often illiquid and non-marketable, or only marketable over the medium to long-run (e.g., privatizations).

74. Taking assets on board creates a comprehensive view of public wealth. The main indicators used to bring this out are net debt, net worth and net financial worth:<sup>10</sup>

- *Net worth*, the headline measure of government wealth. It is calculated as total assets minus total liabilities. Net worth suffers from the various valuation issues that accompany the constituent parts of the balance sheet, particularly from non-financial assets. Furthermore, it makes no distinction between assets that can be sold to meet financing needs, and assets that are not marketable.
- *Net financial worth*, a measure of financial wealth, calculated as total financial assets less liabilities. In general, financial assets and liabilities are more reliably valued, and more readily marketable than non-financial assets.

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<sup>10</sup> Besides net (financial) worth, a range of other indicators provide important information on the state and resilience of public wealth. These include the standard measure of gross debt, as well as measures that explore mismatch risks and degree of hedging present in the balance sheet.

- *Net debt*, a narrow measure of wealth, calculated as debt liabilities (most commonly debt securities, loans and currency and deposits), minus corresponding financial assets. This definition leaves out hard to value assets, such as government equity holdings in state owned enterprises.

75. The evolution of net worth presents a somewhat different picture from the more standard evolution of debt. A decomposition of post-crisis developments in a selected sample of countries shows the relative importance of debt accumulation, public investment, operations in the public corporation sector and valuation changes

76. Overall, the public sector balance sheet complements the picture presented by government debt. It provides the most comprehensive view of public wealth. By broadening the focus, it sheds light on the assets governments control, as well as liabilities that receive scant attention in standard analysis. It thus complements data and analysis based purely on debt, and this way can enrich fiscal analysis as well as the policy debate.

#### IV. SOVEREIGN DEBT COMPOSITION

##### A. Supply (Issuance of Sovereign Debt)

77. Analysis of government or sovereign debt doesn't only focus on the total stock of gross or net debt. The characteristics of debt also matter enormously to whether a country has a debt problem or not. Analysis therefore will often also look at the currency of issuance, the residency of the creditor, and the maturity profile.

78. Currency of issuance remains a major issue. While most large emerging economies issue debt in their own currencies, for emerging and developing markets, it's long been the case the countries borrow in foreign currencies, especially the US Dollar, but also in Japanese Yen, Euros, UK Sterling or Swiss Francs. BY borrowing in foreign currencies countries may be able to access deeper capital markets, or borrow at lower headline interest rates but this exposes the borrower to what can be significant exchange rate risks. Borrowing in foreign currencies also means the Central Bank is not able to step in during a crisis by printing more money. This explains, to some extent the differences between Greece, in the Eurozone and not monetarily sovereign, and Iceland, during the financial crisis.

79. Maturity profile also is an important consideration. As discussed earlier, countries issues a mixture of short and long term debt, but the longer the maturity, the fewer short term refinancing or rollover risks exist.

80. Finally, residency of creditors can be important. Countries often issue debt both domestically and externally, but many analysts provide a much greater emphasis on the amount of external debt, and are much less concerned with the stock of domestic debt (which may be held by domestic financial institutions and households for whom withdrawing capital is not as much of an option). Heavy reliance on external creditors exposes borrowers to risks

related to the global capital markets (assuming the debt is commercial debt), and means creditors are exposed to shifts in investor sentiment, capital flight risks and hot money flows all of which can come to a crunch during a crisis.

81. The total stock of government debt increased sharply after the global financial crisis, as government issued large-scale debt to finance crisis-era fiscal stimulus plans and/or financial sector support programs. As a result, the outstanding stock of government debt for advanced economies rose from around US\$30 trillion to US\$50 trillion during 2007-17 (Arslanalp and Tsuda 2014a, updated). There was a similar, although less dramatic, increase in emerging market government debt—government debt of 24 major emerging markets rose from US\$5 to \$12 trillion during 2007-17 (Arslanalp and Tsuda 2014b, updated).

82. As a result, advanced economy government debt currently stands at a post-World War 2 historic high of over 100 percent of GDP. For emerging markets, the corresponding figure is about 40 percent of GDP, which is also higher than a decade ago but still below the peak of 63 percent of GDP reached at the end of the 1980s (Mbaye, Badia, and Chae 2018).

83. At the same time, we have seen significant improvements in the composition of debt, broken down by currency, maturity, and jurisdiction of issuance. Over the last decade, “dangerous” forms of debt (i.e. short-term and/or foreign currency debt) that increase the likelihood of sovereign debt crises or render these crises more difficult to manage have declined. Similarly, issuance in domestic jurisdictions has increased, allowing countries to avoid some of the complex legal issues associated with debt restructurings in foreign jurisdictions.

84. These improvements have been prevalent especially in emerging markets. During 2007-2017, the average share of government debt securities denominated in local-currency increased from 63.8 percent to 66.5 percent for a sample of 24 major emerging markets (Arslanalp and Tsuda 2014b, updated). During the same period, the average maturity of government debt securities increased from 6.9 years to 8.3 years for a sample of 17 emerging markets tracked by the BIS (BIS debt securities database, Table C2, residual maturity basis). The BIS figures also show that emerging market debt securities are now predominantly domestically-issued, with international debt issuance still rising in absolute terms but falling in relative terms (BIS debt securities database, Table C1).

85. Having said that, historically large difference in debt composition across emerging markets exist. Jeanne and Anastasia (2006) document these differences for 19 emerging markets during 1980-2004 and show that emerging Asia has had debt structures very similar to those in advanced countries, with a high share of long-term domestic-currency debt. In contrast, Latin America has historically had low shares of long-term domestic-currency debt.

### **Box 2.4 Different Approaches to External Debt**

Some definitions of sovereign debt focus in on the idea of external debt, as opposed to domestic debt. A number of different definitions have been used to define external debt which may also be relevant for different purposes:

*Residency.* Following the balance of payment method, the first approach is to define external debt as a resident's liability to a non-resident. For instance, a German bank lending to say Brazil would be an external debt. A debt would be domestic if both parties, debtor and creditor, are residents of the same country (Gianviti 1989). Accordingly, a Brazilian subsidiary of a German company lending to Brazil would be a domestic debt.

*Currency.* A second approach is to distinguish the debt whether it is denominated in domestic or foreign currency. This is important since the sovereign needs to purchase foreign currency to service foreign currency debt. Foreign exchange debt also exposes the debtor to foreign exchange risks due to the devaluation risk of the domestic currency (Gianviti 1989). For countries using another country's currency as a domestic currency (for instance Kosovo using the euro or Ecuador using the US dollar) or for countries in a currency union (such as the euro-area), the currency may be both a domestic and a foreign currency; however, the country in question has no or limited control over such currency.

*Governing law.* A third approach may be to use governing law as the deciding factor to determine external or international. A debt would be external if the liability is governed by the law of another country than the issuing country. This distinction is motivated by a recognition that, with respect to debt governed by domestic law, the legal leverage possessed by holdout creditors is more limited given the capacity of the sovereign debtor to modify its domestic law (IMF 2014). For instance, to facilitate the restructuring of its domestic law governed bonds, Greece in 2012 enacted legislation that aggregated claims across all of the affected domestic law issuances, thereby eliminating the power of creditors to obtain a blocking position in an individual issuance.

#### References:

IMF 2014, Strengthening the contractual framework to address collective action problems in sovereign debt restructuring, Washington 2014.

F. Gianviti, The concept, characteristics and pathology of external debt in: Collected Courses of the Hague Academy of International Law, vol. 215, 1989, p. 232-245.

## B. Demand (Holders of Government Debt)

86. So far, we have discussed how to define and track the outstanding supply of sovereign debt over time. The demand side of government debt—who is holding the debt at any point in time—also matters greatly. In fact, events during the recent euro area debt crisis—and earlier during the emerging market crises of the 1990s—have illustrated that sovereigns, just like banks, can be subject to runs, highlighting the importance of the investor base of debt. Governments have seen sharp rises in borrowing costs or even lost market access following dramatic shifts in their investor base, even when the supply of debt remained unchanged.<sup>11</sup>

87. While there are several ways to track the supply of debt, statistics on the investor base of debt are harder to come by. Public debt managers typically have only limited information on the ultimate holders of government debt securities once those get traded in secondary markets. For example, a debt manager may pay scheduled interest to an account maintained by Euroclear—a Belgium-based settlement and custodian company—but would not know whether the payment is for a commercial bank in Germany, a fund manager in Luxembourg, or a foreign central bank in Asia.

88. This data gap poses a risk factor. Fortunately, one can use a standardized approach to compile internationally comparable estimates of investor holdings of sovereign debt. The methodology, developed by IMF staff (Arslanalp and Tsuda 2014a, 2014b), facilitates tracking the investor base of more than US\$50 trillion of sovereign debt on a quarterly basis starting from 2004. The estimates are constructed from publicly-available international and national data sources and decompose the investor base into six types of investors—domestic central bank, domestic banks, domestic nonbanks<sup>12</sup>, foreign official sector, foreign banks, and foreign nonbanks. The breakdown allows for constructing risk indices—investor base risk index (IRI) and foreign investor position index (FIPI)—to assess a sovereign’s vulnerability to a run by investors.

89. It’s worth noting that domestic non-banks, in many countries, include public sector units such as pension funds, provident funds, or sovereign wealth funds, that like the Central Bank may ultimately hold a lot of government debt. To take one example, in Singapore, at

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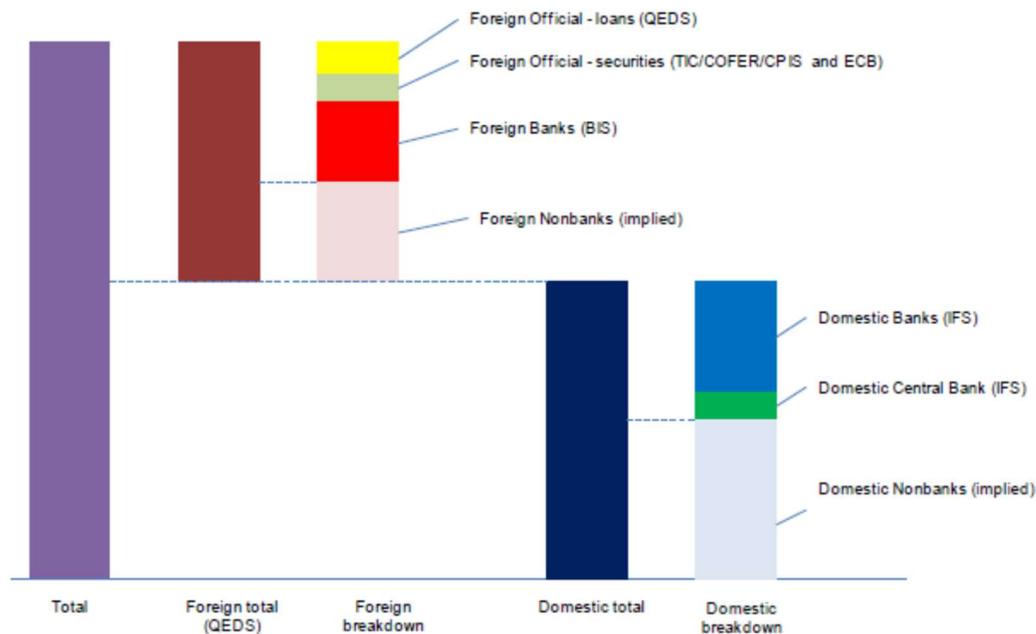
<sup>11</sup> In general, shifts in the sovereign investor base can (i) influence governments’ borrowing costs; (ii) affect governments’ refinancing risks; and (iii) create potentially harmful sovereign-bank linkages and threaten domestic financial stability, if domestic banks become highly exposed to own government debt.

<sup>12</sup> Nonbanks cover (i) institutional investors other than banks (i.e. insurance companies, pension funds, and investment funds) and (ii) households and non-financial corporations. While household or non-financial corporate holdings of government debt account for a sizable portion of nonbanks in some countries (Italy and U.K.), institutional investors usually make up the bulk of nonbank holdings. Foreign official sector covers (i) foreign central banks holding other country debt securities as reserve assets and (ii) foreign official lending in the form of bilateral or multilateral official loans

the end of 2017 the Central Singapore Provident Fund, a public unit classified outside of government, as a domestic non-bank, holds special issues of Singapore government securities worth 77 per cent of GDP. Total Singapore government gross debt was 108 per cent, but the vast majority of this debt is essentially owed to one of its own public entities, and then to the citizens of Singapore in future pensions. This presents a very different scenario to other countries with high government debt levels and explains (alongside the government’s considerable financial assets) why you hear little concerns expressed about what is, on the face of it, a very high level of sovereign debt.

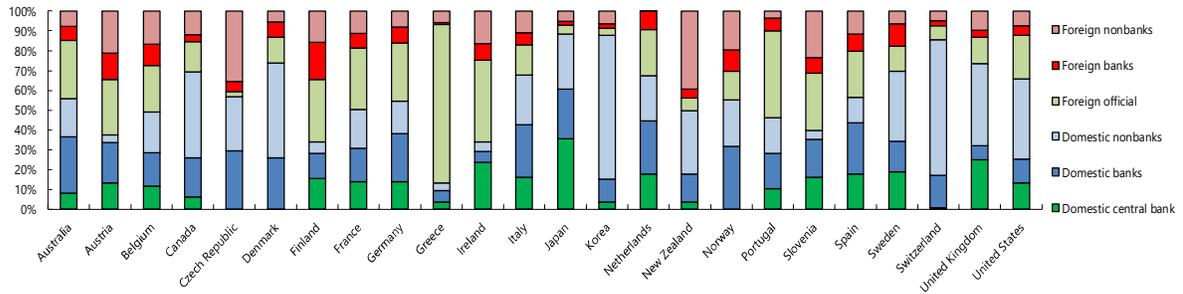
90. The methodology used to compile the investor base holding of sovereign debt are summarized in Figure 2.11. The approach has the following characteristics: First, a common definition of sovereign debt is used—general government gross debt covering currency and deposits; debt securities; and loans. Second, a common estimation methodology is used to ensure cross-country comparability based on harmonized international data sources, such as the Bank for International Settlements (BIS), IMF, and World Bank. Third, all data are compiled in face value to track investor transactions as well as holdings. Fourth, foreign investor holdings are estimated separately for the foreign official sector, foreign banks, and foreign nonbanks, in contrast to national data sources that usually classify them under one category (“rest of the world”).

**Figure 2.11 Compiling of Sovereign Investor Base Estimates—Summary of Methodology**

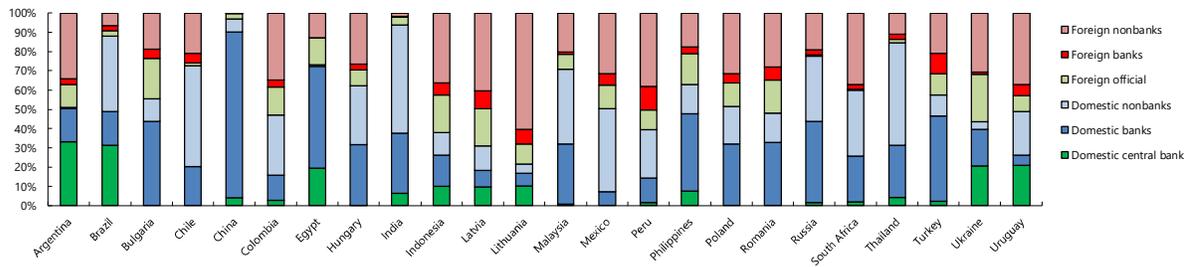


The estimates have been published online since 2012 with semi-annual updates (see links [here](#) and [here](#)) and are summarized in Figure 2.12 and 2.13.

**Figure 2.12 Advanced Economies: Holders of General Government Debt, end-2017**  
(in % of total amount outstanding)

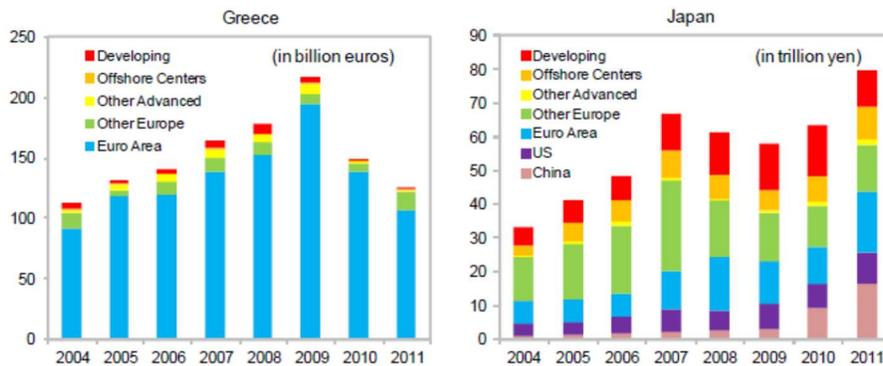


**Figure 2.13 Emerging Markets: Holders of General Government Debt, end-2017**  
(in % of total amount outstanding)



91. In some cases, this approach could be extended to estimate the country of origin of investor holdings. For illustration, Figure 2.14 shows the geographical decompositions of the investor base of the general government debt of Greece and Japan. Examining investors' country of origin can help assess spillover channels (e.g. euro area holdings of Greek debt), as well as emerging regional linkages (e.g. Chinese investment in Japan).

**Figure 2.14 Foreign Holdings of Government Debt by Country of Origin**

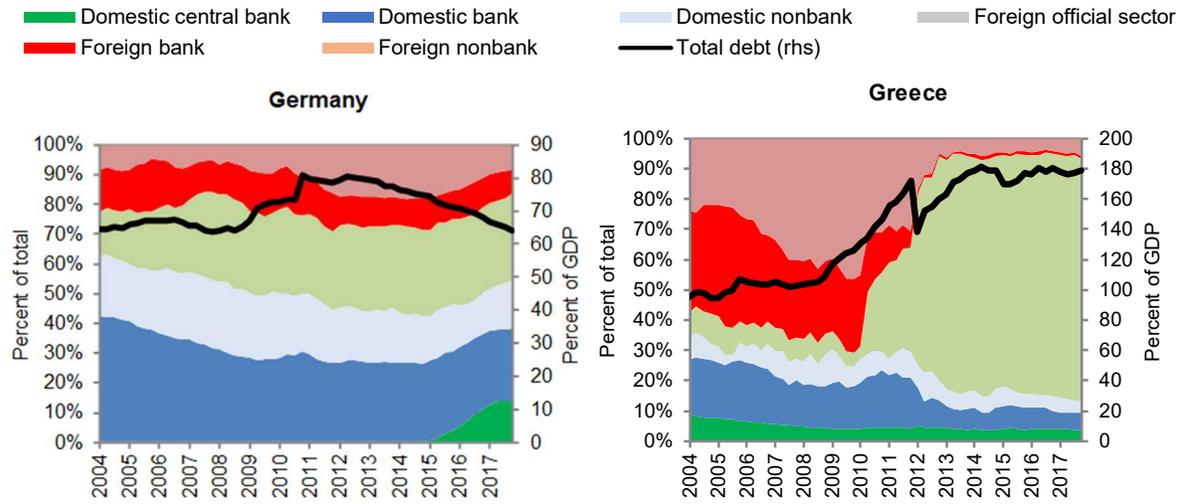


Sources: IMF CPIS and authors' calculations.  
1/ Excluding foreign official loans and SMP holdings of foreign central banks.  
2/ Regional groups are based on country classifications of BIS international banking statistics.

92. Finally, having a view of investors across countries is essential for understanding the dynamics of global demand for government debt. Changes in global investor's allocations

among countries are important because they can affect many countries all at once. For example, during 2010-13, foreign official holder replaced almost all the foreign private holders of Greece's sovereign debt. In contrast, some of these foreign private investors appear to have shifted to safer assets, such as German bunds, as shown in Figure 2.15 for illustrative purposes.

**Figure 2.15 Holders of Advanced Economy General Government Debt, 2004-17**  
(Components in %; total in % of GDP)



*The views expressed in this paper are those of the authors and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.*