



OECD Sovereign Borrowing Outlook 2019



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Foreword

The 2019 edition of the OECD Sovereign Borrowing Outlook provides data, information and background on sovereign borrowing needs and discusses funding strategies and debt management policies for the OECD area and country groupings, including:

- *Gross borrowing requirements*
- *Net borrowing requirements*
- *Central government marketable debt*
- *Liquidity in sovereign bond markets*
- *The importance of understanding the investor base*
- *Dealing with public debt management under stressed market conditions*
- *Recent experiences in Greece, Iceland, Ireland and Portugal*

The information in this publication is based on responses received to an annual survey on the borrowing needs of OECD governments circulated by the OECD's Bond Market and Public Debt Management Unit. This includes an update on trends and developments associated with sovereign borrowing requirements, funding strategies, market infrastructure and debt levels from the perspective of public debt managers. The Outlook makes a policy distinction between funding strategy and borrowing requirements. Central government marketable gross borrowing needs, or requirements, are calculated on the basis of budget deficits and redemptions. Funding strategy entails decisions on how borrowing needs are going to be financed using different instruments (e.g. long-term, short-term, nominal, indexed, etc.) and which distribution channels (auctions, tap, syndication, etc.) will be used.

Comments and questions should be addressed to the Bond Markets and Public Debt Management Unit within the Insurance, Private Pensions and Financial Markets Division of the OECD Directorate for Financial and Enterprise Affairs (e-mail: PublicDebt@oecd.org). Find out more about OECD work on bond markets and public debt management online at www.oecd.org/finance/public-debt/.

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Editorial

The outlook for sovereign debt is diverse across OECD countries

More than a decade on from the Global Financial Crisis, while debt-to-GDP ratios are back around pre-crisis levels in some countries, debt burdens have continued to climb in others, exceeding 100% of GDP in some cases. The challenges sovereign debt managers are confronting in an environment of high debt burdens and relatively tighter financial conditions have been compounded by recent political uncertainties. OECD governments will also need to refinance around 40% of their outstanding marketable debt over the next three years.

This means that most countries are focused on mitigating refinancing risk, maintaining flexibility in funding programmes, and broadening the investor base. In countries where financing requirements are limited and declining, sovereign debt managers face a “positive” set of challenges. For example, the minimal optimal size of outstanding sovereign debt required to maintain a vibrant government bond market and facilitate the implementation of monetary policy is currently under discussion in a few countries.

Understanding the investor landscape is critical

Significant shifts in both the investor base and investor behaviour have occurred in the past decade. This can be attributed in part to quantitative easing programmes and regulatory changes. Funding challenges in the post-crisis environment mean that a broad and diverse investor base is more essential than ever to support liquidity, depth and stability in government securities markets. This edition of the *Outlook* provides insights into access to investor-base information and key trends in the investor base. It analyses the implications of these changes for debt management strategies, in particular with respect to issuance plans and communication practices.

Sovereign issuers need granular and timely investor-base data to be able to better understand changes in the investor base, to make informed decisions on issuance plans and to adapt their investor relations programmes. A survey of primary market developments reveals that a majority of OECD countries receive detailed information on domestic investors, but not necessarily on foreign investors. For example, the foreign non-bank category usually covers a wide range of investors with significantly different investment mandates, including hedge-funds and pension funds. Sovereign issuers would benefit from reinforcing their investor monitoring capabilities, as well as engaging in frequent and consistent dialogue with investors.

A role for sovereigns in catalysing sustainable finance

Demographic changes and climate change are likely to have a significant impact on the long-term prosperity of nations but unlocking finance for sustainable development is a challenge of our times that needs to be addressed head-on. The number of investors and

governments demonstrating their commitment to the transition towards a more environmentally-friendly economy is on the rise. Bond issuances for green projects, for example, have gained momentum in recent years. In the OECD area, the total issuance of sovereign green bonds exceeded EUR 24 billion as of December 2018. This indicates that the sovereign green bond market, although still nascent, can be expected to keep growing.

The integration of environmental, social, and governance (ESG) factors by governments has implications for sovereign creditworthiness and ultimately for bond prices. Sovereign issuers have a role to play by improving the flow and the use of information on government initiatives and actions to promote sustainable finance. Some sovereign debt management offices are starting to adopt a holistic approach in their investment relations and communications strategies. For example, the State Treasury of Finland presented government initiatives to promote sustainable development through budget allocations to investors in its most recent debt management report.

Strategies from the European sovereign debt crisis remain valid today

Borrowing conditions for sovereign issuers can become extremely challenging when rising funding pressures coincide with sudden shifts in sentiment and perceptions of sovereign risk. This publication has discussed in the past how the occasional destabilising dynamics of government securities markets create huge policy problems, including loss of market access. Identifying good practices helps policy makers to develop and deliver better strategies across policy areas. With this in mind, this edition of the *Outlook* reviews the challenges faced during the European sovereign debt crisis, highlighting useful tools to address stressed market conditions.

The sovereign debt management offices of Greece, Iceland, Ireland and Portugal, which were at the epicentre of a multi-year European sovereign debt crisis, grappled with significant refinancing risk and loss of investor confidence. Their experiences suggest the relevance of being a transparent and predictable issuer, building contingency funding tools for flexibility, a solid relationship with the investor base, as well as two-way communication with wider market participants. In terms of policy responses, public debt managers aimed at mitigating refinancing risk and regaining investor' confidence. This meant making use of liability management operations; boosting investor-relation programmes; enhancing the organisational structure of debt management; and, building contingency funding tools. These strategies remain equally valid today.



Greg Medcraft

Director, OECD Directorate for Financial and Enterprise Affairs

Abbreviations and acronyms

AFT	Agence France Trésor
ATM	Average Term-to-Maturity
BIS	Bank for International Settlements
BoE	Bank of England
BOJ	Bank of Japan
CACs	Collective Action Clauses
CB	Central Bank
DB	Defined Benefit
DLT	Distributed Ledger Technologies
DMO	Debt Management Office
ECB	European Central Bank
EFSF	European Financial Stability Facility
EFSM	European Financial Stabilisation Mechanism
EIB	European Investment Bank
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
ETFs	Exchange Traded Funds
EU	European Union
EUR	Euro
FOMC	Federal Open Market Committee
FRDP	Portugal's Public Debt Regularization Fund
FX	Foreign Exchange
GBP	Great Britain Pound
GBR	Gross Borrowing Requirement
GDP	Gross Domestic Product
GFC	Global Financial Crisis
HFT	High-Frequency Trading
ICMA	International Capital Market Association
IGCP	Portuguese Treasury and Debt Management Agency
IFC	International Finance Corporation

IFIs	International Financial Institutions
IMF	International Monetary Fund
ISK	Icelandic krona
IT	Information Technology
JGBs	Japanese Government Bonds
LB	Liquidity Buffer
LEA	Liquidity Enhancing Auctions
MiFID	Markets in Financial Instruments Directive
MOF	Ministry of Finance
MTDS	Medium-Term Debt Management Strategy
NBR	Net Borrowing Requirement
NTMA	Ireland's National Treasury Management Agency
OAT	Obligations Assimilables du Trésor
OECD	Organisation for Economic Co-operation and Development
OTC	Over-the-counter
PD	Primary Dealer
PSPP	Public Sector Purchase Programme
QE	Quantitative Easing
SBO	Sovereign Borrowing Outlook
SIFMA	Securities Industry and Financial Markets Association
SLF	Securities Lending Facility
SLR	Supplementary Leverage Ratio
SNB	Swiss National Bank
SOMA	System Open Market Account
STRIP	Separate Trading of Registered Interest and Principal of Securities
SWFs	Sovereign Wealth Funds
TMPG	Treasury Market Practices Group
TRACE	Trade Reporting and Compliance Engine
UK	United Kingdom
ULB	Ultra-Long Bonds
US	United States
USD	United States Dollar
WP	Working Paper
WPDM	Working Party on Debt management

Executive summary

Outstanding central government debt in the OECD area is double that of pre-crisis levels

The Global Financial Crisis (GFC) marked a watershed in the evolution of sovereign debt in the OECD area. The fiscal and monetary policy responses to the GFC have had important implications for both sovereign debt levels and funding conditions in most OECD countries. The sustained borrowing needs of OECD governments over the past decade mean that outstanding government marketable debt has doubled in nominal terms, from USD 22.5 trillion in 2007 to USD 45.2 trillion in 2018.

Gross borrowings, which peaked at USD 10.9 trillion in 2010 in the wake of the GFC, are set to reach a new record level in 2019 by exceeding USD 11 trillion. More than 80% of this amount will be used to repay bonds maturing in 2019. The remaining amount will finance deficits in government budgets. This means that outstanding central government marketable debt for the OECD area as a whole is projected to reach USD 47.3 trillion in 2019. While government funding needs in the wake of the GFC increased in most OECD countries, the recent further increase is confined to a few countries, particularly the United States.

The favourable differential between cost of debt and growth rates means that the growth of debt-to-GDP ratios has slowed

The central government marketable debt-to-GDP ratio in the OECD area jumped by 23 percentage points from 49.5% in 2007 to 72.6% in 2017. While the new debt issuance is set to increase the nominal level of outstanding central government debt further, the relevant debt-to-GDP ratio is projected to remain unchanged in 2019 at 72.6%, mainly owing to economic growth in the OECD area. Compared with pre-crisis levels, the interest rate-growth differentials – the difference between the interest rate paid to service government debt and the growth rate of the economy – in the major OECD countries have improved significantly and this has slowed growth in debt-to-GDP ratios in recent years. The improvement is more marked in the G7 economies. At the same time, debt burdens have been on an upward trend in all G7 countries except Germany.

The impact of interest rate changes on the cost of sovereign debt depends on several factors

Global financial conditions are loose overall, but have tightened considerably during the past year. The impact of higher interest rates on the cost of debt is expected to be relatively low in countries where new borrowing needs are limited and the share of fixed-rate debt with long maturity is high. In terms of sovereign borrowing needs, countries in the OECD area present divergent paths. While some countries (e.g. Denmark, Iceland, New Zealand and Sweden) have achieved limited or declining funding needs, budget deficits in a few

countries, particularly the United States, have continued to grow in recent years. In terms of maturity and interest rate structure, the composition of sovereign financing in the OECD area has remained tilted towards long-term fixed-rate securities over the past decade. The weighted average-term-to-maturity of outstanding marketable debt, for instance, increased from 6.2 years in 2007 to almost 8 years in 2018. This implies a slower pass-through of changes in market interest rates to government interest costs.

Sovereign issuers have clearly benefited from favourable funding conditions to strengthen the resilience of debt portfolios to potential future shocks. Nevertheless, OECD governments will need to refinance around 40% of their outstanding marketable debt over the next three years, with G7 countries facing particularly significant volumes of scheduled redemptions. A lower level of involvement of central banks as large buyers should lead to increased funding needs from other investors. Against this backdrop, sovereign debt management offices should maintain close communications with investors and other policymaking authorities, especially by re-engaging with traditional investor bases such as pension funds and insurance companies. Elevated uncertainty and the changing funding environment point to an increasing relevance of contingency funding tools such as liquidity buffers and Treasury Bills.

A deterioration in the market liquidity of government securities has led sovereign debt managers to adapt their practices

Liquidity conditions in government securities markets have been volatile, reflecting a confluence of factors. These include: financial sector adjustments to post-crisis regulations; unconventional monetary policies; changes in composition of the investor base; the proliferation of electronic trading venues and strategies; and shrinking borrowing requirements in some countries. Many sovereign issuers see a relative improvement in liquidity conditions, but report that they are still worse than in the pre-crisis environment.

Reduced liquidity of government securities impairs primary market access and increases borrowing costs for sovereigns. This has led sovereign debt management offices in countries experiencing a deterioration to implement various measures to support liquidity conditions in recent years. These measures include changes to frequency and size of auctions; obligations and privileges of primary dealership systems; secondary market activities such as buy-backs and switches and securities lending facilities (SLFs). This edition takes an in-depth look at SLFs used by many debt management offices and provides a detailed set of policy and management information about how sovereign issuers act as a lender of last resort for government securities, and promote secondary market liquidity by helping market participants continuously quote prices and avoid delivery failures.

Chapter 1. Sovereign borrowing outlook for OECD countries

Between 2007 and 2018, the borrowing needs of OECD governments surged drastically and outstanding central government marketable debt for the OECD area as a whole doubled in nominal terms. At the same time, favourable funding conditions eased debt sustainability concerns and enabled public debt managers to enhance the resilience of public finances to shocks. Looking forward, while OECD sovereigns as a whole need to sell more than USD 11 trillion to the markets this year, the central government marketable debt-to-GDP ratio is projected to remain constant in 2019. Against this background, this chapter provides an overview of borrowing, deficits, redemptions and debt developments in the OECD area over 2007-2019.

*Public debt management is part of the overall macroeconomic policy framework which encompasses monetary, fiscal and macro-prudential policies. With that in mind, this chapter discusses the implications of fiscal policy and monetary policy developments for public debt dynamics as well as government debt securities markets. The analysis includes strategic considerations on interest rate and investor base developments, and secondary market liquidity conditions from a public debt management perspective. This chapter also includes a box on security lending practices of sovereign debt management offices.**

* This chapter was published online on 8 February 2019.

1.1. Introduction

During the past decade, sovereign debt structure in the OECD area has been significantly affected by the fiscal and monetary policy responses to the financial crisis. Between 2007 and 2018, the borrowing needs of OECD governments surged drastically and outstanding central government debt for the OECD area as a whole doubled in nominal terms. At the same time, favourable funding conditions eased the debt sustainability concerns and enabled public debt managers to enhance resilience of public finance to shocks. Public debt managers have also adapted their practices to respond to evolving market structures mainly driven by the post-crisis regulatory reforms, unconventional monetary policies and advances in financial technology. While the legacy of the financial crisis continues to cast a long shadow over public finances in the form of heavy debt repayments and monetary policy conditions have changed, public debt managers are now facing a new set of issues. Against this background, this chapter provides an overview of sovereign debt developments in the OECD area and discusses policy challenges and medium-term considerations for sovereign debt management policy.

Key findings

- Gross borrowings of OECD governments from the markets, which peaked at USD 10.9 trillion in 2010 in the wake of the financial crisis, are set to reach a new record level in 2019 by exceeding USD 11 trillion. While government funding needs in the wake of the financial crisis increased in most OECD countries, the recent further increase is confined to a few countries, particularly the United States.
- In 2017, the new debt issuance of OECD governments to the markets registered the lowest level since 2008, but increased by USD 600 billion to USD 1.9 trillion in 2018 and is projected to exceed USD 2 trillion in 2019.
- Between 2007 and 2018, outstanding central government debt for the OECD area as a whole doubled and the debt-to-GDP ratio rose from 49.5% to 72.6%. While the new debt issuance is set to increase the nominal level of outstanding central government debt further, debt-to-GDP ratio is projected to remain at 72.6% in 2019, mainly owing to continued economic growth in the OECD area.
- Compared with the pre-crisis levels, the interest rate-growth differentials – an important indicator to explain debt-to-GDP developments – in the G7 countries have improved significantly and slowed growth in debt-to-GDP ratios in recent years. Nevertheless, central government marketable debt-to-GDP ratio for the G7 countries is expected to increase and reach its highest level in 2019. Among the G7 countries, the differential is still positive only in Italy, albeit a relative improvement compared to 2007.
- The gradual exit from unconventional monetary policy has important implications for sovereign funding conditions, mainly through changes in borrowing interest rates and the investor base. The impact of higher interest rates on the cost of debt will initially be relatively low in countries where new borrowing needs are limited and the share of fixed-rate debt with long maturity is high. In terms of the investor base, a lower level of involvement of central banks as large buyers should lead to increased funding needs from other investors.
- Over the past decade, the composition of government financing in the OECD area has tilted towards long-term fixed rate financing instruments, which has resulted in

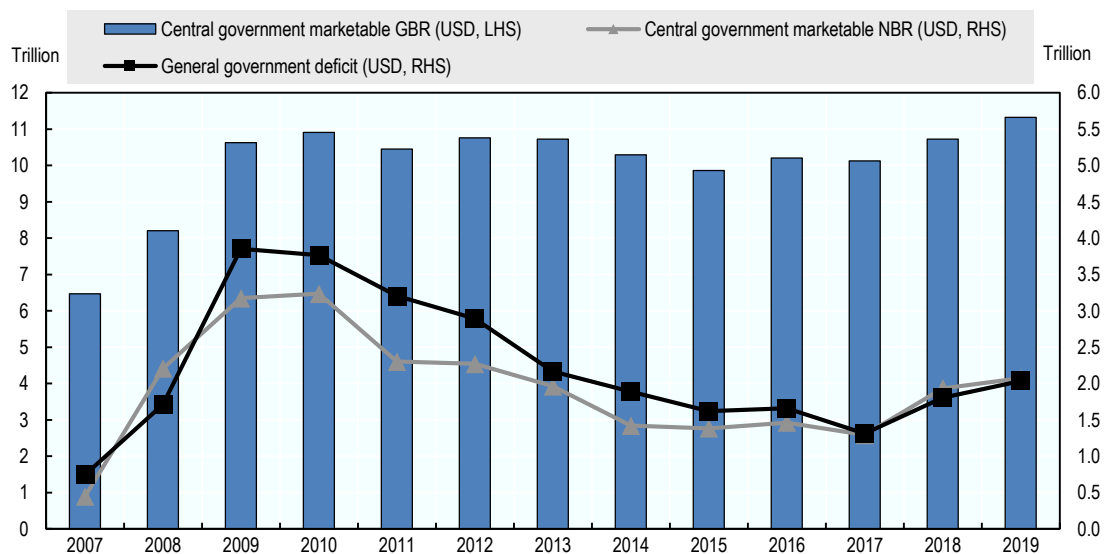
more resilient debt portfolios. Correspondingly, average-term-to-maturity of outstanding marketable debt has increased considerably in recent years, and reached almost 8 years in 2018, which implies a slower pass-through of changes in market interest rates to government interest costs.

- Against the backdrop of less favourable funding conditions, sovereign debt management offices should maintain a close communication with investors and other policy making authorities, in particular by re-engaging with their traditional investor base, such as pension funds and insurance companies, and putting more emphasis on diversification of the investor base. Benefits can also be obtained from retaining flexibility in their funding programme with contingency funding tools such as liquidity buffers and Treasury Bills.

1.2. An upward movement in nominal government borrowing needs

After remaining steady in recent years, the gross and net borrowing requirements of OECD governments increased significantly in 2018, reflecting increasing budget deficits in some countries. The 2018 OECD Survey on Central Government Marketable Debt and Borrowing estimates a continuation of this upward movement in 2019, albeit at a slower pace. Specifically, the combined gross borrowings of OECD governments from the markets, which rose from USD 10.1 trillion in 2017 to USD 10.7 trillion in 2018, are projected to reach a record level of USD 11.3 trillion in 2019 (Figure 1.1).¹

Figure 1.1. Sovereign borrowing outlook in OECD countries, 2007-2019



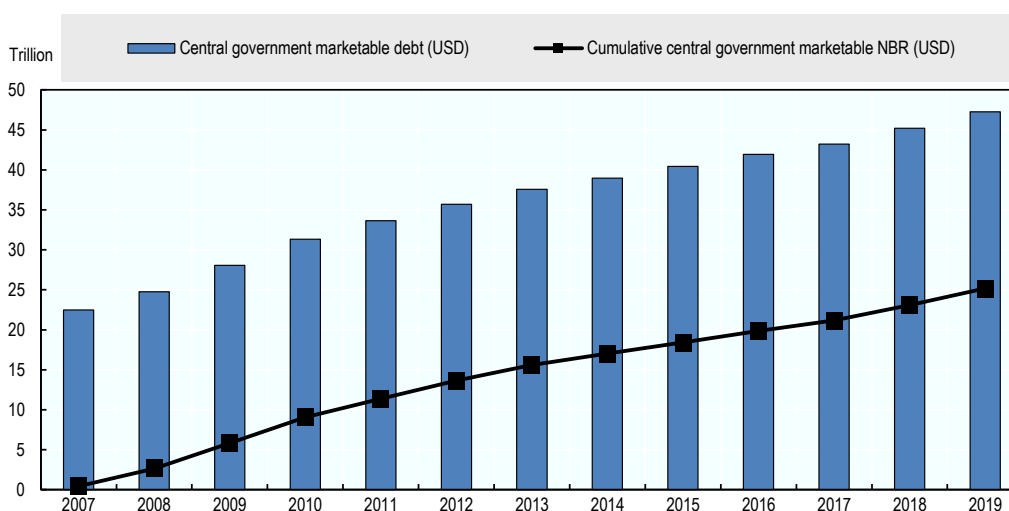
Notes: GBR = standardised gross borrowing requirement, NBR = net borrowing requirement. General government deficit is derived from general government net lending as published in the OECD Economic Outlook No. 104 for all OECD countries, except for Chile, Mexico and Turkey for which the source is the IMF World Economic Outlook (October 2018).

Source: 2018 Survey on Central Government Marketable Debt and Borrowing; OECD Economic Outlook No. 104; IMF World Economic Outlook (October 2018); Refinitiv, national authorities' websites and OECD calculations.

Gross borrowing figures reflect the total amount required to finance budget deficits and debt redemptions, while net borrowing accounts for additional exposures in the market. That said, positive net borrowing requirements reflect the continued growth of central government marketable debt. Net borrowing requirements for the OECD area as a whole reached a peak point in 2010, reflecting fiscal stimulus and recession in the wake of the financial crisis and declined until 2017. However, they are estimated to rise from USD 1.3 trillion in 2017 to USD 1.9 trillion in 2018, and projected to slightly increase further to over USD 2 trillion in 2019.

Figure 1.2 illustrates the outstanding central government marketable debt and cumulative net borrowing requirements from 2007 to 2019. The sustained borrowing needs of OECD governments over the past decade doubled the outstanding government marketable debt in nominal terms. While cumulative net borrowing requirements reached USD 23 trillion between 2007 and 2018, the outstanding central government marketable debt increased from USD 22.5 trillion in 2007 to USD 45.2 trillion in 2018. Against the backdrop of expansionary fiscal policies underway in a few OECD countries, outstanding central government marketable debt for the OECD area as a whole is projected to rise further to USD 47.3 trillion in 2019 (Figure 1.2).

Figure 1.2. Sovereign debt outlook in OECD countries, 2007-2019



Notes: Using 2007 as base year for cumulative net borrowing requirement (NBR) calculations.

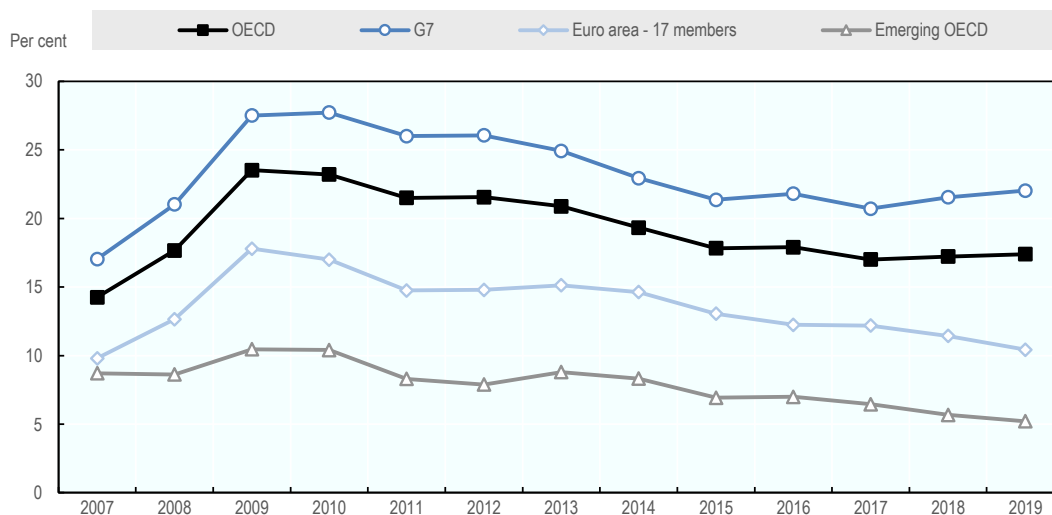
Source: 2018 Survey on Central Government Marketable Debt and Borrowing; OECD Economic Outlook No. 104; Refinitiv, national authorities' websites and OECD calculations.

Figures 1.3 and 1.4 illustrate central government gross borrowing requirements and outstanding debt as a percentage of GDP – rather than in nominal amounts – for the OECD area as a whole and for selected OECD groupings respectively. Both of the indicators, growing in nominal terms, declined or stabilised in relation to GDP. The OECD estimates that the economic growth in the OECD area is set to ease gradually from around 2.5% in 2017-18 to 2.1% in 2019 amidst less accommodative macroeconomic policies, headwinds from trade tensions, tighter financial conditions (OECD, 2018b). In 2019, the gross borrowing is expected to be 17.4% of GDP and gross debt is to be 72.6% of GDP similar to previous two years. Nevertheless, trends in these indicators diverge across selected OECD groupings. Specifically, both ratios are expected to deteriorate further for the G7

countries where ratios are already relatively high, while they continue to improve for the other country groupings. Specifically, central government marketable debt-to-GDP ratio for the G7 countries is expected to increase from 86.1% in 2017 to 86.8% in 2018, and projected to reach its highest level of 87.6% in 2019.

Figure 1.3. Central government marketable gross borrowing in OECD countries, 2007-2019

As a percentage of GDP

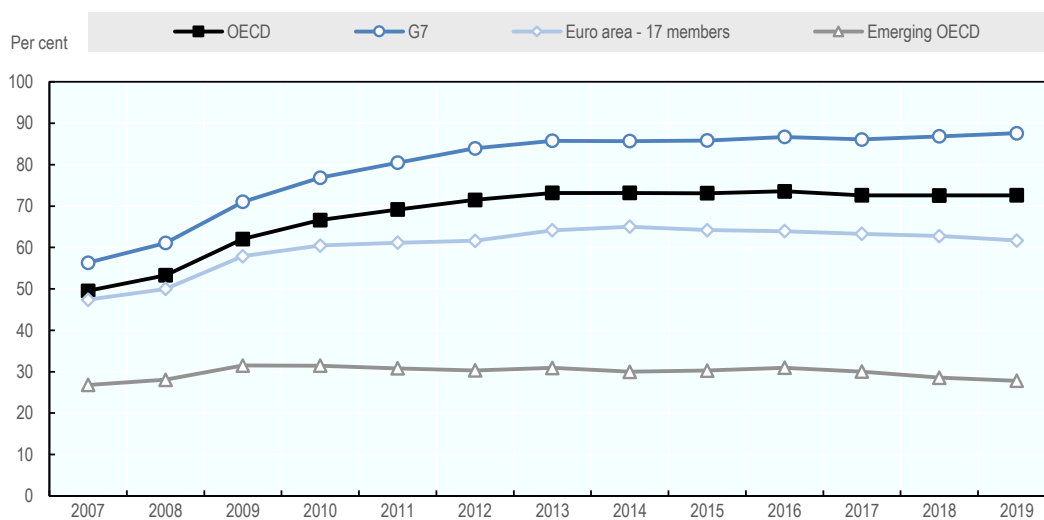


Notes: Standardised gross borrowing requirement. See Annex 1.A1 for a list of countries in each group.

Source: 2018 Survey on Central Government Marketable Debt and Borrowing; OECD Economic Outlook No. 104; Refinitiv, national authorities' websites and OECD calculations.

Figure 1.4. Central government marketable gross debt in OECD countries, 2007-2019

As a percentage of GDP



Notes: Debt stock without cash. See Annex 1.A1 for a list of countries in each group.

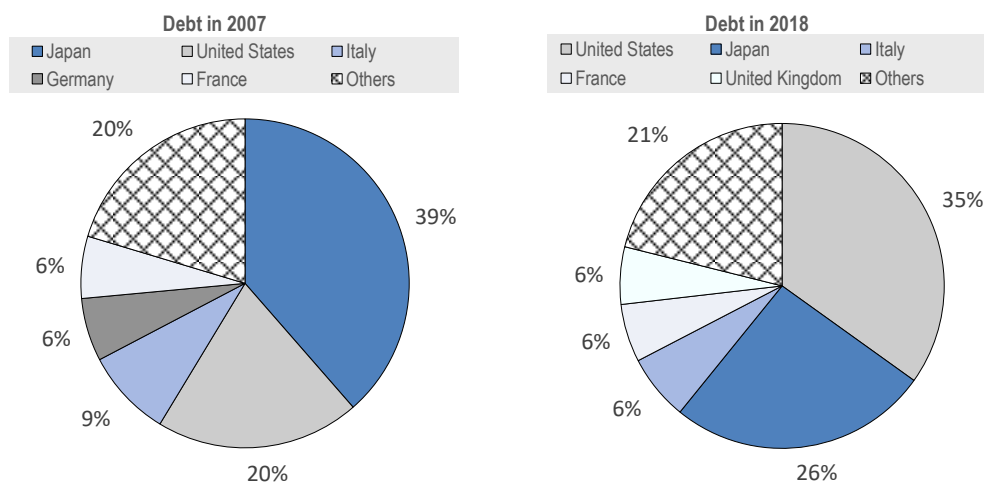
Source: 2018 Survey on Central Government Marketable Debt and Borrowing; OECD Economic Outlook No. 104; Refinitiv, national authorities' websites and OECD calculations.

1.3. Sovereign debt accumulation varied widely across countries in the OECD area

Government funding needs, which are expected to reach USD 10.7 trillion in the OECD in 2018, varied widely across countries. While fiscal expansion in the wake of financial crisis was synchronised to a large extent across the OECD area, the recent rise in gross borrowing-to-GDP ratios has been confined to a few countries, particularly the United States.² Government funding needs for the euro area and Emerging OECD countries have even improved in recent years (Figure 1.3), and the funding needs of some sovereigns (e.g. Denmark, Iceland, New Zealand and Sweden) have declined to very low levels.

Divergence in gross borrowing requirements amongst OECD countries manifests itself in the countries' percentage shares of total outstanding debt. Figure 1.5 compares the share of the top five countries in terms of their share in total outstanding government marketable debt for the OECD area in 2007 and in 2018. This comparison indicates that the United States now has the greatest share, surpassing Japan. Another interesting result of this comparison is that Germany has dropped out of the top five and Italy's share has moderated, while the United Kingdom has moved up to fifth place.

Figure 1.5. The country shares in total central government marketable debt in 2007 and 2018



Source: 2018 Survey on Central Government Marketable Debt and Borrowing; OECD Economic Outlook No. 104; Refinitiv, national authorities' websites and OECD calculations.

1.4. The favourable interest-growth differential

Economic growth, government primary budget balance and interest rates on government debt are the key determinants of public gross debt trajectories. In the OECD area over the past decade, sovereign bond yields have been exceptionally low, even reaching negative levels, irrespective of the relative tightening of financial conditions over the past year (Figure 1.6). Some sovereigns including France, Germany and Japan, have issued negative-yielding debt and received premiums from these issues in recent years.³ These favourable funding conditions have had important implications for debt dynamics:

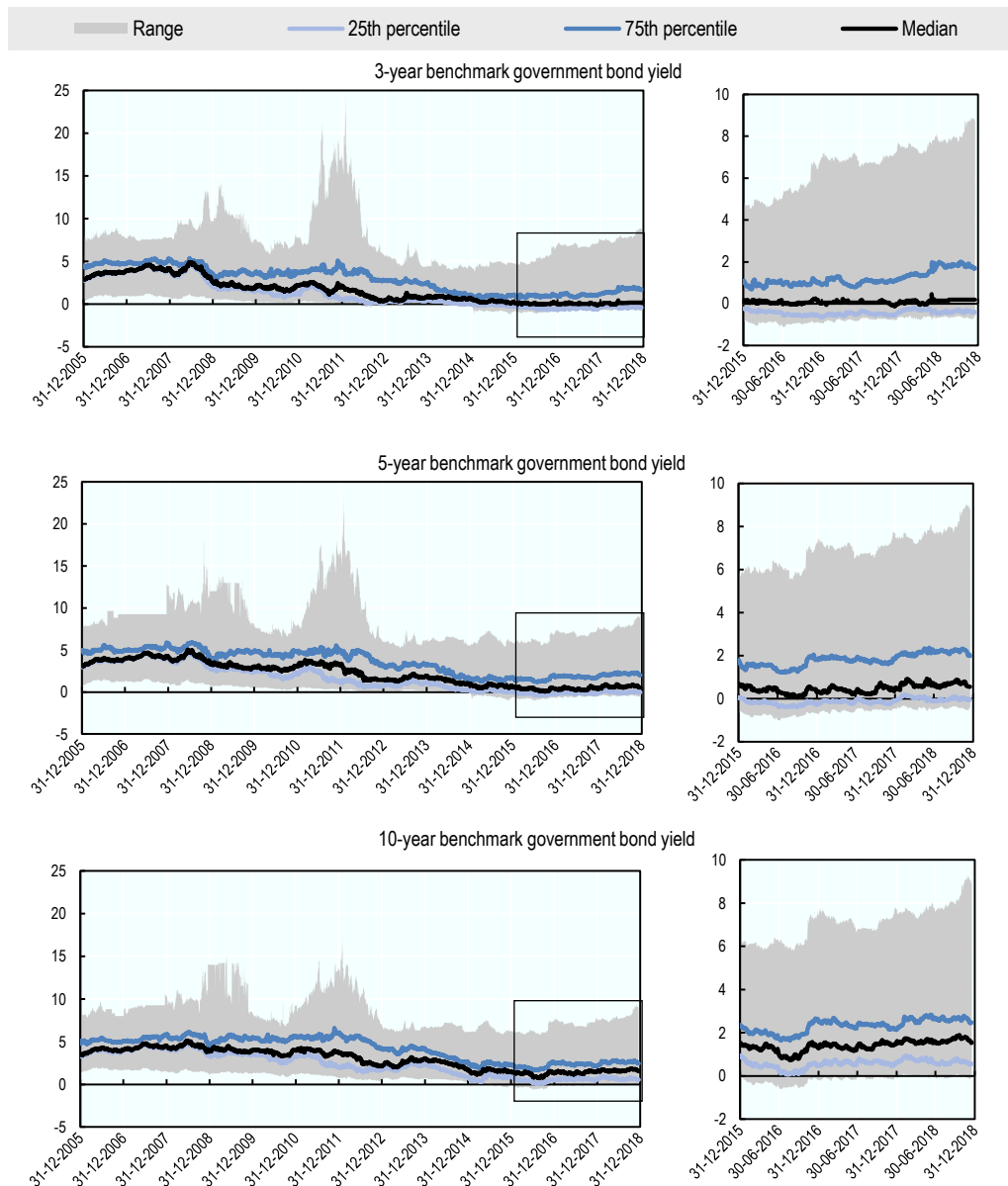
- The majority of OECD governments have reduced their debt servicing costs in recent years, despite in many cases rising sovereign debt.
- The composition of government financing has tilted towards long-term fixed rate financing instruments as a trade-off between expected costs and risks of short and

long-term borrowing choices diminish. This has resulted in more resilient debt portfolios in terms of refinancing risk (see Section 1.5).

- Interest rate have remained less than nominal GDP growth, which constrained the increase in the debt-to-GDP ratio.

Taken as a whole, it can therefore be concluded that a favourable financing environment over the last decade supported public debt dynamics and limited the debt sustainability concerns.

Figure 1.6. Government benchmark interest rates in OECD countries, 2006-2018



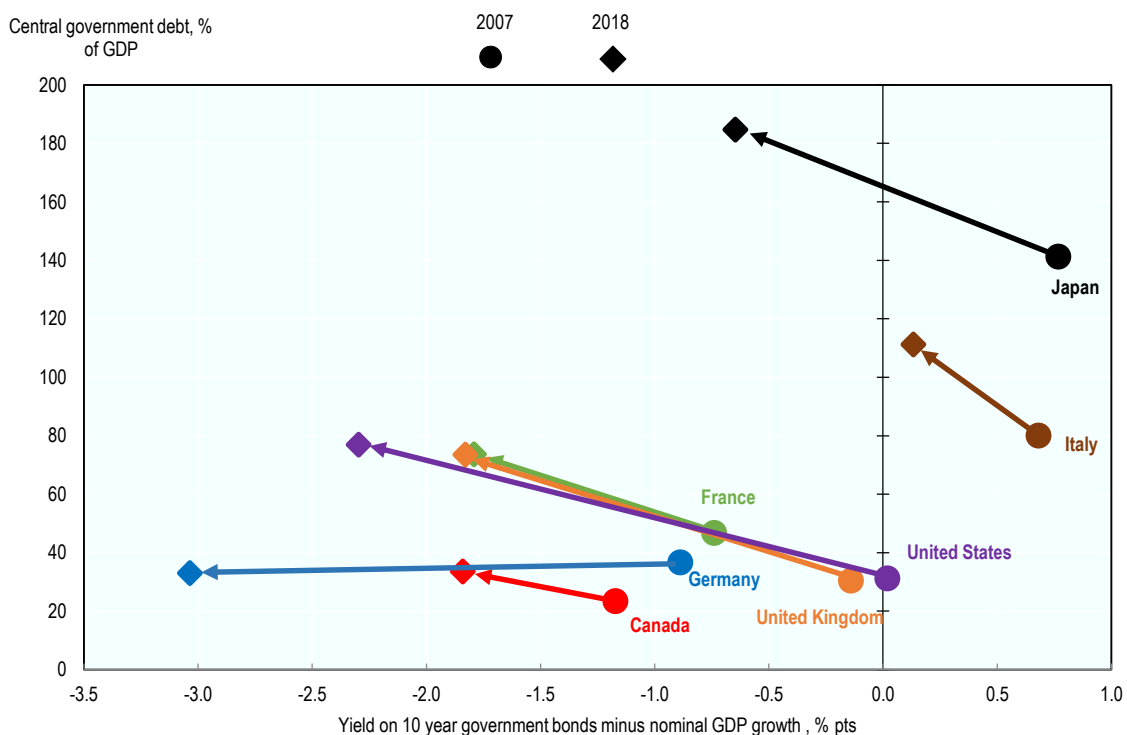
Notes: Interest rates in percentages. Charts show the evolution of several metrics (minimum, maximum, 25th percentile, 75th percentile, median) of 3-year, 5-year and 10-year benchmark government bond yields, calculated for a group of countries. See Annex 1.A1 for a list of countries that were included in these calculations.

Source: Refinitiv

The interest rate-growth differential is essential to assess public debt sustainability: Higher interest rates imply higher interest payments so adversely influencing debt dynamics, whereas higher GDP growth will tend to lower the debt-to-GDP ratio by increasing the denominator. That said, the positive differential increases the debt-to-GDP ratio, other things held constant. For highly indebted countries, a change in the differential of a couple of percentage points, if sustained, could mean the difference between an explosive and a declining path for the debt-to-GDP ratio (Turner *et al*, 2012).

Figure 1.7 compares the debt-to-GDP ratios along with interest rate-growth differentials in the G7 countries in 2007 and 2018. Results indicate that interest rate-growth differentials have improved in all G7 countries, but to different degrees. The improvement is more evident in Germany, Japan, the United Kingdom and the United States where the differential is in negative territory in 2018. At the same time, the debt burdens have been increasing in all G7 countries, except Germany. In Germany, it has declined gradually on the back of fiscal consolidation and a favourable interest rate-growth differential. Among these countries, the differential is still positive only in Italy. The interest rate paid on 10-year government bonds still exceeds the growth rate (by 0.1 basis points) in 2018, albeit a relative improvement compared to 2007.

Figure 1.7. Debt-to-GDP ratios and interest rate-growth differentials for G7 in 2007 and 2018



Notes: Debt stock without cash as percentage of GDP, GDP (volume, growth) and average annual yield on 10-year bond.

Source: 2018 Survey on Central Government Marketable Debt and Borrowing; OECD Economic Outlook No. 104; Refinitiv, national authorities' websites and OECD calculations.

1.5. Composition of financing remains tilted towards long-term fixed-rate securities

A government financing plan is prepared in accordance with projected financing needs, macroeconomic forecasts, the situation in bond markets, and investors' demand. In this framework, sovereign debt managers consider long-term impacts of potential strategies and a variety of potential risk factors (e.g. forthcoming elections, geo-political events and monetary policy decisions) when drawing up their funding plans. They aim for meeting the principles of openness, transparency and predictability of debt management. To this end, flexibility is often built into these financing plans to adjust to unexpected developments (e.g. a lower or higher financial requirement).

During the height of the financial crisis in 2008, the share of short-term issuance to total gross issuance for the OECD area as whole climbed to over 55%. At the same time, the share of fixed-rate debt declined to below 40% of gross issuance. Since then, the composition of governments' funding has improved particularly in terms of maturity and interest rate composition (Table 1.1). Specifically, the share of fixed-rate long-term securities in total marketable gross borrowing needs rose by about 10 percentage points from 2007 to 2017, while T-bill issuance has been moderated. The recent survey results indicate a continuation of this trend in 2019, albeit a slight upward deviation in 2018.

Table 1.1. Funding strategy based on marketable gross borrowing needs in OECD area, 2007-2019

(Percentage)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Short-Term (T-bills)	50.0	55.5	45.3	44.3	44.6	45.4	43.8	40.4	39.9	40.7	40.6	41.6	37.9
Long-Term	50.0	44.5	54.7	55.7	55.4	54.6	56.2	59.6	60.1	59.3	59.4	58.4	62.1
Fixed rate	43.9	39.9	50.6	51.4	50.9	50.3	50.9	52.3	53.5	52.8	52.8	52.1	55.5
Index linked	3.3	2.5	1.9	2.3	2.9	3.3	3.7	4.0	3.7	3.5	3.5	3.3	3.2
Variable rate	1.6	1.1	1.0	0.9	0.7	0.3	0.9	2.6	2.4	2.4	2.6	2.6	2.9
Other	1.3	1.0	1.1	1.0	0.9	0.7	0.7	0.6	0.5	0.5	0.6	0.5	0.4
<i>Of which:</i>													
Local currency	99.5	98.8	98.5	99.1	99.2	98.9	98.9	98.8	98.9	98.7	98.9	99.1	99.3
Foreign currency	0.5	1.2	1.5	0.9	0.8	1.1	1.1	1.2	1.1	1.3	1.1	0.9	0.7

Source: 2018 Survey on Central Government Marketable Debt and Borrowing; OECD Economic Outlook No. 104; Refinitiv, national authorities' websites; and author calculations.

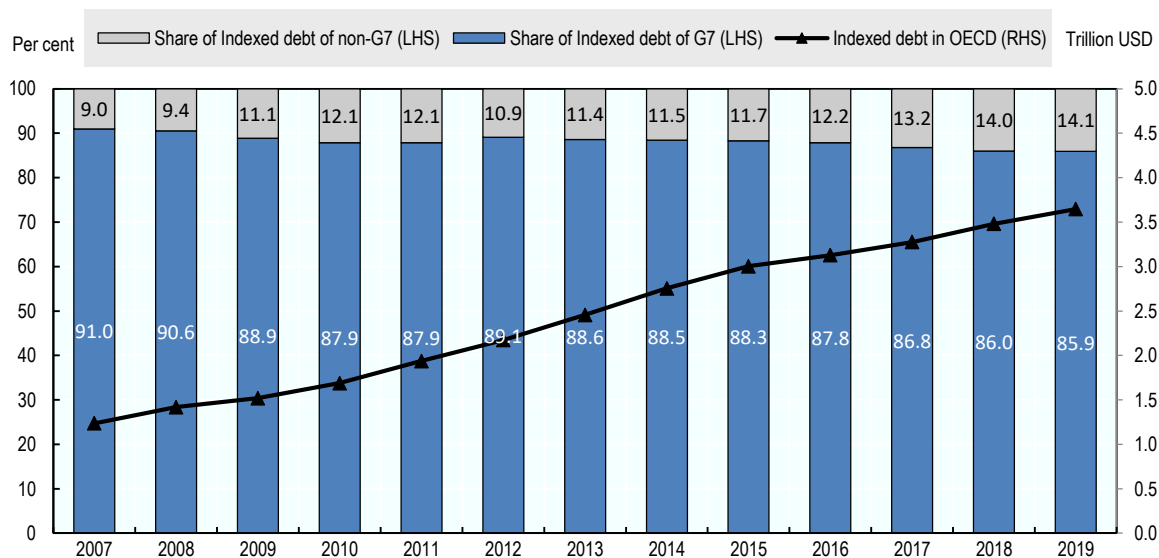
It should be noted that the rise in short-term debt from 2017 to 2018 was confined to a few countries, namely Austria, Germany, the Netherlands and the US. Fiscal benefits of adjusting public debt maturity crucially depend on the future evolution of the yield curves and the current maturity structure of debt (Maravalle, A. and L. Rawdanowicz, 2018). Against this backdrop, some sovereigns, with better than average fiscal fundamentals, might benefit from shortening borrowing maturities in order to take advantage of very low short-term rates, without obstructing their refinancing risk exposure. In the US, the Treasury Borrowing Advisory Committee (TBAC) recommended that between one-quarter and one-third of the financing gap should be met with T-bill issuance for 2019 (US Treasury, October 2018). The main rationale behind this recommendation is the potential need to retain flexibility in Treasury's issuance path to respond to any changes in funding needs and accommodate historically large auction sizes, given the uncertainty inherent in fiscal projections and the timing of the System Open Market Account (SOMA) portfolio normalisation. This strategy is projected to significantly increase T-bill auction sizes. In October 2018, the US Treasury launched inaugural issuance of 2-month T-Bill which settles and matures on Tuesdays.⁴

The share of index-linked issuance has moderated somewhat

In terms of fixed-rate versus index-linked securities, the relative importance of inflation-linkers as part of a sovereign's total financing increased from 3.3% in 2007 to 4% in 2014. The strong and sustainable demand from pension funds and insurance companies was the main driver of this development, as it underpinned the cost-effectiveness of issuing index-linked bonds (OECD, 2018a). The survey results indicate that the share of index-linked securities in total government borrowings has lessened since 2015, although a few countries have issued their first inflation-linked bonds in recent years (e.g. Belgium in 2015 and Ireland in 2017). The annual issuance of index-linked securities declined gradually from above USD 400 billion in 2014 to around USD 350 billion in 2018. Relatively low issuance of inflation-linked bonds in the United Kingdom, and the United States accounts for the most part of this drop. Despite the recent slowdown in new issuance, the outstanding amount of indexed-linked debt in the OECD area almost tripled since 2007 in nominal terms, reaching USD 3.5 trillion in 2018. Over the same period, the share of the G7 economies in the OECD area indexed-linked debt declined (Figure 1.8).

Furthermore, the United Kingdom, the second largest sovereign issuer of inflation-linked securities after the United States, is also acting to mitigate the government's balance sheet exposure to inflation risk⁵ by moderating the issuance of index-linked gilts in the latest financing remit and reviewing the appropriate balance between index-linked and conventional gilts going forward (HM Treasury, 2018a). In addition, Iceland, a small issuer, launched an inflation swap programme in 2018 in order to alleviate inflation risk exposure of its debt portfolio. Specifically, the programme aims to reduce the share of index-linked debt in total marketable debt from its current level of 31% to 10-20% in the long-run.

Figure 1.8. Evolution of indexed linked long-term security issuances in the OECD area, 2007-2019



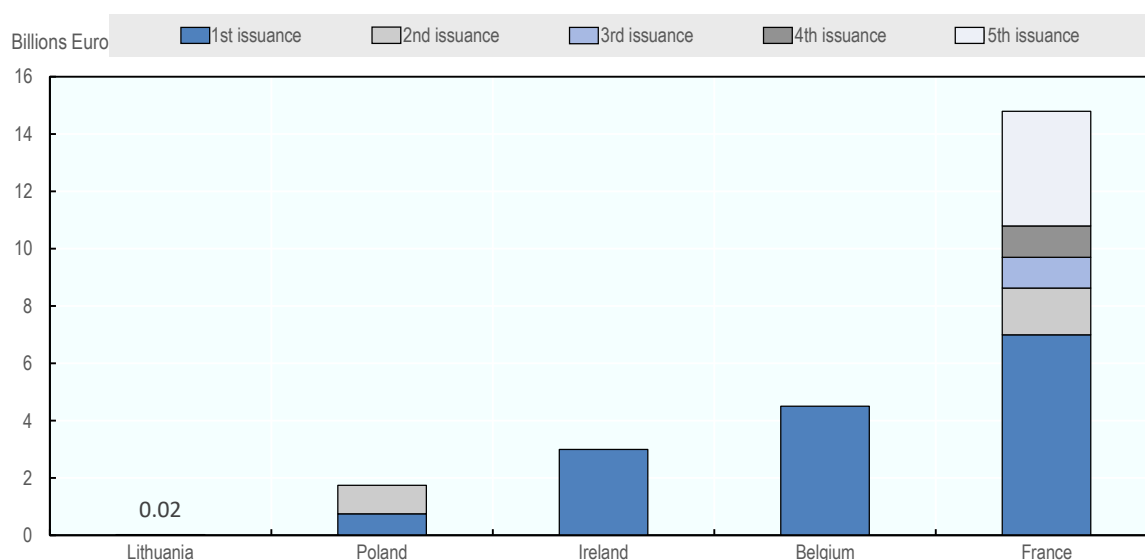
Source: 2018 Survey on Central Government Marketable Debt and Borrowing; Refinitiv, national authorities' websites and author calculations.

Sovereign green bond issuance has been gaining momentum in Europe

The main goal of adding a new instrument to financing securities is to attract a broader and more diversified investor base in line with long-term cost and risk minimisation objectives. Increased investors' demand for a new instrument encourages potential issuers, especially when budget deficits are substantial. In the case of green bonds, the number of investors, such as large sovereign wealth funds (SWFs) and pension funds that are committed to responsible investment and integration of environmental, social and governance (ESG) factors into their investment strategy has increased quite rapidly in recent years.⁶ This, in turn, has supported the growth of green bond market in general. It should be noted that, within the ECB Public Sector Purchase Programme (PSPP), the Euro system has also purchased green bonds issued by sovereigns, which in turn, encouraged euro area governments to use this financing instrument.

The 2018 OECD survey on primary markets developments reveals that Belgium, Ireland and Lithuania issued their first green bonds in 2018. Sovereign green bond issuance by OECD governments has exceeded EUR 24 billion since Poland sold the first ever sovereign green bond in December 2016 (Figure 1.9).⁷ The French green Obligations Assimilables du Trésor (OATs) accounts for nearly two-thirds of all sovereign green bond volumes outstanding. In addition, the sovereign issuers of green bonds so far have employed syndication method for inaugural issuance as an attempt to mitigate potential difficulties that investors face during the price discovery process.

Figure 1.9. Outstanding sovereign green bond issuance by OECD countries



Source: National authorities' websites and author calculations.

Against the background of successful issuance of sovereign green bonds in recent years, the sovereign green bonds market, still at a nascent stage, is expected to grow in coming years with additional offerings as well as debut selling. For example, the Dutch State Treasury Agency announced its plan to issue a green bond in 2019. From a government perspective, this is a way to demonstrate its commitment to the transition to a more

environmentally friendly economy and, in particular, how it intends to raise capital to implement the Paris Agreement commitments. Sovereign issuance in green bond markets is also expected to contribute to the market's growth by signalling and benchmarking roles.

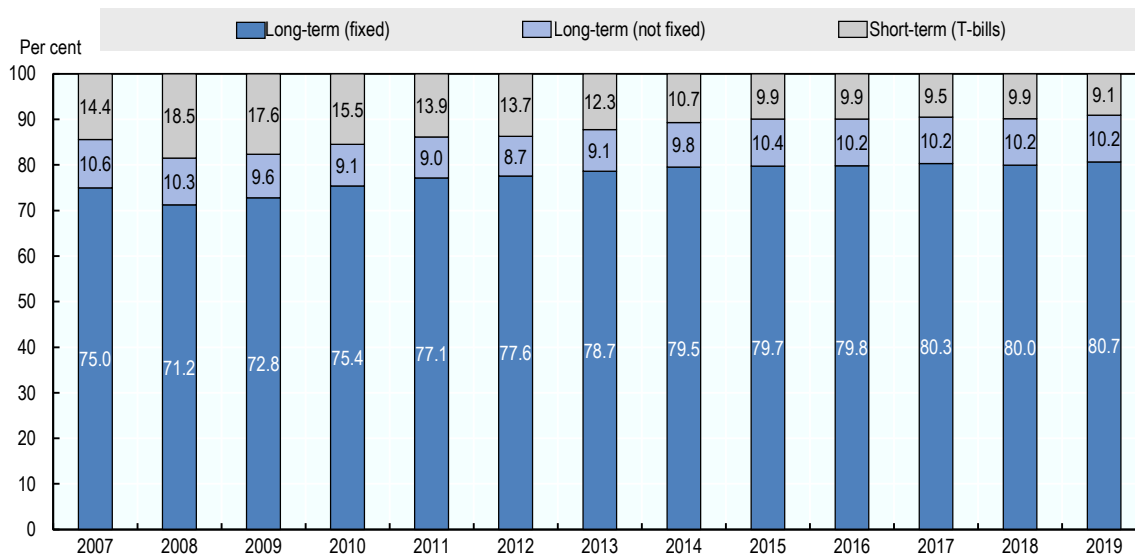
From a debt management perspective, issuing green bonds may contribute to diversification of investor base as well as developing and deepening of the market for sustainable finance instruments. In addition, country experiences suggest that the issuance of green bonds brings about a positive market story with supportive news flows. However, green bonds require issuers to perform distinctive monitoring and reporting activities in order to respect green standards, along with additional marketing events to reach out to new investors. Also, lack of – or limited – green-eligible government expenditures can be a potential barrier to sovereign green bond issuance as issuing a new instrument requires a long-term commitment to create and maintain liquidity, and to lower issuance cost. Against this backdrop, the OECD Working Party on Public Debt Management (WPDM) elaborated existing practices and prospects for sovereign green bonds during its 2017 and 2018 annual meetings. Discussions revealed that issuers with limited funding requirements prefer to allocate their scarce activities in nominal bonds to secure their liquid sovereign curve. Some issuers, including Finland and Denmark, do not view earmarked project bonds as a perfect match to fund government budget. That said, issuing a green bond may create a fragmentation in sovereign issuance structures and increase funding costs due to illiquidity premium⁸, although their cash flows are similar to those of conventional bonds. With regard to country risk assessments, it was pointed out that institutional investors are applying ESG frameworks to provide further input into their sovereign risk scenario assessments and major credit rating agencies have already taken steps to incorporate ESG factors into country risk assessments. In this respect, some sovereign issuers see a need to be more proactive and transparent in providing information for investors on government initiatives and actions to promote ESG issues (State Treasury of Finland, 2019).

1.6. Achieving resilience to potential future shocks

The objective of public debt management is often defined as “to ensure that the government's financing needs and its payment obligations are met at the lowest possible cost over the medium- to long-run, consistent with a prudent degree of risk”. Thus, specific decisions on annual funding must be taken in light of a long-term perspective⁹, given that many governments aim to enhance long-run fiscal resilience. These considerations are in many markets taken against the backdrop of elevated debt-to-GDP ratios and borrowing requirements today. Many OECD debt managers continue to make use of the risk-based debt management framework to achieve portfolios that are more resilient against to potential market risks, such as interest-rate volatility.

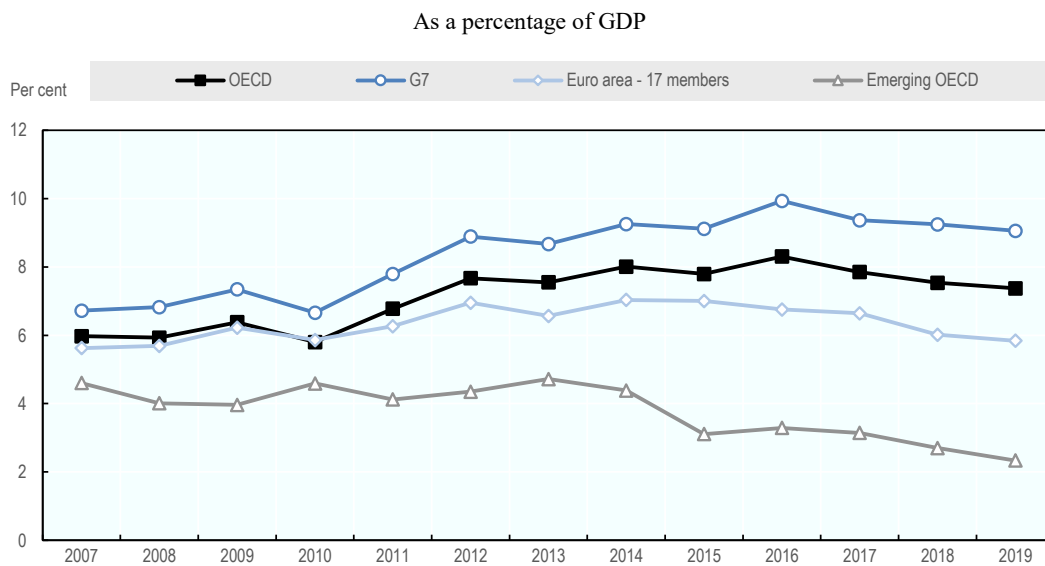
Lengthening the maturity structure of government debt, which helps to reduce roll-over risks, entailed relatively lower fiscal costs in recent years due to flattened yield curves. The share of long-term fixed interest rate debt in central government marketable debt for the OECD area as a whole increased from 75% in 2007 to 80% in 2018 and is projected to improve further in 2019 (Figure 1.10). Furthermore, in terms of the average maturity of outstanding debt, the weighted average term-to-maturity (ATM) figure for the OECD area has been rising and has coincided with larger issuance in recent years (Figure 1.14).

Figure 1.10. Maturity structure of outstanding central government marketable debt for the OECD area, 2007-2019



Source: 2018 Survey on Central Government Marketable Debt and Borrowing; Refinitiv, national authorities' websites and author calculations.

Figure 1.11. Medium and long-term redemptions of central government marketable debt in OECD country groupings, 2007-2019



Notes: See Annex 1.A1 for a list of countries in each country group.

Source: 2018 Survey on Central Government Marketable Debt and Borrowing; OECD Economic Outlook No. 104; Refinitiv, national authorities' websites and OECD calculations.

The debt redemption profile in the OECD area deteriorated significantly in the post-crisis period notably for the G7 countries and the euro area, but it has been gradually improving in recent years. After reaching its highest level in 2016, medium- and long-term redemptions of marketable debt for the OECD area are estimated to have declined to 7.5% of GDP in 2018 and are projected to remain around that level in 2019 (Figure 1.11). The fall is mainly due to the prolonged low level of interest rates together with continued economic growth across the OECD area.

1.7. Implications of monetary policy developments for debt dynamics and government securities markets

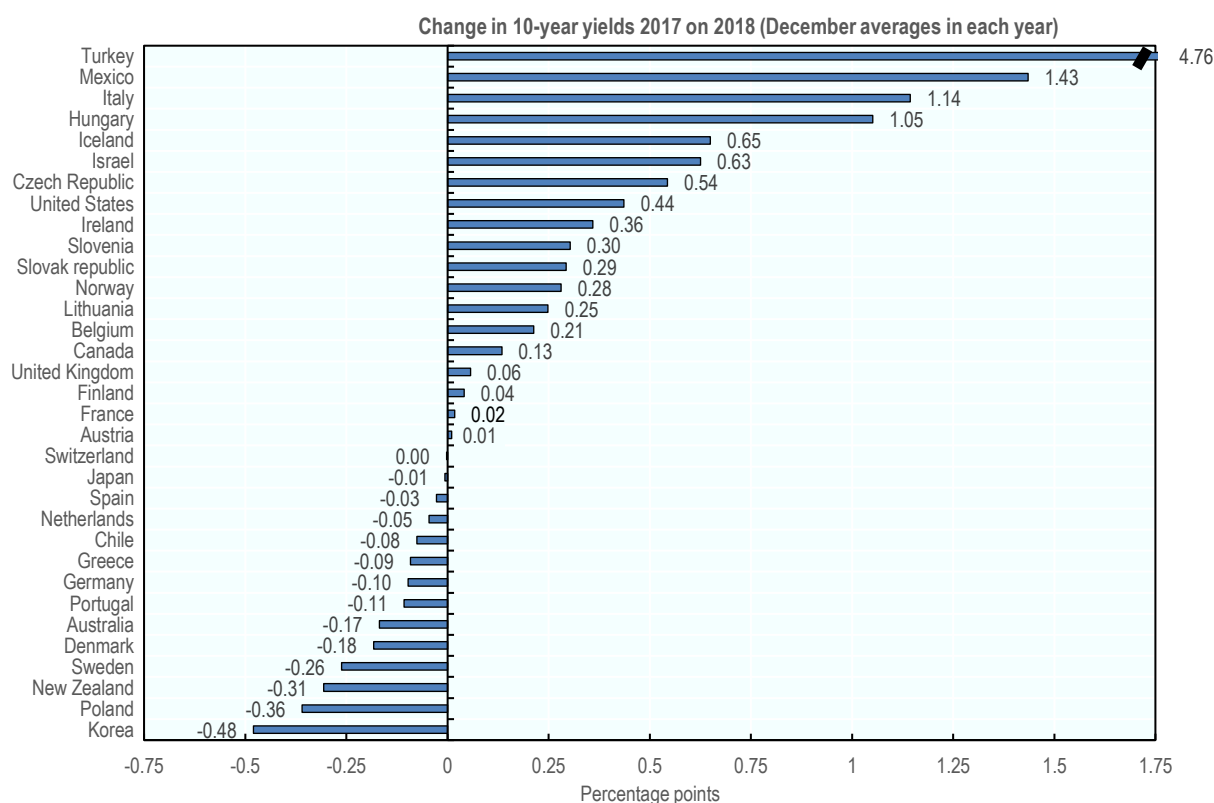
Global financing conditions have recently tightened somewhat, as monetary policy in some regions have been reversing course from a very accommodative policy stance. The monetary policy normalisation in the major advanced economies is making an uneven progress, reflecting different stages of recovery from the financial crisis (OECD, 2018b). So far, the normalisation process has been calibrated diligently against the financial market response and the need to support growth along with inflation expectations. The Federal Reserve has begun unwinding its asset holdings by capping reinvestments since September 2017¹⁰ and increased policy rates steadily since December 2015 on the back of solid economic growth and a strong labour market. As this publication goes to press, the Federal Reserve kept the target range for the federal funds rate on hold, and adopted a ‘patient’ stance for future adjustments to the target range in its January 2019 meeting. In terms of balance sheet normalisation, the Fed made no change to its current policy, but hinted at the possibility of some adjustments if needed in the future. In December 2018, the ECB has ended its vast asset purchasing programme and committed to reinvest the proceeds of maturing bonds that it already owns for an extended period of time – meaning that its portfolio will remain at about the current level. The ECB has kept benchmark interest rates on hold. Meanwhile, the Bank of Japan is continuing with its asset purchases to maintain 10-year government bond yields around 0% and has not communicated any plan for reducing stimulus.

The gradual exit from unconventional monetary policy has important implications for financial markets in general, and for government securities markets in particular, through a number of potential channels. These include, but are not confined to, changes in borrowing costs, investor base and liquidity risk. In this respect, sovereign debt managers face challenges stemming from monetary policy normalisation. The sensitivity of debt servicing costs to interest rate risk might be heightened in case of a sudden and sharp rises in market rates. In addition, due to the complications generated by sudden shifts in sentiment and perceptions of risk associated with certain sovereigns, rollover risk may emerge as a key policy concern for debt managers, in particular in countries with – perceived - debt sustainability problems.

The cost of sovereign borrowings, still at historically low levels, is on an upward trend in many countries. In several OECD countries, government bonds are still trading at low yields sometimes even at negative nominal yields (e.g. up to 3-year maturity in France, 7-year maturity in Germany and, 10-year maturity in Japan). Nevertheless, government bond yields have increased since the end of 2017 in the majority of OECD countries. Figure 1.12 presents the changes in 10-year government bonds yields between December 2017 and December 2018 average in OECD countries. The figures reflect a significant rise in borrowing costs in Hungary, Italy, Mexico and Turkey and to a moderate extent in the Czech Republic, Iceland, Israel and the United States over the review period. It should be noted that in some cases, political and geo-political factors (e.g. elections, the threat of

protectionism and risks related to Brexit) have contributed to stressed market conditions, while investors became nervous in response to rising uncertainty. For example, concerns over Italy's fiscal position and the news flow on the tensions between the Italian government and the European Commission about Italy's budget proposals have adversely affected market sentiment for the most part of the second-half of 2018. Amidst political risk perceived as increasing and deterioration of country's credit rating¹¹, risk premiums on Italian government bonds rose to high levels. The spread between Italian and German 10-year bonds doubled between March 2018 and November 2018, climbed to above 300 basis points, and eventually declined to around 250 basis points by year end.

Figure 1.12. Yields are on upward trend in many countries



Notes: Percentage points difference between the average 10-year yields in December of each year.

Source: Refinitiv; OECD calculations.

The OECD Working Party on Public Debt Management (WPDM) discussed potential impacts of political events on the issuance environment on several occasions in the past. Political developments are often assessed to have only a temporary impact on sovereign yields, with limited effects on sovereign borrowing programmes (OECD, 2018a).¹² However, when political events are associated with growing fiscal deficits and take place in conjunction with monetary policy tightening, the adverse impact can be substantial depending on the size and the length of the market tensions. That said, the markets might suddenly perceive the debt of some sovereigns as “risky”.

Against this background, a transparent debt management framework and a predictable issuance strategy, a strong two-way communication policy – with policymaking authorities, investors and intermediaries such as primary dealers – are instrumental in reducing the type of market noise that can unnecessarily spur borrowing costs. In general, sovereign debt managers are in favour of transparency and predictability since the long-run benefits¹³ of predictability outweighs the disadvantages. However, more predictability means less flexibility. This may pose challenges when exposed to funding shocks. In this regard, some level of flexibility is necessary to provide issuers with room for manoeuvre. Country experiences suggest that the availability of contingency funding tools¹⁴, which provide flexibility for issuance plans, is critical for confronting challenges in periods of market stress. Today, the role of flexibility in issuance programmes has become more important given uncertainty associated with the monetary policy actions along with the uncertainty inherited in macroeconomic and fiscal projections. This is, in particular, relevant for the countries with high redemption profiles.

When flexibility is built into debt management policies, debt management offices (DMOs) can take a proactive approach on several fronts including i) addressing unexpected funding needs with low cost, ii) preventing possible threats to the government's reputation and financing capacity due to failed auctions, and iii) easing market liquidity strains over certain bonds through buy-back or exchange operations. For example, keeping a liquidity buffer cushions events caused by market stress and increases financial flexibility, which in turn enhances market confidence (OECD, 2018a). Issuance of short-term instruments, such as T-Bills, are useful in absorbing shocks with at a relatively modest cost. For instance, in response to market volatility in June-July 2018, the Italian Treasury consulted with market participants, and held buy-back operations, exchange transactions through the Treasury cash buffer and tweaked some issuance to weather the storm.¹⁵

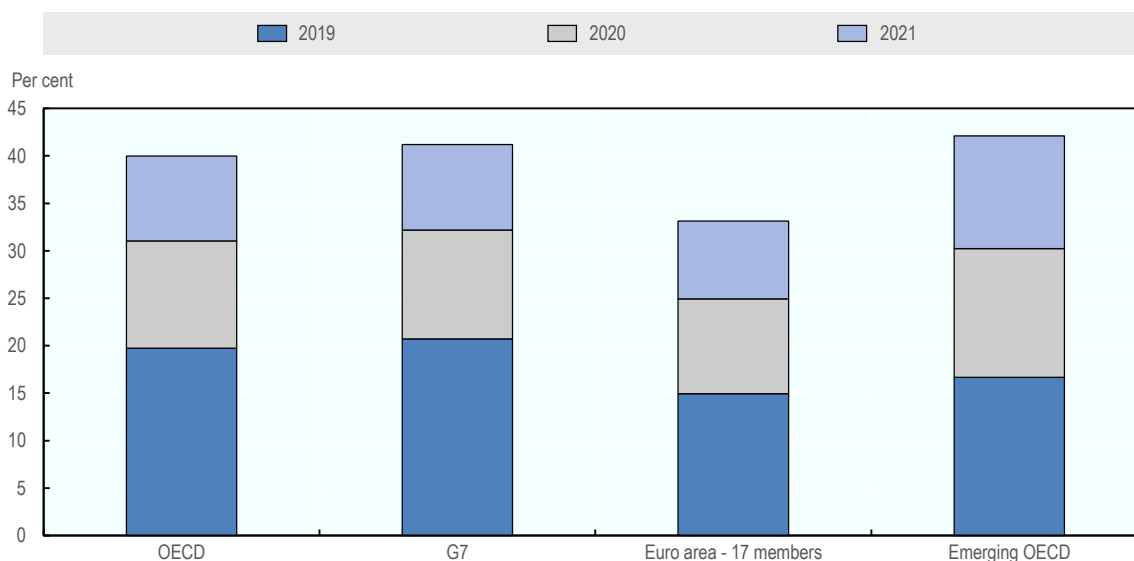
A sustained increase in interest rates pushes up debt servicing costs and, in turn, can put public finances and debt sustainability under sustained pressure. The impact assessment of higher interest rates and exchange rate movements on government interest expenditures through scenario analysis is quite important for policy makers to understand and assess future debt repayment capacity and fiscal resilience of an economy. Against this backdrop, DMOs often make use of stress tests to assess the impact of various shocks on debt dynamics and to project future interest expenses.

Overall, the impact of higher interest rates on interest costs of debt depends on the extent of the financing needs in the coming years and average maturity of existing debt. The transmission is expected to be relatively slow in countries where gross financing needs are limited and average-term-maturity is high. As discussed in previous sections, after being steady in recent years, net borrowing requirements of OECD governments increased in 2018 and are expected to rise further in 2019. Looking at country level data reveals significant differences in net financing needs. For example, net borrowing requirements of the G7 countries are significantly higher than the rest of OECD area.¹⁶ In contrast, smaller countries like Austria, Denmark, Sweden and Ireland have decreasing and/or limited net borrowing requirements. Nevertheless, a government needs to finance not only net borrowing needs, but also total redemptions - rolling-over existing debt -. When redemptions are sizeable, alongside high new borrowing requirements, the DMO may face considerable refinancing risk. Total redemptions of debt in the OECD area have soared in post-financial crisis period, and have remained high since then. Higher rollover risk is reflected in the challenging redemption profiles for the next three years (Figure 1.13). For the OECD area as a whole, governments will need to refinance around 40% of their outstanding marketable debt in the next three years. Among the G7 countries, the large

volumes of scheduled redemptions in France and Italy following the one of the United States and Japan are the most challenging. Emerging OECD countries have also substantial refinancing needs in the next three years. That implies a high interest rate risk for sovereigns that might need to refinance existing debt at (much) higher interest rates. If rising interest rates coincide with exchange rate depreciations, Hungary, Mexico and Turkey would face higher debt servicing costs as they have relatively high foreign currency denominated liabilities.

Figure 1.13. Cumulative percentage of debt maturing in 2019, 2020 and 2021

As a percentage of total marketable debt in 2018

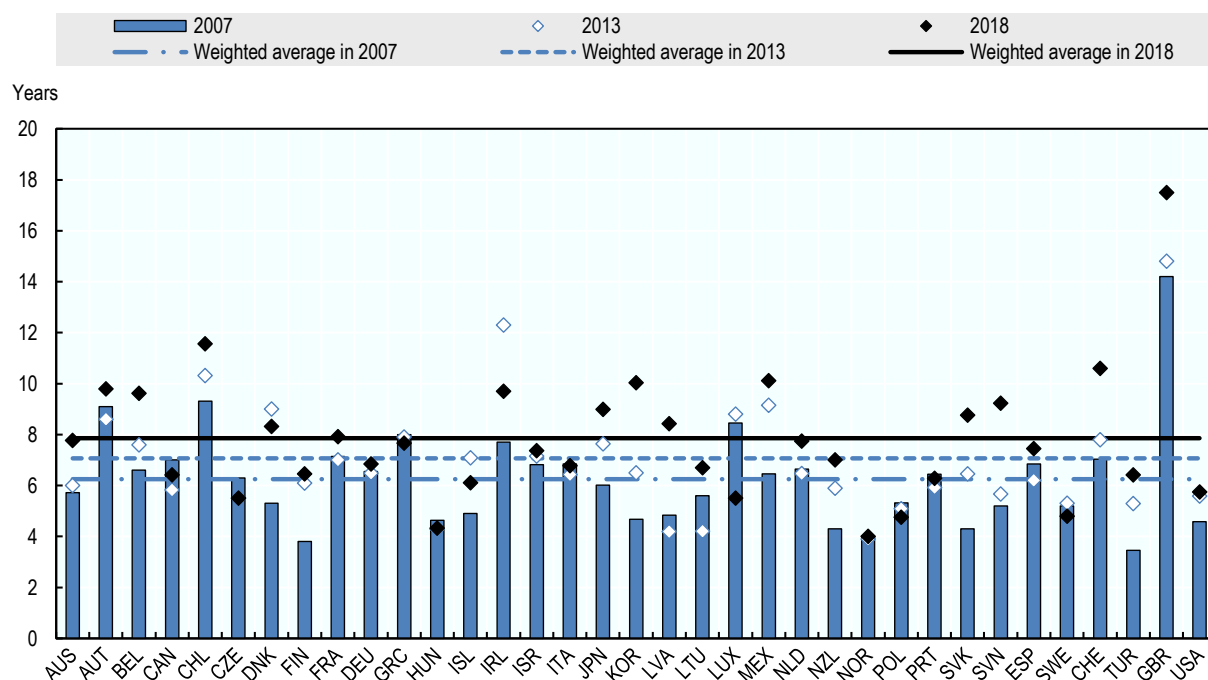


Notes: Cumulative percentage of debt maturing in the next 12, 24 and 36 months (i.e. in 2019, 2020 and 2021), as a percentage of total marketable debt stock (without cash) in 2018. Excludes Estonia, Latvia and Luxembourg.

Source: 2018 Survey on Central Government Marketable Debt and Borrowing; OECD Economic Outlook No. 104; Refinitiv, national authorities' websites and OECD calculations.

The maturity structure of central government debt has improved significantly since the financial crisis, owing to lengthened borrowing maturities. The share of long-term debt in central government marketable debt reached 90% in 2015 and has hovered around that level since then (Figure 1.10). Another important indicator of long-term interest rate risk is the average term-to-maturity (ATM) ratio. Figure 1.14 displays the trend in ATM of outstanding marketable debt in selected OECD countries since 2007. The weighted ATM has been increased from 6.2 years in 2007 to almost 8 years in 2018, which implies a slower pass-through of changes in market interest rates to government interest costs. Among OECD countries, the United Kingdom has by far the highest ATM with 17.5 years, followed by Chile, Switzerland and Mexico. On the other hand, ATM for some countries such as the Czech Republic, Hungary and Poland is lower than the OECD average, which implies a relatively higher exposure to changes in market interest rates.

Figure 1.14. Average term-to-maturity of outstanding marketable debt in selected OECD countries



Notes: Data are collected from Debt Management Offices and national authorities' websites. Data are not strictly comparable across countries, see Annex 1.A1 for further details. The weighted average was calculated using data from all countries for which ATM was available for 2007, 2013, and 2018.

Source: Surveys on central government marketable debt and borrowing; Debt Management Offices and national authorities' websites and author calculations.

Taken as a whole, although several countries managed to strengthen their fiscal resilience to shocks during the post-crisis period, a number of countries where relevant indicators are still poor have significant exposure to hikes in interest rates and changes in market sentiment. Furthermore, the reduced credit quality of sovereign bond issuance in the OECD area, notably in the G7 countries, has not been reflected in the cost of sovereign borrowing over the past decade (OECD, 2018a). In times of market turbulence, while “safe havens”, such as Germany, Japan and the US, experience the “flight to safety” phenomenon, sovereigns with weak fundamentals are more vulnerable to changes in market sentiments and spikes in borrowing rates. Although the volumes of scheduled redemptions of some euro area countries, particularly France, Italy and Spain, are fairly substantial for the next few years, roll-over risk should be manageable under relatively “normal” market access conditions. However, funding conditions for governments can become difficult due to the complications generated by sudden shifts in market sentiment. If market sentiment turns negative, risk premiums may rise sharply, putting public debt sustainability in danger depending on the length of the stressed period.

It should be emphasized that having sustained market access can be much more important than paying higher interest rates on government financing under certain circumstances. Once access to the market is lost, it can take a long and painful period for a sovereign to regain a full market access. In this regard, history holds valuable lessons: For example,

following the European sovereign debt crisis, Ireland and Portugal were able to restore full market access in 2013 and in 2014, respectively. Further discussion of country experiences with regaining market access following the European debt crisis is provided in Chapter 3 of this Outlook.

During the last decade, central banks have become one of the key investors of sovereign debt in several major OECD countries due to asset purchase programmes. For instance, central banks hold more than 40% of national government debt in Japan, above 20% in Germany, France and the United Kingdom and, 15% in the United States (as of December 2018). In this respect, the end of PSPP in the euro area and the reduction of asset holdings by the Federal Reserve will require gradually rising demand from other investors in the euro area and the United States. The gradual withdrawal of such large buyers may exert some upward pressure on bond yields. So far, policy steps regarding balance sheet normalisation have been well-communicated and explained in advance so that investors could account for these changes in their investment decisions. Given the governments' need for new debt is substantial, sovereign DMOs should benefit from re-engaging with their traditional investor base, such as pension funds and insurance companies, and putting more emphasis on regional diversification. With rising yields, a higher demand from 'real money investors' and foreign investors in search of high-quality assets with positive yields could be anticipated. In particular, the move away from sub-zero yields will be welcomed by the investors with self-imposed investment constraints regarding nominal positive returns. Chapter 2 looks at the evolving structure of investor base in addition to the role of investor base information in public debt management.

In times of heightened financial and political risks, advanced markets such as Germany, Japan and the United States with their highly liquid markets and rule of law are seen as "safe havens". In the meantime, changes in monetary policies in advanced economies, particularly in the United States and the euro area, have spill over effects on emerging economies. Recent monetary policy tightening in the United States has contributed to repricing across many asset markets. This, together with macroeconomic vulnerabilities and political tensions, led to significant financial turbulence in a few emerging-market economies, involving sizeable currency depreciations against the US dollar (OECD 2018b). Central banks striving for long-run systematic policy frameworks, take various factors into account including prospects associated with slower global growth. Yet, the speed of monetary normalisation and ultimate size of the central bank's balance sheets are unclear.

Borrowing conditions may become vulnerable to sudden shifts in investor sentiment and perceptions of sovereign risk. Thus, market liquidity, which is inherently delicate, will be a significant parameter to be watched going forward. Although it may look good now in some markets, it could be insufficient to handle large trades under stressed market conditions. Going forward, with a monetary policy stance expected to be less supportive, heightened financial and political risks could increase the probability and potential impact of adverse liquidity shocks to the financial system. Against this backdrop, the following part of this chapter discusses secondary market liquidity conditions of government securities through the lens of public debt managers.

1.8. Concerns over secondary market liquidity of government securities have been somewhat eased

Secondary market liquidity of government securities is important for supporting financial stability. When markets are illiquid, interest rates tend to be higher due to additional risk

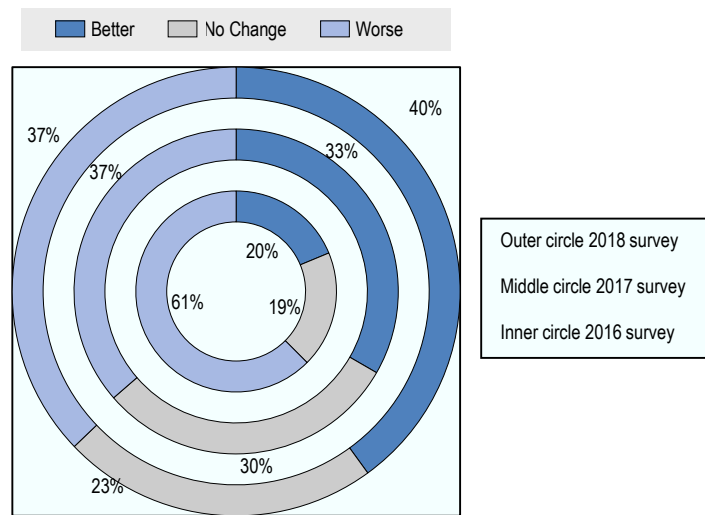
premium¹⁷, reflecting a higher probability of heightened volatility of price movements. From a public debt management perspective, reduced liquidity of government securities impairs primary market access and increases borrowing costs for sovereigns. In this respect, sovereign DMOs aiming at ensuring cost-effective financing encourage the development of a liquid and efficient government securities market and often play a key role in developing and securing well-functioning markets (OECD, 2018a).

Liquidity is a complex and subjective issue as there is no consensus on either the optimum level or the future course of market liquidity. For instance, although liquidity may look good now in some markets, it could be insufficient to handle large trades under stressed market conditions, especially with reduced involvement of central banks. Also, it is difficult to identify causes of changes in market liquidity as a wide range of factors are effective at the same time. In recent years, liquidity conditions in government securities markets have been constantly changing, reflecting combined influences of various factors including financial sector adjustments to post-crisis regulations; unconventional monetary policies; changes in composition of the investor base; and the proliferation of electronic trading venues and strategies.

The OECD survey of liquidity in secondary government bond markets aims to capture sovereign issuers' assessments of liquidity conditions annually. Major factors affecting secondary market liquidity of bonds include monetary policy developments, political uncertainties, new financial regulations, new financial technologies, evolution of government funding requirements and issuance strategies. The 2018 survey revealed that 14 OECD countries indicated enhanced liquidity conditions (Figure 1.15). The improvements in market infrastructures and in primary dealer (PD) systems, transparency and predictability about government borrowing as well as diversification of the investor base are listed as the main driving factors of better conditions in domestic market liquidity in these countries. On the other hand, 13 countries including Finland, Iceland and Israel continued to perceive deterioration in liquidity conditions in their local currency debt market, in particular for off-the-run securities. This is reflecting a confluence of factors, including regulatory requirements, diminished financing requirements and increased presence of buy-and-hold type of investors (e.g. central banks).

Compared to the 2016 survey results, the share of sovereign debt managers observing "worse" market liquidity conditions has decreased considerably. In 2016, a majority of the respondents (61%) indicated 'worse' liquidity conditions in domestic sovereign bonds. In the following two years, the results revealed lower shares of respondents indicating 'worse' conditions (37% in 2017 and 2018), which implies an improvement in market liquidity conditions. However, caution is advisable when interpreting the results, given a significant number of respondents indicate 'no change' (i.e. 30% in 2017 and 23% in 2018), or 'worse' (i.e. 37% in 2017 and 2018) market liquidity conditions in recent years. Taken as a whole, it can be concluded that observations on market liquidity conditions, which are still worse than the pre-crisis environment, have relatively improved recently in several OECD countries.

Figure 1.15. Observations of changes in liquidity conditions of domestic sovereign bonds in recent years: A comparison of responses between 2016, 2017 and 2018



Source: OECD Surveys on liquidity in secondary government bond markets (2016, 2017 and 2018).

Liquidity is not easily defined and measured given the evolving market structure (e.g. rising role of exchange traded funds and high-frequency trading). For example, algo-trading platforms hold a lot of seamless trades in small sizes in great frequencies, especially for on-the-run securities (Brain *et al.*, 2018b). Against this backdrop, PDs still have a predominant role in government securities markets in major OECD countries. During the 2018 annual meeting of the OECD Working Party on Public Debt Management (WPDM), members discussed the role of PDs in providing liquidity and implications of reduced warehouse capacities of PDs, as market makers. Anecdotes highlighted that holding sovereign bonds on a bank's balance sheet and making that balance sheet available for trading of government bonds has become more costly for PDs following the financial regulation reforms. That said, it makes it harder for PDs to intermediate sovereign bonds due to higher warehouse costs. This is particularly relevant for the countries with low borrowing needs such as Denmark, Germany and Sweden. Against the backdrop of the reduced warehouse capacity of banks, members of the WPDM have repeatedly stressed that regulatory changes in the financial system should strike the right balance between reducing risks – hence improving financial stability – and allowing the market-making abilities of banks (OECD, 2013 and 2014).

In response to the perceived deterioration in liquidity conditions, many DMOs have implemented various measures in recent years. These include changes in frequency and size of auctions; obligations and privileges of primary dealership systems; secondary market activities such as buy-backs and switches and securities lending facilities. The survey results indicate that secondary market liquidity conditions are still a source of concern in many markets, albeit recent measures taken by many DMOs have paid-off with some signs of relative improvement (e.g. Denmark, Germany, Turkey and the United Kingdom).

With the aim of enhancing liquidity in the government bonds markets, some DMOs have modified obligations and privileges of PDs in recent years. For instance, DMOs in Denmark, Iceland and Sweden provide a compensation for PDs based on their performance in secondary market trading. Another commonly used tool is buy-back and switch operations that enables issuers to strategically increase the size of on-the-run bonds. In 2018, the Danish central government has purchased all government-guaranteed mortgage bonds issued for financing social housing. These purchases are expected to allow the central government to build up series of liquid government securities and maintain a broad range of on-the-run issues (Danmarks National bank, 2018). In addition, a few DMOs have adopted more frequent and smaller auctions. For large issuers (e.g. the United Kingdom), adopting frequent and smaller-sized auctions in sovereign borrowing programmes can promote market liquidity of government bonds. However, smaller issuers may find it difficult to attract the attention of investors if auctions are too frequent (OECD 2018a). In this regard, faced with shrinking borrowing requirements, several small issuers prefer to reduce the number of auctions to underpin auction size and offer multiple securities in each auction. Another tool to support PDs is to offer securities lending facilities (SLFs) to act as a lender of last resort and promote secondary market liquidity by helping market participants continuously quote prices and avoid delivery failures. A detailed set of policy and management information about security lending facility practices in OECD DMOs, in terms of their purpose, use and common features is provided in Box 1.1.

Lastly, availability of comprehensive trade data on a timely basis offers deeper insights into liquidity developments in different segments of the market (e.g. maturity segments, on-the-run versus off-the-run securities, and trading venues) and thus facilitates monitoring and interpreting market dynamics, as anecdotal commentaries could sometimes be misleading.¹⁸ Therefore, DMOs attach special importance to improving collection of trade data in terms of its scope, quality and frequency. According to an OECD survey run amongst the DMOs in 2017, data collection on bond trade activities has improved in recent years in most OECD countries; however, there are still data gaps.¹⁹ For example, faced with major constraints in readily available micro-level data following the flash-crash in the US Treasury market in October 2014, the US authorities started to obtain such data through the Financial Industry Regulatory Authority by expanding the Trade Reporting and Compliance Engine ('TRACE'). The TRACE data have allowed for a more granular analysis and view of interdealer broker (IDB), dealer-to-dealer (DTD), and dealer-to-client (DTC) trading in different segments of the Treasury market (Brain *et al.*, 2018a and 2018b).

Box 1.1. Securities lending facilities managed by public debt management offices

The purpose and the use of the securities lending facility

A securities lending facility (SLF), through which the owner of bonds transfers them temporarily to a borrower, is a well-known policy tool used by central banks for monetary policy for financial stability purposes. Nevertheless, it is also a common practice amongst public debt management offices, who act as the lenders of last resort for government securities. From public debt management perspective, the SLF is one of the most common policy tools for promoting market liquidity of government securities. Securities lending can make significant contributions to the functioning of bond markets, as it supports market participants to continuously quote prices and reduces the risk of shortages, avoids settlement problems and in turn, enhance liquidity in government debt markets. Particularly, it has been proven to be a valuable tool during episodes of market stress.

Discussions by the Working Party on Debt Management highlighted that these facilities played a paramount role during the financial crisis when many banks turned to debt management offices (DMOs) to meet funding needs as market liquidity dried up. Since then, there has been a renewed interest in the design of SLFs. In recent years, liquidity in government bond markets has deteriorated in several countries, reflecting a confluence of factors, including regulatory requirements, investor base flows and supply shortages. This has been particularly relevant in the case of less liquid – scarcer – securities. Against this backdrop, several DMOs have been temporarily providing securities to help avoiding settlement failures, facilitating market-making activities, compensating for reduced holdings – due to increased warehousing costs, thus, encouraging their activity in government securities market.

Experiences suggest that the facility is often used sporadically. For example, the DMOs of Australia, Canada and Portugal have employed this facility only occasionally to mitigate strains in the government securities market in recent years. In Canada, the facility was used very actively in 2015 during a temporary shortage of Canadian sovereign bonds, and assessed as an effective tool for closing the demand-supply gap for individual securities and prevented settlement fails to a large extent. In recent years, the facility has been used regularly as an integral part of the annual debt management programme in a few countries where government funding needs are limited and debt is declining (e.g. Denmark, Germany, Ireland and Sweden). For example, the Swedish DMO faced with a sustained reduction in government financing needs and mounting concerns over liquidity conditions, has increased its repo facility significantly since the start of its Quantitative Easing Programme in 2015.

In a few countries including Finland and Turkey, it was established, but has never been utilised. Some large issuers (e.g. Italy, Japan, and the United States) do not have a SLF in place. In these cases, other tools such as re-opening issues, buy-back and switch operations are found to be suitable or most consistent with a “regular and predictable” debt management framework.

Common features of SLFs

A recent OECD survey of SLFs indicates that this facility is in place in 20 DMOs. In many cases, it has existed for more than ten years (e.g. Australia, Belgium, Canada, Denmark, Hungary, Iceland, Israel, Mexico, Portugal and Sweden), while a few countries have

adopted it during the last five years (e.g. Finland, France and Germany). The survey results also indicate that three DMOs are considering establishing a SLF.

In majority of the surveyed countries, the facility is offered exclusively to primary dealers (PDs) who must comply with quoting obligations and often engage in short positions as part of their daily market-making activity. However, there are certain limits applied to the extent of PDs' borrowing securities through SLFs in terms of aggregate amount, per security and per firm. A vast majority of the SLFs designate O/N and T/N with same day settlement. In terms of managing counterparty risk, DMOs use cash and government securities as collaterals, and apply a fixed fee as well as monetary penalties at delivery failures.

Source: The information provided in this box is mainly drawn from the results of a survey conducted on Security Lending Programmes compiled by the Swedish Debt Management Office for the annual meeting of the OECD Working Party on Debt Management on 6-7 November 2018.

Notes

¹ The cut-off date for data collected through the Survey on Central Government Marketable Debt and Borrowing conducted by the OECD Working Party on Debt Management and other data considered in this chapter was December 2018.

² In the United States, the federal tax cut and the increase in federal spending at the beginning of 2018 substantially increased the government deficit, requiring a jump in the amount of Treasury securities needed to fund the gap.

³ Between 2014 and 2016, the volume of negative-yielding fixed-rate bond issues in 14 OECD countries stood at USD 1.25 trillion, total premiums received reached a substantial level, and the maturity of negative-yielding issues went out to 10 years in Germany, Japan, and Switzerland (OECD, 2017a).

⁴ The US Treasury moved the settlement and maturity of the US 1-month bill from Thursdays to Tuesdays to pair with the newly introduced 2-month bill (the settlement date for the 3-month, 6-month, and 1-year T-bills continue to settle and mature on Thursdays), to reduce settlement sizes, to smooth out cash balance, and to help dealers to digest issuance amounts.

⁵ As of 2017, index-linked gilts account for around 25 percent of the UK government's annual debt issuance as well as its debt portfolio – the highest level among G7.

⁶ The term “green bond” refers to debt securities whose proceeds are used to finance governments' projects with an environmental benefit (OECD, 2018a).

⁷ In terms of issuer type in green bond markets, development banks and financial corporates account for more than two thirds of the total green bond market while sovereigns, which constitute a large share of traditional bond issuance, are increasing market share in recent years (Sustainable Banking Network, 2018). In addition to OECD countries, Fiji (2017), Indonesia (green sukuk, 2018) and Nigeria (2017) are among countries that issued sovereign green bonds in recent years.

⁸ Liquidity premium is a risk premium demanded by investors to compensate for uncertainty of the ability to sell a security easily for its fair market value.

⁹ OECD DMOs consider a long-term impact of potential strategies through modelling exercises which optimises interest cost volatility relative to the cost that is paid over long periods (e.g. simulation horizon is 20 years for the US TBAC debt management model, 10 years in Canadian debt strategy model). Several DMOs share in depth information about the risk models/techniques that are

used to help debt managers determine their optimal financing strategy (e.g. Canada, Denmark, Turkey and the US), via working papers and annual debt reports.

¹⁰ In September 2017, the Federal Reserve voted a plan to gradually scale back reinvestments of maturing securities: Principal payments from maturing securities were planned to be reinvested only if they exceed gradually rising caps (Federal Reserve Bank of New York, 2017). Hence, the US Treasury securities held by the Fed decreased from USD 2.5 trillion in September 2017 to USD 2.2 trillion in December 2018 (<https://fred.stlouisfed.org/series/TREAST>).

¹¹ Pointing to the increased credit risk associated with potential fiscal loosening, Moody's downgraded Italy's credit rating in October 2018, Fitch and S&P lowered country's outlook from stable to negative in August and October 2018.

¹² For example, several political events including the Brexit referendum in June 2016, the presidential elections in the United States in November 2016 and in France in April 2017 have created brief market swings. In each cases, risk premium widened for a period, but narrowed back to earlier levels as risk appetite returned to markets.

¹³ A predictable issuance programme i) raises DMO's credibility, accountability; ii) allows transparent allocation; iii) reduces uncertainty for investors; iv) facilitates better communication and marketing. This, in turn, – based on expert judgment and investors' feedback– broadens the investor base, lowers risk premiums and decreases borrowing costs and fosters secondary market liquidity.

¹⁴ A detail discussion on contingency funding tools such as immediate access to asset portfolio/liquidity buffer; issuance of short-term instruments, such as liquidity buffers, T-Bills and commercial papers; overdraft facility arrangements with CBs, and credit lines with banks is available in the 2018 edition of the SBO.

¹⁵ A set of detailed information on announcements and results of special operations is available on the Italian Treasury's website: http://www.dt.tesoro.it/en/debito_publico/altre_operazioni/

¹⁶ Between 2007 and 2018, net borrowing requirements as a percentage of GDP for the OECD area as a whole has risen from 1% to 3%. In the same period, the ratio for the G7 countries has surged from about 1% to 3.8%.

¹⁷ Investors charge risk premium (extra return) for various risks associated with investment in bonds including, but not limited to, duration risk, credit risk, inflation risk and liquidity risk. Liquidity risk premium is investors' additional compensation demand for uncertainty about the ability to sell a security easily at its fair market value.

¹⁸ For example, although there are anecdotal commentaries indicating growing hedge-fund activity in government securities markets in the post-crisis environment, the lack of more granular investor base data is limiting the analytical test of these arguments.

¹⁹ A data gap is reported to exist particularly in i) investor type and geographical distribution, regarding both holdings and flow data, and ii) high-frequency transaction-level bond market data (OECD, 2018a).

References

- Brain, Doug, Michiel De Pooter, Dobrislav Dobrev, Michael Fleming, Pete Johansson, Collin Jones, Michael Puglia, Frank Keane, Liza Reiderman, Tony Rodrigues, and Or Shachar (2018a); “*Unlocking the Treasury Market through TRACE*” FEDS Notes; Board of Governors of the Federal Reserve System, September 28, 2018; <https://doi.org/10.17016/2380-7172.2251>.
- Brain, Doug, Michiel De Pooter, Dobrislav Dobrev, Michael Fleming, Pete Johansson, Frank Keane, Michael Puglia, Tony Rodrigues, and Or Shachar; (2018 b) “*Breaking Down TRACE Volumes Further*,” Federal Reserve Bank of New York Liberty Street Economics (blog), November 29, 2018; <https://libertystreeteconomics.newyorkfed.org/2018/11/breaking-down-trace-volumes-further.html>.
- Danmarks Nationalbank (2018), “*New financing of social housing strengthens the market for Danish government Securities*”, December 2018 Analysis No. 14, Copenhagen; www.nationalbanken.dk/en/governmentdebt/publications/Pages/New-financing-of-social-housing-strengthens-the-market-for-Danish-government-securities.aspx
- Dell’Ariccia, Giovanni, Pau Rabanal, and Damiano Sandri (2018), “*Unconventional monetary policies in the euro area, Japan, and the United Kingdom*”, Hutchins Center Working Paper 48, October 2018; <https://www.brookings.edu/wp-content/uploads/2018/10/WP48-DellAriccia-et-al.pdf>
- Dutch State Treasury Agency (2019), “*Outlook 2019*”, December 2018; <https://english.dsta.nl/documents/publication/2018/12/14/outlook-2019>
- Federal Reserve Bank of New York (2017), “*Projections for the SOMA Portfolio and Net Income*”, July 2017; www.newyorkfed.org/medialibrary/media/markets/omo/SOMAPortfolioandIncomeProjections_July2017Update.pdf
- Federal Reserve Bank of New York (2018), “*Monetary Policy Strategies for a Low-Neutral-Interest-Rate World*”, November, 2018; Speech by John C. Williams Remarks at the 80th Plenary Meeting of the Group of Thirty, Federal Reserve Bank of New York, New York City; <https://www.newyorkfed.org/newsevents/speeches/2018/wil181130>
- HM Treasury (2018a), “*Debt Management Report 2018-19*”, March 2018, <https://dmo.gov.uk/media/15381/drmr1819.pdf>
- HM Treasury (2018b), “*Managing fiscal risks: government response to the 2017*”, July 2018; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/725913/Managing_Fiscal_Risks_web.pdf
- Sustainable Banking Network (2018), “*Creating Green Bond Markets – Insights, Innovations, and Tools from Emerging Markets*”, October 2018; www.ifc.org/wps/wcm/connect/2448e622-3e36-4098-b228-ffe52185af51/SBN+Creating+Green+Bond+Markets+Report+Toolkit.pdf?MOD=AJPERES
- Koijen, R.S.J., F. Koulischer, B. Nguyen, and M. Yogo (2016), “*Quantitative easing in the euro area: The dynamics of risk exposures and the impact on asset prices*”, Banque de France, Document de Travail No. 601, September.
- Kearns, J., A. Schrimpf and D. Xia (2018), “*Explaining Monetary Spillovers: The Matrix Reloaded*”, November 2018, BIS Working Papers No 757; <https://www.bis.org/publ/work757.htm>
- Maravalle, A. and L. Rawdanowicz (2018), “*To shorten or to lengthen? Public debt management in the low interest rate environment*”, OECD Economics Department Working Papers, No. 1483, OECD Publishing, Paris; <https://doi.org/10.1787/192ef3ad-en>

- Mehrotra, N. R. (2017), “*Debt Sustainability in a low interest rate world*”, Hutchins Center Working Paper 32, June 2017; www.brookings.edu/wp-content/uploads/2017/06/wp32_mehrotra_debtsustainability.pdf
- OECD (2013), *OECD Sovereign Borrowing Outlook 2013*, OECD Publishing, Paris; <https://doi.org/10.1787/23060476>
- OECD (2014), *OECD Sovereign Borrowing Outlook 2014*, OECD Publishing, Paris; https://doi.org/10.1787/sov_b_outlk-2014-en
- OECD (2017a), *OECD Sovereign Borrowing Outlook 2017*, OECD Publishing, Paris; https://doi.org/10.1787/sov_b_outlk-2017-en
- OECD (2017b), *Business and Finance Outlook Scoreboard*, www.oecd.org/daf/oecd-business-and-finance-scoreboard.htm
- OECD (2018a), *OECD Sovereign Borrowing Outlook 2018*, OECD Publishing, Paris; https://doi.org/10.1787/sov_b_outlk-2018-en
- OECD (2018b), *OECD Economic Outlook, Volume 2018 Issue 2*, OECD Publishing, Paris; https://doi.org/10.1787/eco_outlook-v2018-2-en
- State Treasury of Finland (2019), “*Debt Management Annual Review 2018*”; www.treasuryfinland.fi/en-US/News_and_publications/Publications/Annual_reviews
- Turner, D. and F. Spinelli (2012), “*Interest-rate-growth differentials and government debt dynamics*”, OECD Journal: Economic Studies, Vol. 2012/1; http://dx.doi.org/10.1787/eco_studies-2012-5k912k0zkhf8
- US Treasury (2018), “*Report to the Secretary of the Treasury from the Treasury Borrowing Advisory Committee of the Securities Industry and Financial Markets Association*”, Press release on 30 October 2018; <https://home.treasury.gov/news/press-releases/sm539>

Annex 1.A. Methods and sources

Regional aggregates

- Total OECD area denotes the following 36 countries: Australia, Austria, Belgium, Canada, Chile, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States.
- The G7 includes seven countries: Canada, France, Germany, Italy, Japan, United Kingdom and the United States.
- The OECD euro area includes 17 members: Austria, Belgium, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Portugal, Slovak Republic, Slovenia and Spain.
- In this publication, the Emerging OECD group is defined as including five countries: Chile, Hungary, Mexico, Poland and Turkey.
- The euro (€) is the official currency of 19 out of 28 EU member countries. These countries are collectively known as the Eurozone. The Eurozone countries are Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia, and Spain.
- In the case of figure 1.6. (Government benchmark interest rates in OECD countries) calculations for 3-year, 5-year and 10-year benchmark government bond yields, used the following group of countries: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Hungary, Iceland (5-year and 10-year yields only), Ireland (5-year and 10-year yields only), Israel, Italy, Japan, Korea, Lithuania, Mexico, Netherlands, New Zealand (5-year and 10-year yields only), Norway (5-year and 10-year yields only), Poland, Portugal, Slovak Republic (5-year yields only), Spain, Sweden, Switzerland, United Kingdom, United States.

Calculations, definitions and data sources

- Standardised gross borrowing requirements (GBR) as a percentage of GDP are calculated using nominal GDP data from the OECD Economic Outlook No. 104, November 2018.
- To facilitate comparisons with previous versions of the Outlook, figures are converted into US dollars using exchange rates from 1 December 2009, unless indicated otherwise. Where figures are converted into US dollars using flexible exchange rates, the main text refers explicitly to that approach. Source: Refinitiv. The effects of using alternative exchange rate assumptions (in particular, fixing the exchange rate versus using flexible exchange rates) are illustrated in Figures 1.3 and 1.4 of Chapter 1 of the *Sovereign Borrowing Outlook, 2016*.

- All figures refer to calendar years unless specified otherwise.
- Aggregate figures for gross borrowing requirements (GBR), net borrowing requirements (NBR), central government marketable debt, redemptions, and debt maturing are compiled from answers to the Borrowing Survey. The OECD Secretariat inserted its own estimates/projections in cases of missing information for 2018 and/or 2019, using publicly available official information on redemptions and central government budget balances.
- The average term-to-maturity data in Figure 1.14 is not strictly comparable across countries. Some countries may exclude some securities (like short-term debt) whilst others may include them. The following notes were received from each country:

Australia	Weighted average term to maturity calculation includes Treasury Bonds, Treasury Indexed Bonds, and Treasury Notes. Security weightings are based on the face value of each instrument.
Chile	All marketable debt in Chile are bonds.
Czech Republic	Marketable central government debt excludes savings government bonds (retail bonds).
Denmark	Excludes swap effects.
Finland	This is the ATM for the central government debt, excluding no securities at the end of 2018..
Germany	Excludes swap effects, maturities of inflation-linked securities are weighted by 0.75 %
Hungary	Data excludes retail securities, locally issued FX bonds, loans, and in 2018 a bond series held by the National Bank of Hungary (only negligible amount). Data includes cross-currency swaps.
Ireland	Please note the calculations for the Weighted Average Maturity include Irish Government Bonds, Euro Commercial paper and Irish Treasury Bills.
Israel	Marketable debt in local and foreign currency. Year 2018 is estimation.
Japan	(Note) MOF announces ATM, based on Fiscal Year, not Calendar Year. Figures from 2007 to 2017 exclude saving bonds. Figures of 2018 are estimated and include saving bonds.
Mexico	Our calculation of the ATM considers all outstanding market debt (short-term and long-term). Estimates for 2018.
Netherlands	The figures mentioned include only the capital market bonds.
New Zealand	The calculation is based on all NZ government marketable securities including Nominal Bonds, Inflation-Indexed Bonds, and Treasury Bills. The Calculation excludes the securities held by NZ Reserve bank and Earthquake Commission.
Norway	Includes government's own holdings. Excludes interest rate swaps.
Poland	Includes all marketable State Treasury securities.
Sweden	Marketable debt securities include: Government bonds, Inflation-linked bonds, Treasury bills, Public bonds in foreign currency, and Commercial paper in foreign currency
Switzerland	Outstanding marketable debt, excluding: own tranches not yet issued and securities for cash management purposes, excludes swap effects.
Turkey	Weighted average term to maturity (ATM) figures reflects central government marketable debt.
United Kingdom	Treasury bills for cash management purposes, DMO's gilt holdings and undated gilts are excluded from the calculation of the weighted average term to maturity.

Chapter 2. Understanding investor demand for government securities

The investor base for government securities has evolved significantly over time. Today, a wide range of individual and institutional investors buy and sell government bonds and bills with different motivations. In addition, new technologies in finance have had substantial implications for primary and secondary government debt markets. This chapter looks at the evolving structure of the investor base in addition to the role of investor base information in public debt management.

Sovereign issuers have a strong interest in observing and assessing the investor base in terms of changing needs and behaviours. This is critical to enable debt managers to draw up more informed issuance strategies and to adjust investor relations and communication practice. Against the backdrop of ever-changing conditions in the investor landscape, sovereign debt managers strive to enhance the information on the investor base, as well as engage with them on a continuous basis to understand their prevailing concerns/interests. Accordingly, they adapt how they communicate, what they sell, and the way they sell through innovation and re-organization.

2.1. Introduction

The changing profile of the investor base is having a major impact on the functioning of sovereign debt markets. Today, sovereign debt management offices function in a more demanding and more volatile investor landscape. This new environment requires closer monitoring of market, a diligent communication strategy with investors and greater transparency of debt management in terms of debt statistics, long-term strategies and short-term funding plans.

Against this backdrop, this chapter discusses relevance of the investor base for sovereign debt management, access to the investor base information, current and potential changes in investor base as well as implications of these developments for issuance and communication strategies.

Key findings

- The primary objective of sovereign debt management, which is financing government borrowing needs at the lowest cost, taking into account risk, can only be achieved by encouraging the development of a liquid and efficient government securities markets, and diversifying the investor base.
- Decisions on the composition of debt issuance methods are informed by an assessment of investor demand for debt instruments by maturity and type. Issuance methods (e.g. syndications, auctions or direct sales) are also adapted based on target investor base.
- The last decade was a period of significant shifts in the investor base as well as investor behaviour, partly due to quantitative easing programmes and regulatory changes. Widespread adoption of new financial technologies are also having an influence on the trading behaviour.
- A majority of OECD countries receive broad information on foreign non-bank investor categories, under which foreign investors with significantly different investment mandates are reported together. In order to make informed decisions on issuance plans, sovereign issuers need more granular and timely investor base data, particularly concerning the subsectors of foreign investors.
- Continued funding challenges in the post-crisis environment have led to a situation where a broad and diverse investor base is more essential than before to support liquidity, depth and stability in government securities markets.
- For countries with a concentrated investor base, the challenge is to diversify the investor base in order to be prepared for a potential structural change in the ownership of government securities. For countries with limited government funding needs, the challenge is to address investors' concerns over long-term viability of government securities markets.
- Against this investor landscape, sovereign issuers would benefit from frequent and consistent dialog with investors. Investor relation programmes should cover potential investors as well as existing investor base. In addition, there is a need for re-engaging with their traditional investor base, such as pension funds and insurance companies, and putting emphasis on geographical diversification.

2.2. Relevance of investor base for sovereign debt management

Throughout the centuries, the use of government securities has grown exponentially, with both issuers and investors using these securities for various reasons. The early examples of government debt indicate that governments issued bonds only for financing budget deficits (particularly for funding wars) and to a limited number of local investors.¹ In modern financial markets, government securities have a wider set of roles and a broadened investor base.

They serve as a saving instrument for individuals and institutional investors, an investment instrument for central banks, a risk management instrument for companies, a collateral to secure to financial transactions, and a benchmark for pricing of other debt instruments. For example, pension funds and insurance companies invest in long-term government bonds to meet their future liabilities. Central banks use government bonds for quantitative monetary policy purposes along with reserve management. Another phenomenon observed in recent years is the increasing number of investors committed to integration of environmental, social, and governance (ESG) factors, catalysing allocation of capital to green bond markets.

Investors' preferences for specific bonds have influence on issuance and communication strategies. For example, the trend of growing ESG-sensitive investors has encouraged sovereign issuers to consider issuing green bonds and adjust their communication strategies. Similarly, demand of pension funds for long-dated indexed and fixed securities is an important factor prompting issuance choices. According to the preferred-habitat view proposed by John Culbertson (1957) and Franco Modigliani and Richard Sutch (1966), there are investors with preferences for specific maturities, and the interest rate for a given maturity is influenced by the demand of the corresponding investors and the supply of bonds with that maturity. That said, a higher demand of pension funds would be expected to raise prices of long-term bonds and thus lower long-term interest rates.

In addition to changes in investor base, new technologies in finance have had substantial implications for primary and secondary government debt markets in the last few decades.² For example, new electronic systems in primary markets play an important role by making it easier for retail investors as well as institutions to bid directly in auctions. In the secondary markets, automated trading systems have improved order entry speed at a lower cost and helped market makers to maintain tight yield spreads and consistent prices for closely related assets, which in turn supports market liquidity. However, algorithms-based trading may also cause less heterogeneous behaviour, leading to greater volatility. In this regard, investor data is important to be able to assess the influence of one single investor or a group of investors or the dependence on those investors in government securities markets.

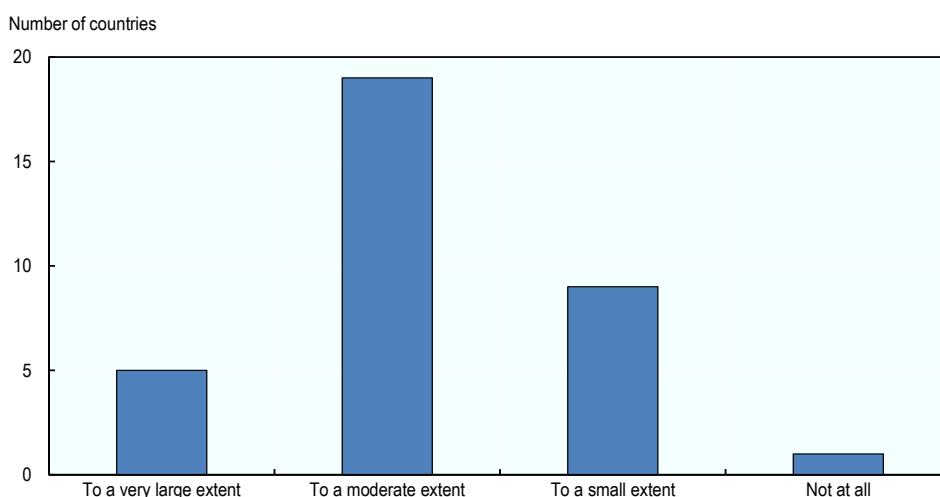
If the investor base is diverse and includes different types of investors from different geographic regions, the behaviour of any subset will have a diminished effect. Credit rating agencies also consider a broad and diversified investor base as a credit supportive feature (Moody's, 2018). For instance, when foreign investor demand reverses, provided that banking sector is able to absorb additional buying of securities, negative impact of a sell-off would be limited. Similarly, domestic institutional investors can act as a buffer absorbing part of the excess of supply of medium-long term paper when foreign investors sell off. Therefore, a stable and diversified investor base can facilitate the absorption of volatile capital flows and mitigate the pressure on refinancing in times of stress.

Nevertheless, it should be noted that there is no generally accepted definition of a diversified investor base.

From the issuers' perspective, a reliable and broadly diversified investor base is critical as it supports liquidity, depth and stability in government securities markets. Today, government debt is not only issued for financing deficits, but also to meet investors' needs for a risk-free asset and as part of a broader strategy to develop local bond markets.³ Indeed, since the 1990s it has been widely recognized that the primary objective of sovereign debt management, financing government borrowing needs at the lowest cost, taking into account risk, can only be achieved by encouraging the development of a liquid and efficient government securities markets, diversifying the investor base, and meeting the principles of openness, transparency and predictability. Against this backdrop, sovereign debt managers have adapted what they sell, and the way they sell to the ever-changing conditions in government securities market through innovation and re-organization. Clearly, understanding the changes in investor demand for government securities is a key element of this progression. Changes in investor demand have an influence on a wide range of sovereign debt management issues from issuance strategy to transparency and communication practices.

An issuance strategy can include different maturity and interest-rate combinations of existing instruments as well as new financing instruments. When setting issuance strategies, sovereign issuers consider investor demand for a wide range of funding instruments (e.g various types of loans, bonds, bills and commercial papers). The 2018 survey of the OECD Working Party on Debt Management (WPDM) on primary market developments mirrors this situation. Specifically, when setting issuance strategies, 33 out of 34 participant countries take investor base information into account from a small extent to a very large extent. The survey shows that investor base information is important for sovereign debt managers to implement more informed issuance strategies.

Figure 2.1. Influence of the investor base knowledge on issuance strategy



Source: 2018 Survey on primary market developments by the OECD Working Party on Debt Management.

In order to diversify the investor base, sovereign issuers focus on attracting investors with different mandates and investment horizons through issuance strategies and investor relations policies. In most cases, maturity composition of the debt issuance is determined

in consideration of market needs and trends. In terms of maturity choices, overall central banks prefer short-dated securities for reserve management purposes, while institutional investors such as insurance companies and pension funds invest in long-term bonds to match the maturity of their liabilities. For example, sustained strong demand from pension funds for long-term assets is one of the driving factors of long maturity bond issuance in the UK.⁴ Similarly, life insurance companies in Japan are the major investors for super long-term Japanese government bonds (JGBs).⁵

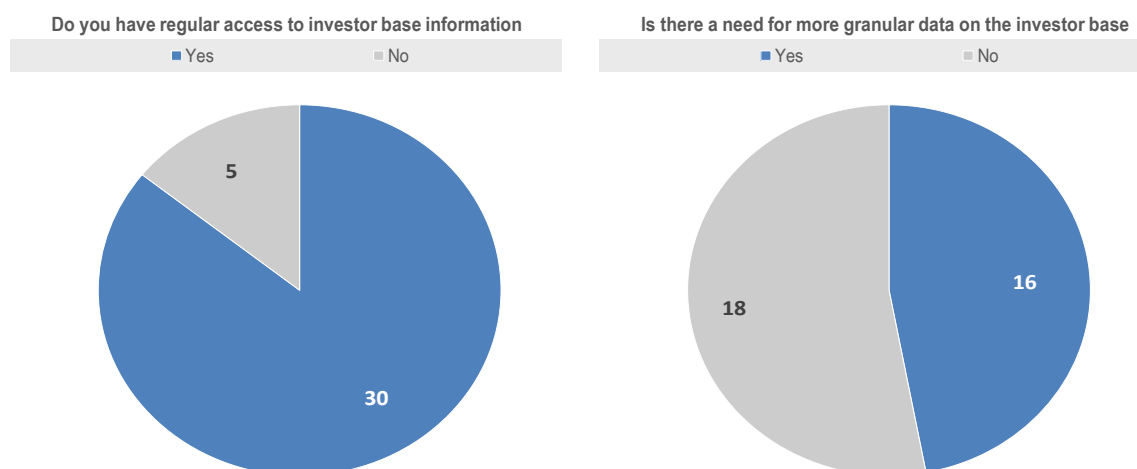
Investors demand transparency and clarity in debt management operations and plans. When investors understand better how and why decisions about changes in funding and debt management are made, uncertainty may be reduced, leading, in turn, to lower borrowing costs. On the subject of providing clarity to the market about future debt policies, sovereign issuers in favour of transparency and predictability in general since the long-run benefits of predictability outweigh the disadvantages (e.g. losing flexibility).

Accessing investor base information is a prerequisite for monitoring the investor base, information-based strategy-making, as well as for building and maintaining relations with current and potential investors. With this in mind, the next part of this chapter discusses debt management offices' (DMOs) access to quantitative and qualitative information on investor profile and preferences.

2.3. Access to investor base information

A majority of OECD area issuers have regular access to investor base information (Figure 2.2). Usually, the data is more granular for domestic investor groups than for foreign investors. Typically, holdings of primary dealers, domestic pension funds and insurance companies and national central banks are regularly collected, and other local financial institution holdings are calculated as a residual. On the other hand, non-resident investors are often broken down into three sub-sectors: central banks, banks and non-bank financial institutions. It means that the foreign non-bank category is composed of a wide range of investor groups including hedge funds, asset managers, insurance companies and pension funds from different regions. Clearly, each of these investor groups has significantly different investment mandates, which in turn lead to different trading behaviours.

Figure 2.2. DMOs access to investor base information



Source: 2018 Survey on primary market developments by the OECD Working Party on Debt Management.

Given the fact that the structure of the domestic and foreign investor base is an important element for the types of products offered by the issuer, many DMOs point to lack of detailed information. Specifically, 16 out of 34 respondents to the 2018 survey on primary market developments highlighted a need for more granular data on the investor base (Figure 2.2). During its 2018 annual meeting, members of the OECD Working Party on Debt Management (WPDM) elaborated on the availability of investor base information and the need for more granular data, particularly concerning the foreign investors category. Sovereign debt managers highlighted that more detailed information on the investor base would be desirable for answering a set of key questions including the following: i) is there a strong concentration or strong diversification of investor base?; ii) whom to sell a new security?; iii) whom to visit on road-shows?; iv) to what extent is the sovereign vulnerable to sudden investor outflows?; and v) how to structure the issuance plan for the upcoming year?. It was also stressed that the aim is not to act like a regulator, but purely to allow informed issuance strategies and to assess longer-term trends.

For domestic investor base, registry information is the primary source of information with intermediaries (e.g. Primary dealers) providing a secondary source of information. It is a common practice amongst the OECD countries that primary dealers are often obliged to report on their trading activities, as well as on their observation of investor demand. In terms of coverage and period of such reporting, country experiences vary across the OECD area. In many countries, primary dealers prepare monthly reports on their activities, in addition to *ad hoc* research or surveys requested by the DMOs. Primary dealers in euro area report to DMOs within Harmonized Reporting Format (HRF). In a few cases (e.g. Ireland and the United Kingdom), DMOs receive primary dealers' position at the end of each business day, which reveals the relevant information such as PDs' appetite for different bonds, and for how long PDs keep bonds on their books following each auction.

The geographical diversification of the investor base over the last few decades led to an important shift in the holders of government securities from local CSD (central securities depository) to international CSDs. Sovereign debt managers often cite the IMF, ECB and BIS as the primary data source for foreign investor holdings.⁶ It should be noted that efforts to collect consistent and timely investor data by international institutions have increased in recent years. For example, the ECB introduced 'Security Holdings Statistics' in 2014, in response to the need for granular information on holdings of individual securities. In addition, the IMF's sovereign investor datasets for advanced economies and emerging markets are regarded as welcome developments. Despite the recent progress, sovereign issuers highlight incomplete coverage of holdings, delays in publishing and granularity of categories as the main shortcomings of existing data.

2.4. Current and potential changes in investor base

The survey results show that a large majority of DMOs have been observing structural changes in the investor base composition in recent years. Major trends draw on issuers' observations on investor demand across the OECD area presented in Table 2.1, as follows:

- *More changes observed in domestic investors demand:* The number of countries observing changes in domestic investor demand higher than those with changes in foreign investor demand.
- *Greater role of central banks and institutional investors:* In terms of central banks and institutional investors, the number of countries observing stronger demand

from foreign and domestic markets is more than double those observing lower demand.

- *Higher demand from national central banks coincides with lower demand from domestic banks:* Many countries that reported higher demand from national central bank also observed lower demand from domestic banks.

Table 2.1. Observations of sovereign issuers on demand changes (by investor groups)

▲ higher demand ▼ lower demand ⇌ no change	Domestic investor demand				Foreign investor demand			
	Banks	Central Banks	Institutional investors	Others	Banks	Central Banks	Institutional investors	Others
Australia	▲	⇌	▲	⇌	⇌	⇌	▲	⇌
Austria	▼	▲	▲	▲	▼	▼	▲	⇌
Belgium	▼	▲	▼	▼	▼	▼	▲	⇌
Canada	▲	▼	▲	⇌	⇌	⇌	▲	⇌
Chile	▲	⇌	▼	⇌	(▲) from foreign investors as a whole			
Czech Republic	▲	⇌	▲	⇌	(▼) from foreign investors as a whole			
Finland	⇌	▲	▼	⇌	▲	▲	⇌	⇌
France	⇌	▼	▲	⇌	⇌	▲	⇌	⇌
Germany	▼	▲	▲	⇌	▲	▲	▼	⇌
Greece	⇌	⇌	⇌	⇌	▲	▼	▲	⇌
Hungary	▲	⇌	⇌	▲	(▼) from foreign investors as a whole			
Iceland	▼		⇌		(⇌) from foreign investors as a whole			
Israel	⇌	⇌	▲	▲	⇌	⇌	⇌	⇌
Italy	▼	▲	⇌	▼	▼	⇌	⇌	
Japan	▼	▲	⇌	⇌	(▲) from foreign investors as a whole			
Latvia	⇌	▲	▼	⇌	⇌	▲	▲	▼
Lithuania	▼	▲	⇌	▼	▼	▲	▼	⇌
Mexico	▲	⇌	▲	▲	▼	⇌	▼	▼
Netherlands	⇌	▲	⇌	⇌	(▼) from foreign investors as a whole			
New Zealand	▲	⇌	▲	⇌	⇌	▲	▼	⇌
Norway	▲		▼					▲
Poland	▲			▲	▼	▲	▲	⇌
Portugal	▲	▼	▼	▲	▲	▲	▲	▼
Slovak Republic	▼	▲	⇌		▲	▲	▲	⇌
Slovenia	▲	▲	⇌	⇌	▲	▲	⇌	⇌
Spain	▼	▲	⇌	▼	⇌	▲	▲	▼
Sweden	(▼) from domestic investors as a whole				(▼) from foreign investors as a whole			
Switzerland	⇌	⇌	(▼) pension funds (▲) insurance (▲) investment funds	⇌			▲	⇌
Turkey	⇌	⇌	▼	⇌	▼	⇌	▼	▼
United Kingdom	⇌	⇌	▲	⇌	(▼) from foreign investors as a whole			
United States	⇌	▼	▲	⇌	(⇌) from foreign investors as a whole			

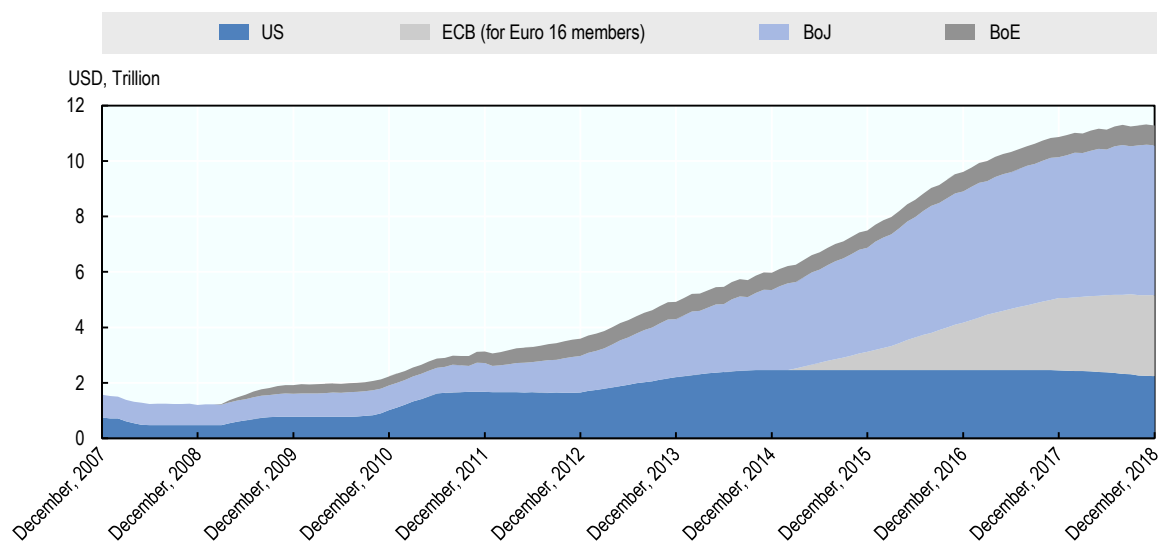
Source: 2018 Survey on primary market developments by the OECD Working Party on Debt Management.

Country responses to the survey indicate that recent changes in investor demand are largely attributable to low yields on government securities, monetary policy actions and post-crisis regulatory changes (Annex A). In addition, developments concerning sovereign credit ratings and cross-currency basis swaps between different markets are noted by a few countries as other factors affecting investor base changes. These developments have different implications for different investment groups. For example, central banks give priority to safety, liquidity and stable long-term holdings and are expected to be less sensitive to interest rate developments. Asset allocations of pension funds and life insurance companies, driven by features of their liability, are sensitive to changes in regulatory frameworks and demographic patterns. Hedge funds, on the other hand, have more freedom to pursue various investment strategies (e.g. relative-value arbitrage). The changing profile of the investor base is having a major impact on the functioning of sovereign debt markets. Moreover, the structure of the domestic and foreign investor base will determine, to a greater extent, the types of products offered by the issuer. Against this backdrop, impacts of various developments on major investor groups are elaborated in the following sections.

Greater role of domestic central banks in government bond markets

In several OECD countries, central bank demand for government securities has substantially increased as an operational consequence of the quantitative easing policy launched by major central banks. Today, government securities holdings of the ECB, BoE, BoJ and the Fed add up to USD 11 trillion (Figure 2.3). As a result, central banks in several countries have become one of the key domestic investors (40 % in Japan, above 20% in Austria, France, Germany and the UK).

Figure 2.3. Government security holdings of selected central banks



Note: Values have been aggregated by using fixed exchange rates, as of 1st December 2009.

Source: ECB, central banks of Japan, United Kingdom and the United States.

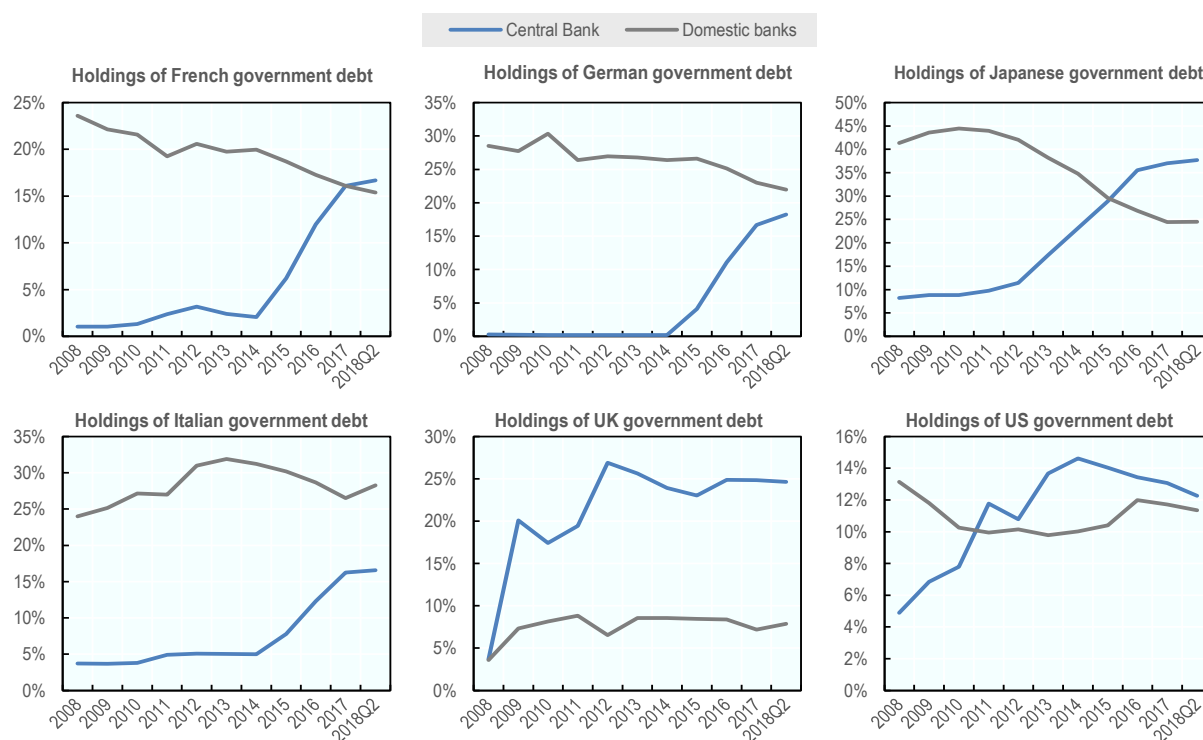
Moreover, with the greater role of central banks in government bond markets, maintaining a diversified investor base has become more difficult than before. This huge demand coming from (domestic) central banks is raising questions about its impact on other major

holders of government securities. In some cases, including France, Italy, the United Kingdom and the United States, supply of government debt has also increased in the post crisis period. In such cases, absolute holdings of existing investor groups did not have to change significantly. In contrast, countries with diminishing or limited borrowing needs have faced a challenge. For example, in Germany, the ECB has increased its share from 0 to close to 30%, while the amount of outstanding government bonds has changed only very slightly. For the countries with declining borrowing requirements, sustained central bank bond buying programmes result in “crowding out” other investor-groups – mainly foreign investors.

In some cases, higher demand from national central banks coincides with lower demand from domestic banks. In Japan, the share of banks decreased from over 40% in 2008 to 17% in 2018, while BoJ holdings moved from 8% to over 40% over the same period. In addition, the share of households in total debt declined from 4.4% in 2008 to 1.2% in 2018.

Against this background of substantial participation of central banks in government securities market, it can be argued that a shift from unconventional monetary policy may have important implications for investor bases in major OECD countries. In cases where balance sheet normalisation occurs in countries with a concentrated investor base, re-engaging with the traditional investor base is becoming more relevant.

Figure 2.4. Evolution of holdings of government debt: domestic banks versus national central banks



Note: Coverage of debt is general government. For French, German and Italian government debt the central bank is the ECB, for Japanese government debt the central bank is the BoJ, for the UK government debt the central bank is the BoE and for the US government debt the central bank is the Fed.

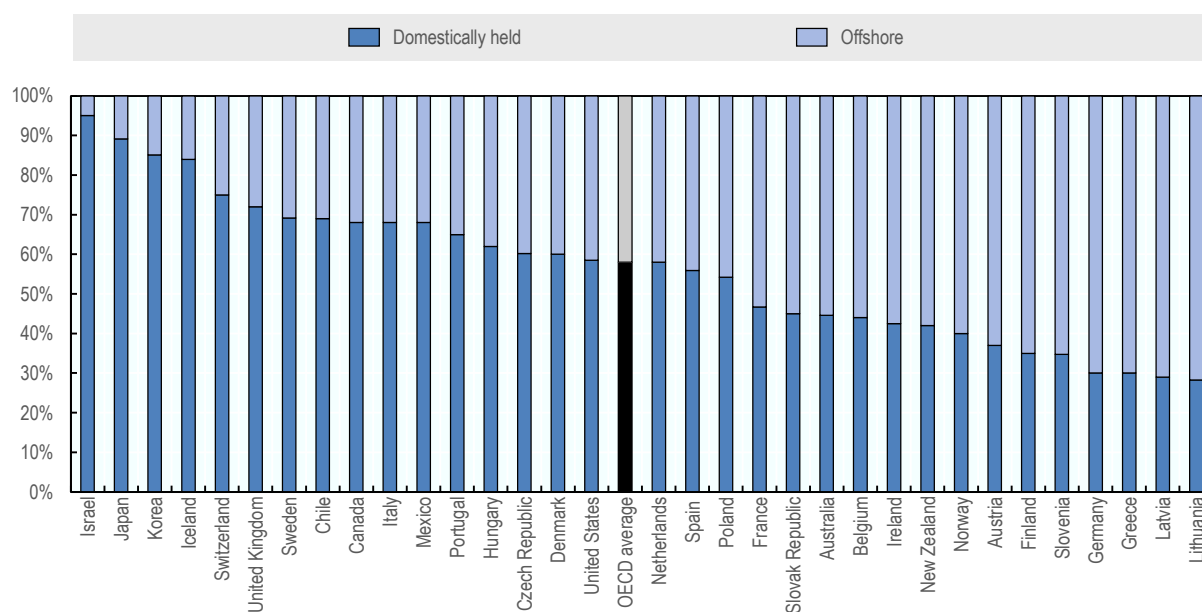
Source: Arslanalp and Tsuda (2014, updated)

Given that government needs for new debt is substantial, sovereign DMOs should benefit from re-engaging with their traditional investor base, such as pension funds and insurance companies, and putting more emphasis on regional diversification. With rising yields, a higher demand from ‘real money investors’ and foreign investors in search of high-quality assets with positive yields could be anticipated. In particular, the move away from sub-zero yields will be welcomed by the investors with self-imposed investment constraints regarding nominal positive returns. This chapter looks at the evolving structure of the investor base, in addition to the role of investor base information in public debt management.

Changes in foreign investor demand: Tracking the details

The 2018 survey on primary market developments carried out by the OECD WPDM reveals that approximately 60% of government debt is held domestically, with substantial differences across countries (Figure 2.4). Government bonds are held predominantly by domestic investors in some countries (e.g. Israel, Japan, Korea, Iceland and Chile). In contrast, foreign investors are the main holders of debt in another group of countries (e.g. Lithuania, Latvia and Germany). It should be noted that euro area countries have very high percentages of ownership within the euro area.

Figure 2.5. Percentage of bonds held domestically vs. offshore



Note: Where it is known, ECB’s holdings from the PSPP is considered as domestic. OECD average is the median average.
Source: 2018 Survey on liquidity in secondary government bond markets by the OECD Working Party on Debt Management.

In terms of trading behaviour, domestic investors are typically very stable holders of own sovereign debt, as foreign investors are more sensitive to various risk factors (e.g. political and macroeconomic risks). For example, in Canada a sell-off by non-resident investors occurred mainly due to NAFTA negotiations and monetary policy normalisation. However, the overall impact on the market remained limited, since almost 70% of total debt is held by domestic investors (mostly pension funds, domestic banks and insurance companies).

The portion of bonds held by domestic banks is around 20% in some countries (e.g. Australia, Denmark and Italy). Domestic banks are typically stable holders of own sovereign debt with home-biased behaviour. However, an excessively large “home-bias” with a high level of government debt level increases the interdependence between the sovereign and local banks, which undermines domestic financial stability. Rating agencies incorporate this fact into their methodology when analysing sovereign risks. For example, Standard&Poors sees a risk factor if “a large share (typically more than 20%) of the resident banking sector’s balance sheet is exposed to the government sector via loans, government securities, or other claims on the government or its closely held agencies, indicating a limited capacity of the national banking sector to lend more to the government, without possibly crowding out private sector borrowing”.

Foreign investors are of great importance for developing or maintaining liquid local bond markets. In relatively small markets, high demand from non-residents may also have an impact on prices. Peiris (2010) studied 10 emerging markets and found that a 10% increase in the share of non-residents is associated with a 60 basis points lowering of government bond yields. One challenge is understanding the direction of the causality. For example, one might suspect that enhanced macroeconomic fundamentals along with expectations regarding a credit rating upgrade of a country might attract inflows of foreign investors and official reserve managers. Nevertheless, especially when foreigners are a very large share of the total investor base, proper attention needs to be paid to type of foreign investors and the associated risks (e.g. likelihood of a sudden investor outflow). In this regard, rating agencies also consider the share of non-resident as an assessment criterion. For example, Standard&Poors sees a risk factor if non-residents hold consistently more than 60% of government marketable debt.

There are several factors driving non-resident demand for government bonds, including upsurge in the official reserves, flight-to-quality phenomenon, and cross-currency movements. Official reserves held by monetary authorities increased fivefold over the period 2000–2010, reached USD 9.3 trillion in 2010 and gradually increased to USD 11.4 trillion in September 2018 (IMF, COFER database). Central bankers, having traditionally conservative investment strategies with prudential, monetary control and liquidity management purposes, invest in reserve currency bonds. In terms of currency composition, the concentration of foreign reserve holdings in USD assets remains significant. Over the recent decades, while the share of USD holdings declined gradually, the shares of other currency holdings including euro, Chinese renminbi and pounds sterling have increased.⁷ Research suggests that concerns regarding the fundamental weakness of a currency and rating downgrades prompted key changes to the asset allocation of reserve managers (Morahan and Mulder, 2013).

In the post-crisis environment, demand by non-residents for safe assets picked up despite low yields, reflecting a flight-to-quality phenomenon. Most notably, U.S. Treasuries benefit from flight-to-quality and flight-to-liquidity episodes and attract substantial foreign flows during episodes of increased market turbulence and investor risk aversion. For example, according to Securities Industry and Financial Markets Association (SIFMA) data, share of foreign and international investors group in the US Treasuries, surged from around 40% in 2007 to 44% in 2012. In recent years, the ratio has gradually declined to 36% in 2018.

Non-resident investors are not homogeneous and different investor types may have different effects on the underlying market. According to research based on the historical relationship between changes in investor holdings of sovereign debt and sovereign bond

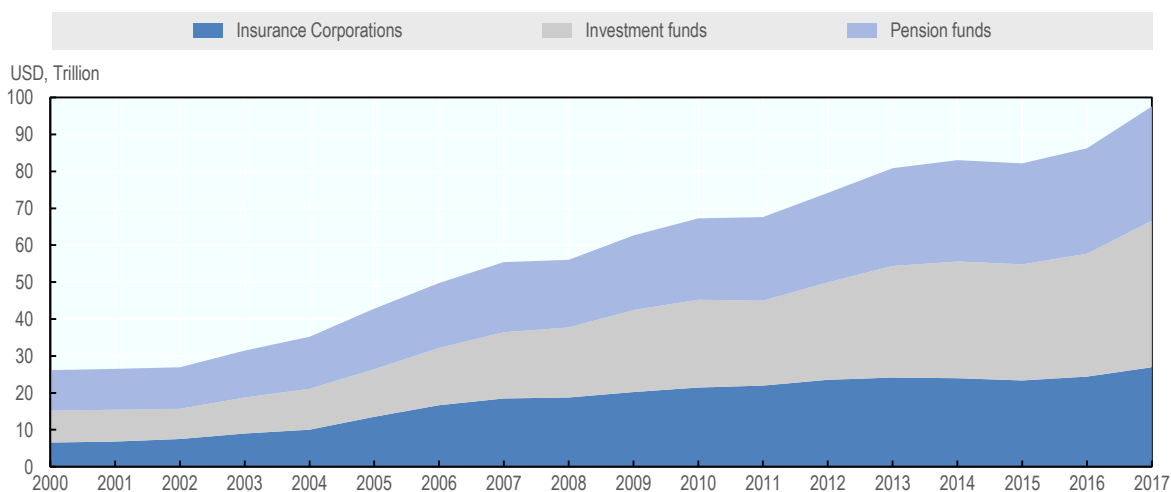
yields, the most variable investor type is foreign non-banks, followed by foreign banks, foreign central banks, domestic non-banks, domestic banks, and the domestic central bank (Arslanalp and Tsuda, 2012). However, investor base studies should be assessed with caution due to insufficient granularity of investor groups. As discussed in a previous section, the ‘foreign non-banks’ heading covers a wide range of investment strategies such as hedge funds, asset managers, insurance and pension funds. Understanding the various data-sets related to foreign participation in government securities markets is important for conducting accurate analysis and interpretation of the data.

In some advanced economies, while overall holdings of foreign investors have not changed significantly, types of foreign investors have changed in the post-crisis period. During the 2018 annual meeting of the OECD Working Party on Debt management, several debt managers provided anecdotal evidence of increased foreign investors’ activity largely driven by hedge funds in local government securities markets, in particular the T-bill market. For example, foreign investors’ share in T-bill markets reached 60% in Japan and 64% in Italy in 2018. Widening cross-currency swaps and quantitative easing environment might be among the factors that explain increased activities of foreign investors, including hedge funds. Ireland, a small issuer that was recently upgraded to investment grade, is highly dependent on foreign investors. Anecdotes indicate that increasing hedge funds activities in Ireland has improved market liquidity in bond markets. However, the lack of more granular investor base data is limiting the analytical test of impact of changes in types of foreign investors demand for different segments of government bond markets. Currently, the majority of the sovereign debt managers, mainly rely on anecdotes, require more granular investor base data in order to better monitor investors’ behaviour and make better assessments. That said, data availability issues create a natural barrier for further analysis.

Factors affecting demand from pension funds and insurance companies

During the last two decades, most OECD countries experienced a dramatic increase in institutional investors. Figure 2.6 illustrates the trend in total assets managed by institutional investors such as pension funds and insurance companies in the OECD area.

Figure 2.6. Assets under management by traditional investors in the OECD



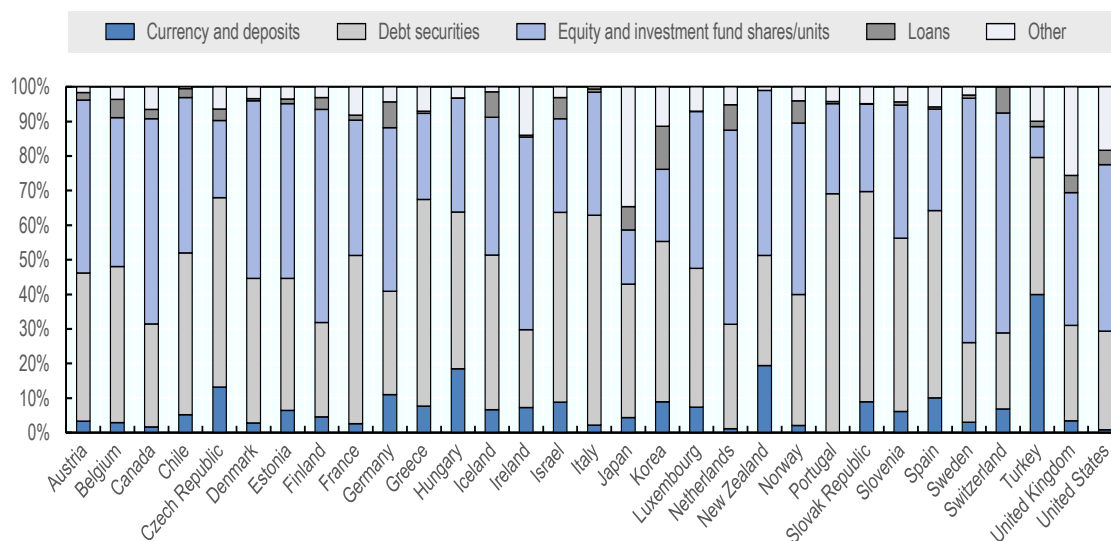
Note: All OECD area, excluding Australia, Lithuania, and Mexico.

Source: OECD National Accounts.

Institutional investors, particularly pension funds and insurance companies are buy-and-hold, stable investors given their investment strategy. Pension funds and life insurance companies, reflecting the length of their financial liabilities, tend to have long-term investment horizons and prefer high quality long-dated indexed and fixed debt. Thus, typical investors for long-term bonds in government securities markets are pension funds and life insurance companies. Figure 2.7 shows that ‘debt securities’ account for over 40% of total assets of institutional investors. It should be noted that ‘debt securities’ include debt issued by general government as well as financial corporations and non-financial corporations.

More specifically, the share of government debt holdings of domestic pension funds and insurance companies reach substantial levels in some countries. For example, in the United Kingdom, domestic pension funds have dominated the gilt markets since the mid-1990s (currently around 30%). In the US, pension funds, the second largest investor group of US Treasuries following the foreign and international investors, hold about 15% total marketable debt. Similarly, domestic insurance companies in France held around 19% of government debt as of 2018.

Figure 2.7. Asset allocation by traditional institutional investors in OECD countries (2017)



Note: Other includes the following financial assets; Insurance pension and standardised guarantees, Financial derivatives and employee stock options, and Other accounts receivable.

Source: OECD National Accounts.

Changes in pension systems, regulatory frameworks and demographic profiles are the main factors that determine the growth of pension funds as well as their investment strategy. For example, changes in pensions systems from defined benefits to defined contributions have an impact on portfolio investment strategies. In the United Kingdom, where the existing stock of pensions is predominantly based on a defined benefit (DB) system, demand for long-dated bonds is strong, as it is for inflation-linked bonds – since the liabilities are also linked to changes in inflation. On the contrary, in the United States, a rapid shift to defined contribution retirement plans suggests limited demand for ultra-long bonds.

Regulations (e.g. rules concerning underfunded pension plans and early retirement) also have an impact on asset allocation of pension funds. In the United Kingdom, the Pensions

Act of 2004 instituted fines for underfunded pension plans, providing strong incentives to buy more long-term government bonds. Greenwood and Vayanos (2009) shows that long-term government bond yields decreased following regulatory changes that induce pension funds to hold longer-term assets.

Demographic patterns, largely driven by fertility and mortality rates, have consequences for the growth of pension funds and insurance companies, which in turn affect their demand for government securities. Developments in insurance contracts significantly affect the companies' investment and the amount of interest-rate risk that they bear. The maturity of liabilities is affected by a range of factors such as the composition of insurance products, the mortality rate, and the surrender rate. For example, life insurance companies in Japan are major investors in super long-term Japanese government bonds (Debt Management Report MoF of Japan, 2018).⁸ In Japan, empirical studies suggest that the average life expectancy has been on an uptrend, which in turn contributed to the lengthening of the maturity of overall liabilities. In this regard, future demographic changes may shorten the maturity of liabilities, and therefore demand for super-long-term JGBs from life insurance companies is likely to change accordingly (Bank of Japan review, 213).

Lastly, the prolonged low interest-rate environment in several OECD countries poses a significant challenge for pension funds and insurance companies, which promise a minimum return to their customers.⁹ Some of institutional investors have restrictions on buying government bonds with negative yields. In markets where government securities have negative yields, pension funds and other institutional investors become less active or invest more in the long-end of the yield curve. In Japan, life insurance companies replaced shorter-term bonds with super long-term bonds with positive yields. In Germany, life assurance companies selling many insurance contracts with guaranteed yields of 3 to 4 per cent, have gradually reduced their purchases of new issuances of German government securities to diversify into other issuers or asset classes since the 2010s. Against this backdrop, one should expect conventional investors such as pension funds and insurance companies to demand more government securities when the yields rise.

Given the direct impact of credit ratings on institutional investors' portfolios, along with bank capital requirements and pension fund investment restrictions, a downgrade can generate a portfolio shift, which can significantly affect bond yields. An OECD survey of investment regulation of pension funds revealed that a majority of the respondent countries indicate credit rating restrictions cornering investments in debt securities. Sovereign credit quality in the OECD area stands at high levels and provides high quality liquid bonds, albeit a considerable deterioration has been experienced during the last decade (Box 2.1).

2.5. Implications of changes in investor demand for issuance strategies

The diversification of funding sources reduces the reliance on any one group of investors and reduces the risk that unfavourable conditions in one market segment becomes costly to the government (OECD, 2002). While, investor base of a government debt portfolio is predominantly a result of markets forces, using a variety of instruments (nominal bonds, real return bonds, Treasury bills, foreign-currency instruments and retail products) and a range of maturities can be used for building a broad investor base as well as reaching out to new investor groups. In particular, countries with substantial borrowing requirements (e.g. the US) need to increase attractiveness of government securities to foreign and domestic investor groups. Issuing a new product or adjusting an existing product might generate additional demand from available domestic and international savings pools.

Box 2.1. Trends in credit quality of sovereign bonds

From an investor's perspective, the credibility of a government's macroeconomic framework; the integrity of state institutions; the political environment and the country's economic growth prospects are the main determinants of bond valuations. In practice, these elements are allegedly captured in sovereign credit ratings.

Credit ratings of many countries have steadily shifted down since the GFC, albeit a recent improvement. To better quantify and assess the credit quality of sovereign bond issuance, an index covering 10-year bond issuance by OECD governments over the period 2008–2018 has been constructed. The results reveal a clear deterioration in sovereign bond credit quality in the OECD area for the designated time period. The trend is clearly driven by the G7 and euro area country groupings which can be explained by the sustained rise in borrowing needs in most of these countries.

Figure 2.8. Evolution of sovereign debt credit quality, credit ratings weighted by amounts issued, 2008–2018

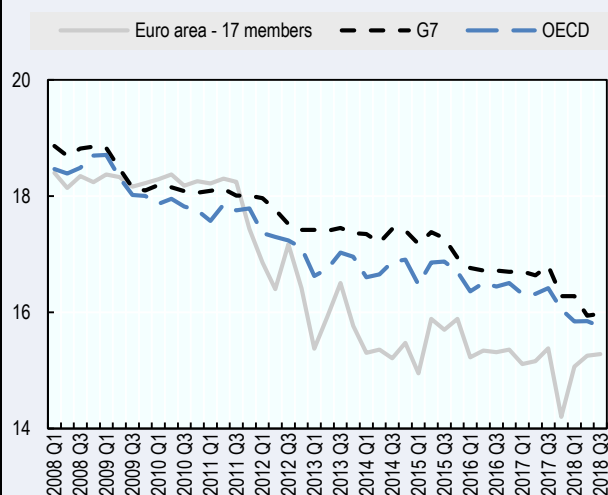
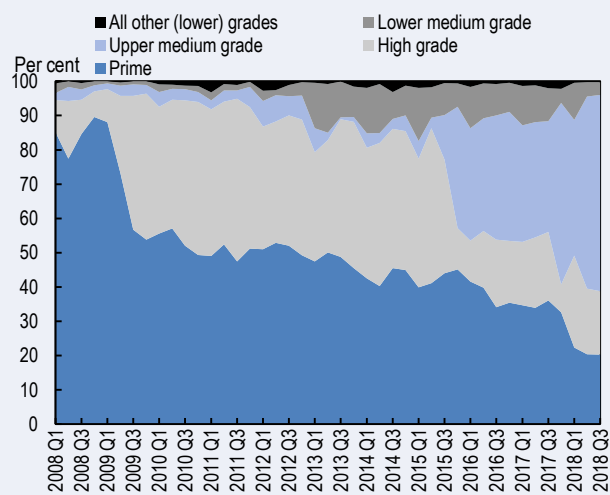


Figure 2.9. Distribution of sovereign bond issuance among rating categories, as a percentage of total, 2008–2018



Notes: Weighted average (by amounts issued) and based on the maximum issuance rating from three rating agencies: Fitch, Moody's and Standard and Poor's. Influenced by the methodology used in the "corporate bond quality index" (OECD, 2017), each issuance is assigned a value ranging from 1 for the lowest credit quality rating and 19 for the highest.

Source: Refinitiv and author calculations. See Annex 1.A1 of the 2018 SBO for the methodology.

The distribution of sovereign bond issuance among rating categories indicates two significant shifts during the past decade: The first move was from 'Prime' category to 'High grade' category during the initial years of the GFC, the second was from 'High grade' down to 'Upper medium grade' category. Overall, the share of A-rated bonds in total 10-year bond issuance in the OECD area has decreased gradually from above 95% in 2008 to 90% in 2017. Since 2017, upper medium category further increased in expense to lower medium grade category, largely due to recent upgrades in sovereign ratings in some euro area countries (i.e. credit rating of Greece, Iceland, Portugal and Spain have been upgraded in recent years).

Source: OECD Sovereign Borrowing Outlook 2018 (updated)

The structure of the domestic and foreign investor base largely determines the types of products offered by the issuer. For instance, an issuer may not be able to sell longer-term – in particular ultra-long term – maturities in the market, in the absence of continued and substantial demand for that particular maturity. On the other hand, observing a robust and viable investor demand for a new instrument encourages issuers. Given the strong investor demand for floating-rate and inflation-linked securities, these instruments have become part of regular issuance choices over the past few decades. In countries where high and volatile inflation rates prevailed for a prolonged period, local investors, particularly insurance companies and pension funds, tend to give greater priority to protecting the future real value of savings. This generates a strong appetite for inflation-linked securities (OECD, 2017). In fact, an increasing number of EMs (e.g. Chile, Mexico and Turkey) have introduced inflation-linked bonds to eliminate the risk of inflation uncertainty over the total return on investment. Another example comes from the UK, where strong demand from the pension funds for the long-dated Gilts have impact of debt strategies. As discussed in Chapter 1, a high presence of pension funds is the main reason explaining the high weighted average maturity of outstanding debt in the UK (i.e. the weighted average maturity of outstanding debt was 17.5 years in 2018 in the UK, the highest in the OECD area). Similarly, as environmentally conscious investing is growing quite rapidly today, sovereign green bond issuance, though still at an embryonic stage, has risen steadily in recent years.

In addition, sovereign issuers consider investors feedback when designing securities to attract various types of investors. Several OECD countries have a retail-targeted debt instrument (e.g. France, Italy, Spain and Turkey). Also, they tailor products to investor needs within an appropriate risk management framework. For example, investor base and preference have an influence on a reference index choice of inflation-indexed debt. France and Italy issue bonds, which are linked to the national consumer price index excluding tobacco, as well as bonds that are linked to the Eurozone harmonised index of consumer prices excluding tobacco (HICP ex-tobacco). Another example is the floating rate notes (FRNs) issued by the United States Treasury in 2014. The Treasury introduced the FRNs in a way to offer investors a hedge against rising rates by offering an interest rate tied to the most recent 13-week T-bill auction, while extending the maturity of debt.

Auction systems and bidding procedures are, in some cases, adapted to allow involvement of wider investor groups. For example, direct bidding may be a useful system to broaden investor base, as it reduces or eliminates intermediary costs (SBO, 2013). In the United States, direct bidding to the Treasury auction is made possible for individuals as well as other investor groups through the Treasury Automated Auction Processing Systems (TAAPS). Similarly, some countries facilitate bond-purchasing process via online applications. This is the case in Austria, where an online retail saving product (i.e. bundesschatz.at) launched by the Austrian Treasury in 2002, offers a secure and free of charge alternative to savings accounts.

2.6. Considerations of investor relations and communication practices

Two-way communication between sovereign issuers and investors is essential to establish and maintain an efficient government securities market at all times. The continued funding challenges discussed in Chapter 1 have recently led to a situation where a broad and diverse investor base is more essential than before. This means that it is more important to take into account the preferences of both foreign and domestic investors when making changes to issuance procedures and introducing new instruments. In this regard, most countries

mention that they give a higher priority to maintaining good investor relationships not only with current investors but also with potential investors.

Investor relations (IR), a strategic communication function, has become a standard part of work programmes of sovereign debt management offices across the OECD countries since the 1990s. Sovereign issuers have adjusted their IR practices according to evolving market conditions, particularly in response to changes in investor bases and their preferences (Box 2.2).

Box 2.2. Investor relation practices in the OECD area

The investor relation (IR) activities facilitate two-way communication between investors and issuers on a wide range of issues from a government funding needs and strategies to macroeconomic targets. In the OECD area, objectives of IR activities include the following themes:

- to develop and maintain a wide and diversified investor base;
- to reduce uncertainty and promote transparency;
- to provide investors with the information they need on a timely basis including changes in debt management strategies;
- to ensure awareness of fiscal, economic and debt management policies and developments;
- to promote awareness of government securities and facilitate access;
- to gauge investor appetite, grasp investment trends and obtain feedback on investor needs.

In terms of the IR strategy, target key investor groups include insurance companies, pension funds, institutional asset managers and primary market distributors. Interaction with primary dealers is considered as one of the most useful activities related to communicating debt management information and for receiving input into the decision making process.

In the majority of the OECD countries, the IR activities are executed as an integrated function of debt offices, and some OECD countries (e.g. Australia, Mexico and Turkey) have an investor relations office with a discrete group dedicated to IR activities (Dooner, M. and D. McAlister 2013).

When providing information to stakeholders, they adapt information based on the stakeholder and tailor presentations depending on how well-informed the stakeholder is. In terms of communication methods, DMOs organize regular and ad-hoc face-to-face meetings with investors as well as overseas roadshows. Technological advances changed the communication methods, as issuers can communicate directly and is less costly with a larger investment community through social media, video conferences and web-based communications. DMOs attach great importance to dissemination of information that all current and potential buyers of government securities are provided simultaneously with the same information, and that dealers and investors are treated fairly and equally.

In the aftermath of the global financial crisis, sovereign issuers fortified their investor relation activities due to an increased need for on-going co-operation with domestic and international investors (Dooner M. and D. McAlister, 2013). For instance, some countries made their first ever roadshows to Asian countries in order to diversify their investment base. Some countries established an investor relations office with a discrete group dedicated to IR activities. This is the case, for example in Australia, where a dedicated IR unit was established in 2009 with the purpose of stimulating immediate demand from investors in the face of rapidly growing issuance programs.¹⁰ The Ministry of Finance of Japan established the Office of Debt Management and JGB Investor Relations at the Debt Management Policy Division of the Financial Bureau in July 2014.

In recent years, environmental, social, and governance (ESG) factors have become increasingly relevant for a number of institutional investors. This has implications for sovereign creditworthiness and ultimately for bond prices. In this respect, credit rating agencies have taken steps to incorporate ESG factors into country risk assessments. This, in turn, encourages sovereign issuers to integrate ESG approaches in their communication strategy. The Finnish State Treasury, for example, presented the government's initiatives and actions to promote sustainable development in its annual debt management report.

For countries with highly concentrated debt holdings composition, the challenge is to diversify the investor base in order to be prepared for a potential structural change in the ownership of government securities. In this regard, there is a need for re-engaging with their traditional investor base, such as pension funds and insurance companies, and put emphasis on regional diversification.

In cases, where monetary policy normalisation coincides with rising or high borrowing requirements, the need to expand the investor base is more crucial. Issuing a new product or adjusting an existing product can be considered for generating additional demand from untapped savings pools. In this regard, consultation with market participants is key to assess investor appetite for a new instrument, or to design an appealing product for a specific group of investor.

As discussed in Chapter 1, some of the OECD countries have been experiencing shrinking budget deficits or budget surpluses in recent years, which leads to a concomitant decline in government financing needs. In that case, the challenge for sovereign issuers is to maintain a liquid market for government securities with a limited security offering. DMOs, facing such a situation, focus on issuing a limited number of benchmark bonds along the yield curve. Sovereign debt managers, in consultation with investors, may consider various policy options associated with their primary and secondary market activities to promote secondary market liquidity. These include, but not limited to, the use of buy-back and switch operations to enhance the volume of benchmark bonds, modifications in primary dealership systems and security lending facilities to help market participants to continuously quote prices and avoid delivery failures.

Declining stocks of government securities might raise concerns about the benchmark status of government bonds. Then, it is necessary to address investors' concerns about maintenance of government debt supply and provide clarity about a government's commitment for a liquid and efficient government securities market. In New Zealand, where strong and persistent fiscal position led such concerns, the New Zealand DMO assessed that the investors need to be reassured about a minimum level of borrowing amounts irrespective of fiscal outlook. In response, based on the DMO's proposal the government committed to "maintain levels of New Zealand government bonds on issue at not less than 20 per cent of GDP over time" regardless of the fiscal outcome in 2017.

Notes

¹ Early examples of government bonds were used to fund military operations and other expenditure in times of wars. For example, the Bank of England issued the first government bond in 17th century to raise money to fund a war against France. Following that, governments in other European countries, Canada and the US sold bonds for war financing.

² The widespread adoption of new technologies in finance, such as the proliferation of electronic trading venues, high-frequency trading and robo-advisors, has changed traditional registration, clearing, settlement, payments, reporting and monitoring operations, as well as investment management services (OECD 2018a).

³ Today, there are examples of governments (e.g. New Zealand and Singapore) with strong fiscal fundamentals, which do not use debt to finance their expenditure, instead, bonds and Treasury bills (T-bills) are issued to support investors in need of safe assets.

⁴ The size of pension fund assets has reached 105.5% of GDP in the UK in 2017 (OECD 2018b). As of September 2017, the three largest investor groups in the UK Gilt markets were insurance companies and pension funds (31%), overseas investors (28%), and the Bank of England's Asset Purchase Facility (25%) (HM Treasury, 2018).

⁵ As of September 2018, life and non-life insurance companies hold 20% of outstanding Japanese Government bonds (Ministry of Finance of Japan, 2018).

⁶ The IMF's Currency Composition of Official Foreign Exchange Reserves (COFER) and Coordinated Portfolio Investment Survey (CPIS), ECB's Securities Holdings Statistics (SHS), and Bank for International Settlements (BIS) International Banking Statistics are among the datasets provide investor base information.

⁷ The IMF Currency Composition of Official Foreign Exchange Reserves (COFER) database indicates a gradual change in the currency composition of foreign reserves since 2000, with the share of USD holdings, at a global level, at its peak with 71.1% in 2000. Since then, the share of USD holdings has declined, standing at 62% in September 2018. The share of euro holdings increased from 18.3% to 20.5% within the same period.

⁸ This is because the share of new policyholders has been declining in accordance with the decrease in the number of young people, while the share of the existing policyholders has been increasing.

⁹ Prolonged low interest rates and falling inflation rates pose serious challenges to insurance and pension systems and, in particular, to defined benefit pension funds and life insurance companies offering long-term financial promises (OECD, 2016).

¹⁰ Australia had maintained budget surpluses for several years prior to the Global Financial Crisis. Following the events of 2008, the Australian Office of Financial Management went from issuing bonds in order to maintain a certain level of market liquidity aimed at supporting the futures contracts, to a regime of significantly larger funding programs aimed at funding the budget deficit. In this regard, investor relation activities included active engagement with new and existing institutional investors where they were introduced to, educated on and updated about topics such as the Australian economy, the Government's fiscal and debt positions as well as the issuance strategy.

References

- Arslanalp S. and Takahiro Tsuda (2016), "*Sovereign Investor Base Dataset for Emerging Markets*", the Monetary and Capital Markets Department of the International Monetary Fund, Washington D.C. www.imf.org/external/pubs/ft/wp/2014/Data/wp1439.zip.
- Arslanalp S. and T. Tsuda (2014), "*Tracking Global Demand for Advanced Economy Sovereign Debt*" IMF Economic Review, Volume 62, Number 3, Washington DC. www.imf.org/external/pubs/ft/wp/2012/wp12284.pdf

- Bank of Japan (2013), “*Japanese Life Insurance Companies' Balance-Sheet Structure and Japanese Government Bond Investment*”, Bank of Japan Review, February 2013.
www.boj.or.jp/en/research/wps_rev/rev_2013/data/rev13e02.pdf
- Beltran, Daniel O., Maxwell Kretchmer, Jaime Marquez, and Charles P. Thomas, 2013, “*Foreign Holdings of U.S. Treasuries and U.S. Treasury Yields*,” *Journal of International Money and Finance*, 32, pp. 1120-1143. www.federalreserve.gov/pubs/ifdp/2012/1041/ifdp1041.pdf
- Culbertson J. M. (1957), “*The Term Structure of Interest Rates*”, *The Quarterly Journal of Economics*, Vol. 71, No. 4, November 1957, pp. 485-517, The MIT Press. www.jstor.org/stable/1885708
- Dooner, M. and D. McAlister (2013), “*Investor Relations and Communications: An Overview of Leading Practices in the OECD Area*”, OECD Working Papers on Sovereign Borrowing and Public Debt Management, No. 6, OECD Publishing, Paris. <https://doi.org/10.1787/5k4dhnwftq6-en>.
- ECB (2015), “*Who holds what? New Information on securities holding*” ECB Economic Bulletin Issue 2 / 2015. https://personal.lse.ac.uk/vayanos/Papers/PPGBM_AER10.pdf
- Greenwood R. and D. Vayanos, 2009, “*Price Pressure in the Government Bond Market*,” *The American Economic Review*, Vol. 100, No. 2, (May 2010), pp. 585-590.
https://personal.lse.ac.uk/vayanos/Papers/PPGBM_AER10.pdf
- Greenwood R. and A. Vissing-Jorgensen (2018), “*The Impact of Pensions and Insurance on Global Yield Curves*” June, 2018. http://faculty.haas.berkeley.edu/vissing/greenwood_vissingjorgensen.pdf
- HM Treasury (2018), “*Debt Management Report 2018-19*”, March 2018.
<https://dmo.gov.uk/media/15381/dmr1819.pdf>
- Ministry of Finance of Japan (2018), “*Debt management Report 2018*”.
www.mof.go.jp/english/jgbs/publication/debt_management_report/2018/esaimu2018.pdf
- Modigliani, F. and Sutch, R. (1966), “*Innovations in Interest-Rate Policy*” *American Economic Review*, 56, 178-197. www.jstor.org/stable/1821281?seq=1#metadata_info_tab_contents
- Moody’s (2018), “*Sovereign Bond Ratings - Rating Methodology*”.
www.moodys.com/research/Moodys-updates-its-methodology-for-rating-sovereign-bonds--PR_392072
- Morahan A. and C. Mulder (2013), “*Survey of reserve managers: Lessons from the crisis*”, the Monetary and Capital Markets Department of the International Monetary Fund, Washington D.C Working Paper WP/13/99. www.imf.org/external/pubs/ft/wp/2013/wp1399.pdf
- Peiris, S. (2010), “*Foreign Participation in Emerging Market Local Currency Bond Markets*”, IMF Working Paper No. 10/88. www.imf.org/external/pubs/ft/wp/2010/wp1088.pdf
- S&P Global Ratings (2017), ‘*Sovereign Rating Methodology*’, December 18, 2017.
www.spratings.com/documents/20184/4432051/Sovereign+Rating+Methodology/5f8c852c-108d-46d2-add1-4c20c3304725
- OECD (2013), *OECD Sovereign Borrowing Outlook 2013*, OECD Publishing, Paris.
http://dx.doi.org/10.1787/sov_b_outlk-2013-en
- OECD (2016), *OECD Pensions Outlook 2016*, OECD Publishing, Paris.
http://dx.doi.org/10.1787/pens_outlook-2016-en
- OECD (2017), *OECD Sovereign Borrowing Outlook 2017*, OECD Publishing, Paris.
http://dx.doi.org/10.1787/sov_b_outlk-2017-en

OECD (2018a), *OECD Sovereign Borrowing Outlook 2018*, OECD Publishing, Paris.

http://dx.doi.org/10.1787/sov_b_outlk-2018-en

OECD (2018b), *OECD Pension Funds in Figures June 2018*, OECD Publishing, Paris.

www.oecd.org/daf/fin/private-pensions/Pension-Funds-in-Figures-2018.pdf

OECD (2018c), “*Annual Survey of Investment Regulation of Pension Funds*”, OECD Publishing, Paris.

www.oecd.org/daf/fin/private-pensions/2018-Survey-Investment-Regulation-Pension-Funds.pdf.

Warnock, F. E., and V. C. Warnock, 2009, “*International capital flows and US interest rates*,” *Journal of International Money and Finance*, 28(6), 903-919.

https://faculty.darden.virginia.edu/warnockf/papers/WarnockWarnock_Flows_and_Rates_JIMF.pdf

Chapter 3. Public debt management under stressed market conditions: A review of the recent experiences of Greece, Iceland, Ireland and Portugal

The aim of this chapter is to identify challenges in financing government budget deficits under stressed market conditions; immediate reactions to these challenges; as well as the medium and long-term policy responses for facilitating and maintaining market access. As increased debt services going forward can leave some economies vulnerable to rollover risk, sudden deterioration in market sentiment and tightening of credit, it is timely to look back and highlight key lessons learned from the recent country experiences with stressed market conditions.

With this in mind, this chapter presents the recent experiences of sovereign debt management offices of Greece, Iceland, Ireland and Portugal that were at the epicentre of the multi-year European sovereign debt crisis. These country experiences provide insights into the challenges with deteriorated financing conditions and loss of market access as well as the effective means of addressing the challenges and re-establishing market access. Practices of these countries highlight the relevance of being a transparent and predictable issuer, building contingency funding tools for flexibility, a solid relationship with the investor base, as well as a two-way communication with wider market participants.

3.1. Introduction

Public debt managers always face some level of uncertainty stemming from changes in funding needs, as well as in the funding environment. Public debt management generally becomes more difficult than usual under stressed market conditions. Country experiences suggest that deteriorated fiscal balances can trigger sudden shifts in sentiment and perceptions of sovereign risk, which in turn lead to interruption of market-based borrowing.

This chapter sheds a light on debt management practices under stressed market conditions based on the recent experiences of four countries: Greece, Iceland, Ireland and Portugal.¹ The aim is not to investigate the causes or macroeconomic consequences of the European debt crisis, but rather to explore the challenges faced by debt management offices when market access is deteriorated or lost, as well as appropriate policy responses to these challenging situations.

Key findings

- The immediate impact of stressed market conditions is often felt on cost and maturity of government funding, in terms of higher interest rates and shortened borrowing maturities. If conditions deteriorate further (e.g. with a sharp increase in government financing requirements due to re-capitalisation of the banking sector), this may even cause a partial or total loss of market access. This was the case in Greece, Iceland, Ireland and Portugal during the European debt crisis of 2010-2012.
- The size and extent of the financial crisis led to a deep loss of confidence for the reviewed countries and a shift in the investor base. While more traditional “buy-and-hold” investors, such as pension funds and insurance companies, left the government bond markets of these countries, newcomers, like hedge funds, took a more active role.
- Debt managers of all four countries, receiving financial support through IMF/EU programmes, made use of liability management exercises (e.g. buy-back and switch operations) to smooth redemption profiles, and extend average life of debt, thereby mitigating refinancing risk. This also facilitated regaining investors’ confidence.
- Regaining and maintaining market access requires a concentrated focus on investor engagement. Experiences suggest that having an investor relations programme was an effective tool for developing long-term relationships with investors, broadening the investor base, and providing transparency about the macroeconomic situation and funding plans.
- Against stressful episodes in sovereign debt markets, it is important to increase flexibility via liquidity buffers and credit lines in funding operations without damaging predictability. Greece, Iceland and Portugal benefited from building up liquidity buffers against liquidity risks. Issuance techniques and pricing systems can also be adapted to market conditions. For example, Ireland and Portugal switched to a single-price auction, mainly to make pricing easier and the auctions more accessible to a wider range of market participants.

3.2. Dealing with public debt management under stressed market conditions

Public debt managers typically face some level of uncertainty stemming from changes in funding needs, as well as in the funding environment. Government funding requirements, which are submitted to debt management offices, are subject to changes during a fiscal year partly due to deviations between forecast and actual budget expenditures and revenues. In the OECD area, governments' funding needs are predominantly financed through financial markets. Therefore, a deterioration in market sentiment due to various factors including political events, macroeconomic developments, and monetary policy decisions, has a strong impact on public debt management. Public debt managers, striving to be predictable, regular and transparent issuers in the market, consider a “typical” level of uncertainty (i.e. level of uncertainty observed in normal times), when they develop funding programmes.

When undesirable changes occur in funding needs and funding conditions at the same time, this might dampen investors' appetite significantly, which in turn poses a danger for government financing depending on the size and duration of the volatility. That said, the borrowing environment for governments could become more difficult than usual due to increasing funding pressures coinciding with sudden shifts in sentiment and perceptions of sovereign risk. The 2013 edition of the Sovereign Borrowing Outlook discussed how occasional destabilising dynamics of government securities markets creates huge policy problems including loss of market access.² During the debt crisis in 2010-2012, significant sales of sovereign debt by foreign and domestic investors together with soaring borrowing needs, resulted in a surge in interest rates demanded by bond investors to very high levels in several countries. The borrowing environment for governments became difficult due to the complications generated by sudden shifts in sentiment and perceptions of risk associated with certain sovereigns: the so-called swings in the “risk-on” and “risk-off” trades. It is highlighted that these sharp and significant price deviations relative to fundamentals led to interruptions in government's market access and even loss of market access in some cases. The empirical literature has explored the issue of a self-fulfilling prophecy on various occasions in terms of the potential implications of debt dynamics on market access conditions (see, among others, Reinhart et al. 2003; Kraay and Nehru 2006; Manasse and Roubini 2009; Ghosh et al. 2012; and Bassanetti Antonio, et al. 2016).

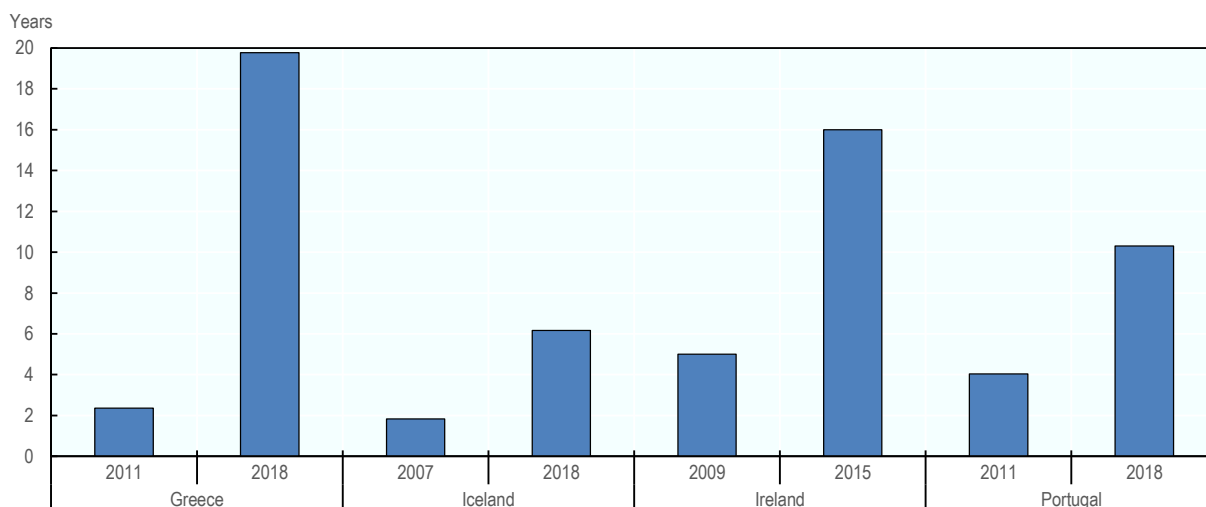
Looking back, the global financial crisis, and the policy response to it, implied drastically increased additional borrowing requirements across the OECD area. As discussed in previous editions of this publication, the legacy of the financial crisis continues to cast a long shadow over public finances, in the form of high debt burdens and heavy debt repayments. Gross borrowings of OECD governments from the markets, which peaked at USD 10.9 trillion in 2010 in the wake of the financial crisis, are set to reach a new record level in 2019, when they are expected to exceed USD 11 trillion. As a result, central government debt-to-GDP ratios in OECD countries remain above 70% (and close to 90% in G7 countries), which is high by historical standards. In terms of refinancing of existing debt, sovereigns in the OECD area need to roll over 40% of their outstanding marketable debt in the next three years.

While crisis-related legacies remain in some countries, monetary policy transition in major markets, escalating trade tensions, and heightened geopolitical risks might pose challenges going forward for financial markets. Indeed, the recent bouts of volatility in financial markets, in conjunction with slower and less balanced economic growth expectations in the OECD area have raised market concerns over sovereigns' ability to repay their debt and put extra pressure on sovereign funding conditions in some countries. It is, therefore, timely

to look back and assess the challenges faced during the European sovereign debt crisis, and to highlight key lessons learned from the experiences with stressed market conditions.

Country experiences presented in the following sections of this chapter suggest similarities as well as differences in losing, and re-establishing market access. Significant sales of sovereign debt by foreign and domestic investors, coupled with soaring borrowing needs often result a surge in interest rates to very high levels. Public debt managers often shorten maturities of new debt (issuing T-Bills) to weather storms. Hence, the stressed market conditions initially manifest themselves with a sudden hike in interest rates and decline in maturities of borrowing instruments. This was the case in Greece, Iceland, Ireland and Portugal during the European sovereign debt crisis. As market conditions have improved in recent years, there has been a significant improvement in maturity of new debt issuance, which in turn helped mitigating refinancing risk in these countries (Figure 3.1).

Figure 3.1. Changes in average term to maturity of new issuance

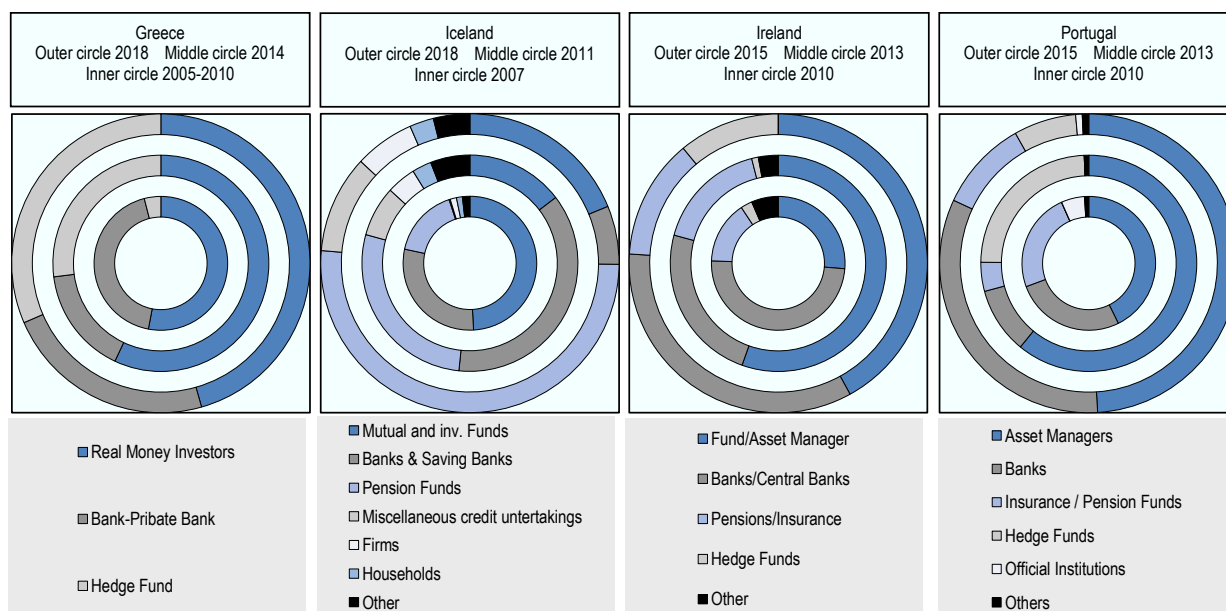


Source: Debt Management Offices of Greece, Iceland, Ireland and Portugal.

During the European sovereign debt crisis, significant shifts were observed in holder profiles: Initially, many governments faced large sell-offs from foreign investors, were forced to borrow more domestically (leading to an increase in “home bias”). Following the loss of market access and use of massive financial supports from international institutions, the share of marketable debt in total debt fell significantly. Recently, as these countries regained market access as well as upgrades in sovereign credit ratings, the privately owned share of debt increased and holder profiles have begun shifting towards conventional investors. Figure 3.2 shows changes in investor breakdown of outstanding debt in Iceland, and that of allocations in Greece, Ireland and Portugal during the period between 2005 and 2018.

In terms of policy responses, public debt managers aimed at mitigating refinancing risk and regaining investors’ confidence. Therefore, they made use of liability management operations (e.g. buy-back and switches); boosted investor relations programmes; enhanced organizational structure of debt management; built contingency funding tools (e.g. liquidity buffers and credit lines). These experiences, which are discussed further below remain valid today.

Figure 3.2. Investor base changes



Notes: Investor classifications differ across countries. Debt holdings in Iceland, known allocations in Greece, Ireland and Portugal.

Source: Debt Management Offices of Greece, Iceland, Ireland and Portugal.

3.3. Greece

Greece had large public sector deficits before the crisis, received significant financial support from the IMF and the EU through three bailout programmes during the crisis. After losing its access to financial markets in 2010, the country has implemented fiscal consolidation plans and has restructured its existing debt; it emerged from the euro area bailout programme in 2018. Greece has returned to bond markets with occasional bond issuance in recent years, but has not returned to regular schedules of auctions yet.

Economy and public debt dynamics in the run-up to the crisis

The economic crisis in Greece, the problem of fiscal and trade deficits and of public debt encountered is common knowledge. An excessive deficit procedure was opened in 2009, and, as of May 2010, Greece was excluded from the international capital markets.³ The 2007-2008 financial crisis took its toll on the euro area, and mostly influenced the periphery countries whose economies presented weak features (high fiscal deficit, high current account deficit, high ratio of debt-to-GDP, etc). The Greek economy contracted by about 25% between 2008 and 2016. The unemployment rate climbed to nearly 30% in 2013, and Greece's debt-to-GDP ratio reached an all-time high of 181% in 2016.

The European Commission, the European Central Bank and the International Monetary Fund supported the Greek economy with three bailout programmes in order to address the crisis.

Financial support programmes and restructuring of public debt

The Greek Loan Facility Agreement (GLFA), the first financial support programme for Greece, was agreed in May 2010. It consisted of bilateral loans from euro area countries, amounting to EUR 52.9 billion, and a EUR 20.1 billion loan from the IMF. The European Financial Stability Facility (EFSF), which was only established in June 2010, did not take part in this programme.

The second bailout programme consisted of the EFSF loans of EUR 141.8 billion and a further EUR 12 billion loan from the IMF. It is noted that as a result of the fiscal problems and the government debt crisis in Greece, the country's financial system also suffered, mainly because of the major exposure of the Greek banks to Greek government securities and of the fear of a disorderly default that sparked a run on deposits. In view of the importance of the banking system for the smooth operation of the Greek economy and the prevention of its collapse, a re-capitalization of the banks was also deemed necessary.

Central to the second programme was the Private Sector Involvement (PSI), which was a restructuring of Greek debt held by private investors (mainly banks) in March 2012, to lighten Greece's overall debt burden. About 97% of privately-held Greek Government Bonds-GGBs (about EUR 197 billion) took a 53.5% cut of the face value (principal) of the bond, corresponding to an approximately EUR 106 billion reduction in Greece's debt stock. In return 31.5% of the nominal value (about EUR 62 billion) was covered by new GGBs (the PSI bonds) and 15% was covered by EFSF notes (EUR 29.5 billion). About EUR 7 billion GGBs did not participate in the PSI (holdouts). Furthermore, a total of about EUR 56 billion GGBs was excluded from the PSI, as it was held by the official sector (mainly the ECB & National Central Banks). This is the source of the Securities Markets Programme (SMP) and Agreement on Net Financial Assets (ANFA) bond profits (circa EUR 10 billion expected to be returned to Greece). The core of the loans was the Master Financial Assistance Facility Agreement (Master FAFA) EUR 109.1 billion (circa EUR 11 billion was returned) together with the PSI LM Facility (EUR 29.5 billion) and the Accrued Interest Facility (EUR 4.8 billion).

In December 2012, a buyback operation took place, in which EUR 31.8 billion of PSI bonds were exchanged for EUR 11.2 billion EFSF notes, which constituted the so-called "Buy Back Loan", resulting in an effective reduction of the outstanding debt by EUR 20.5 billion. Therefore, a 10-year deferral of interest payments due to the EFSF Master FAFA was agreed in order to cover the financing gap caused by the use of the aforementioned EUR 11.2 billion.

Since 2011, Treasury Bills have remained the main debt instrument that Greece could rely on for new issuances via the market. Consequently, the amount outstanding of Treasury Bills rose to a ceiling of about EUR 15 billion. Treasury Bills were issued on a monthly basis, with 26 and 13 weeks maturities. Since 2017 the yields have dropped, from 4.82% in 2011 to 0.90% in December 2018 for the 26 weeks maturity and from 4.10% to 0.71% for the 13 weeks maturity. For the first time since April 2010, 52-week Treasury Bills were issued in March 2018, with a yield of 1.09% in the December 2018 auction. At the end of 2018 the amount outstanding was about EUR 15.2 billion (EUR 4 billion with 52 weeks maturity, EUR 2 billion with 13 weeks and EUR 9.2 billion with 26 weeks maturity).

Mobilizing cash reserves and adoption of buffer policy

In 2014, the Greek Public Debt Management Agency (PDMA) started an effort to mobilize the cash reserves of the General Government Entities (GGEs) – Social Security Funds,

Municipalities, Hospitals, Universities, etc. – in order to cover part of the funding needs of the central government. With concentrated legislative actions (mainly Law 4549/2018 National Gazette 105 A 2018), a new framework leading to a Single Treasury Account is set, with a team consisting of the PDMA, the General Accounting Office of the Ministry of Finance and the Bank of Greece, making use of the excess cash reserves of such entities. The ultimate target is the implementation of a holistic and integrated cash management policy for both the State and the General Government Entities, via Repo operations between the PDMA and the GGEs. By the end of 2018 about EUR 24 billion of the GGEs' reserves was put on Repo transactions. The yields of the Repos incentivized the managers of the entities to join the scheme, which, in the context of intra governmental debt (i.e. being neutral in fiscal terms) is mutually beneficial to the State and the GGEs.

Greece issued via syndication two new bonds, the first issuances after the PSI in 2014. The first was a 5-year bond, EUR 3 billion of nominal value with maturity 17/4/2019, coupon 4.75% and issue price of 99.133%. It was followed by a 3-year bond, EUR 1.5 billion nominal value with maturity 17/7/2017, coupon 3.375% and issue price of 99.650%. The two bonds were tapped in September 2014 by a total of EUR 1.6 billion, in exchange for Treasury Bills held by the four Greek Systemic Banks.

The third programme of assistance was launched in August 2015 by the European Stability Mechanism (ESM) and it consisted of new loans of EUR 61.9 billion.

Steps taken to improve structure of public debt

Measures presented within the EU/IMF financial support programme

In order to reduce vulnerabilities in debt structure, various short, medium and long-term measures were taken in May 2016. Short-term measures consisted of smoothing the EFSF repayment profile, the use of the EFSF/ESM diversified funding strategy to reduce interest rate risk without incurring any additional costs for former programme countries and the waiver of the step-up interest rate margin related to the debt buy-back tranche of the 2nd Greek programme for the year 2017. In this context, a large amount of floating-rate loans has been converted to fixed rate, in order to protect Greece against future rises. By locking in historic lows in euro interest rates the PDMA essentially provided Greece, a B+ rated issuer, with an effective rate that is on par with AA-rated euro-area peers. Also, the weighted average maturity of the EFSF Master FAFA loans, which had fallen to 28.3 years due to some bond swap activity in 2015, was extended to 32.5 years. Around EUR 31 billion of the EFSF and ESM funding, provided during 2012 and 2015 in floating-rate note form to prop up the country's banks, was swapped for fixed-rate notes.

Medium-term measures for Greece consist of (i) a mechanism for the conditional abolition of the step-up interest rate margin related to the debt buy-back tranche of the second Greek programme from 2018 onwards; (ii) a further deferral by 10 years of both EFSF interest and amortization payments on the EUR 96.4 billion of EFSF Master FAFA; and (iii) an extension of the maximum weighted average maturity on the above-mentioned portion of EFSF loans by 10 years. In addition, the return of 2014 SMP and ANFA profits to Greece (as of budget year 2017) builds an internal buffer intended to reduce Greece's future gross financing needs. It is estimated that the combined results of the short and medium-term measures will contribute to a reduction of 50-percentage points in the Greek debt-to-GDP ratio in 2060. Of this reduction, 25 percentage points each come from short and medium-term measures.

Greece's gross financing needs are expected to remain below 15% of GDP over the medium term, and to comply with the 20% threshold in the long run. Therefore, Greece's debt is considered sustainable. In fact, given the size of debt and the interest rates it is now paying, Greece's credit costs are lower than many AA-rated sovereigns.

For the long-term, the Eurogroup also agreed to review at the end of the EFSF grace period in 2032, whether additional debt measures are needed to ensure the respect of these gross financing need targets. Also, the Eurogroup committed to long-term technical assistance to boost Greek growth.

Return to bond markets

The PDMA conducted a long-planned Liability Management Exercise (LME) in November 2017, where the agency offered to exchange a strip of 20 government bonds (PSI bonds) issued after the 2012 debt restructuring for five new benchmark issues. This circa EUR 26 billion debt swap had the effect of cutting the liquidity premium on Greek debt, which also resulted in a reduction of the country's credit spread of 150–170 basis points (bps) across the curve.

In August 2017, Greece issued a new 5-year bond, with maturity 1/8/2022, nominal value of EUR 3 billion, coupon 4.375% and issue price of 98.906%.

Additionally, in February 2018, Greece issued a new 7-year bond, with maturity 15/2/2025, nominal value of EUR 3 billion, coupon 3.375% and issue price of 99.236%.

In parallel, the PDMA persuaded 18 initially unwilling Primary Dealers to provide EUR 35 billion notional amount of euro interest rate swaps to hedge a large proportion of the EUR 52.9 billion of the Greek Loan Facility (GLF). In all, the PDMA's work over 2018 has dropped the country's proportion of floating-rate debt to around 10% by the end of 2018. These loans carried an interest rate of three-month Euribor plus 50bps. With rates set to rise in the euro area in the near future, Greece would face an additional EUR 500 million per annum interest payment if rates rose by 1% – close to 0.25%–0.30% of Greece's GDP (e.g. for a 2% rise, it would be EUR 1 billion).

The PDMA started the hedging programme, constituted by plain vanilla Interest Rate Swaps (IRSs), with just three counterparties in January 2018. The PDMA also offered some "cashflow incentives" to help the programme continue. In all, out of a Primary Dealer group of 21 banks, 18 have finally engaged in such IRSs with the PDMA – 14 foreign banks, and 4 Greek systemic banks. They were done in clips of EUR 250 million or EUR 500 million for a total of about 75% of the total amount of GLF loans, and with an average weighted maturity of 10.5 years. Regarding these loans, the agency managed to change the funding costs of Greece from floating at 3-month Euribor plus 50 bps, to an average all-in cost of 95bps plus 50bps.

Current environment

Greece now has cash reserves of more than EUR 30 billion – sufficient to cover its gross financing needs for the next four years, under very conservative scenarios. Assuming Greece's presence in the capital markets continues, it will be able to generate excess liquidity. PDMA will look to buy back expensive short-dated, floating-rate debt – e.g. the International Monetary Fund loans, which have an outstanding amount of around EUR 10 billion and weighted average maturity of around 3.5 years. Half of that is charged at about 4.9% due to a step-up feature of the loan. The floating element of the 4.9% is

linked to the price of the IMF's 3-month Special Drawing Rights rate, which is not only expensive, but includes foreign exchange risk that is tricky to hedge.

3.4. Iceland

Iceland, a small economy with its own currency, had a strong fiscal position with high exposure to foreign investors before the crisis hit. In response to the crisis, the government introduced capital controls, along with austerity measures and a series of reforms. The crisis had an impact on debt management practices on wide a range of issues, including organizational and regulatory changes, improvement in risk management and transparency practices.

Economy and public debt dynamics in the run-up to the crisis

Iceland has come a long way since passing emergency legislation in the autumn of 2008 and shortly afterwards taking the extraordinary measure of adopting capital controls. These actions were undertaken in response to extreme circumstances and addressed a specific situation; they were aimed at protecting the interests of the Icelandic nation and ensuring the stability of the country's economy. Iceland's strong fiscal position when the crisis hit helped enormously in dealing with the situation. In preceding years, the government had focused on running a budget with an overall surplus and used this to reduce outstanding debt. Total Treasury debt relative to GDP was 23% at year-end 2007, a favourable debt position that enabled the Treasury to shoulder very significant amounts of debt related to the crisis.

The unprecedented economic collapse in Iceland in October 2008 demanded clear and decisive action to respond to this exceptional situation. The government's objectives were clear: to ensure economic, fiscal and currency stabilization without compromising Iceland's real economy and its welfare model. The problem faced was not a sovereign debt problem but primarily a balance of payments problem with a capital overhang seeking an exit estimated at around 70% of GDP. This overhang was a result of carry trade including investments in the failed banks. All decisions made were focused on ring-fencing the sovereign, securing the payment system and stabilizing the currency.

Iceland signed a Stand-By Arrangement (SBA) with the IMF in late 2008 and, as part of the agreement, obtained loan facilities from the Nordic countries, Faroe Islands and Poland as well as the IMF. These funds were used to build up the foreign reserves of the Central Bank. The fiscal outcome was strongly negative from 2008 onwards, and the accumulated deficit reached as high as 25% of GDP at its peak. In addition to the SBA facilities the Treasury took on substantial debt to fund the fiscal deficits.

Introduction of capital controls and recapitalization of the banking system

The steps taken regarding the financial sector were somewhat unique as the three large commercial banks were not split into good/bad banks but rather domestic and foreign operations, with the former transferred to new banks and the latter remaining with the old failed banks. The Treasury recapitalized the banking system and secured the Central Bank's equity position through bond issuance. In total, the cost of recapitalizing the financial sector amounted to around 30% of GDP. Total general government debt peaked at roughly 100% of GDP in 2011. This four-fold increase in total debt resulted in Treasury interest expenses increasing to 5% of GDP at their highest.

Iceland's access to foreign financial markets had practically closed as early as late 2007. Capital controls helped to facilitate domestic purchases of the increased supply of government bonds and bills. By far the largest investors were the pension funds who, at the time, were locked in behind the capital controls and therefore forced to invest domestically. The investment needs of the pension funds are equivalent to around 5% of GDP yearly. So, fortunately, their capital looking for investment dovetailed neatly with the Treasury's increased financing needs. The debt issuance programme was characterised by a high level of transparency, which was welcomed by investors.

Interest rates rose significantly in late October 2008 and even though they subsided somewhat in subsequent months, sovereign interest expense increased greatly. Bond issues from late 2008 until 2010 bore 8%-8.75% nominal interest. Interest rates then began to drop in 2010, and the latest new non-indexed Treasury bonds have a 5% coupon.

Re-establishing international market access

Once economic development in Iceland started to improve, efforts began to re-establish international market access. In 2011, the Treasury issued a 5Y USD-denominated bond with a fixed interest rate of 4.875%. In 2012, market access was confirmed with another 10Y issue at a rate of 5.875%. The proceeds from these issues were used to pre-pay most of the SBA facilities from the Nordics taken in the aftermath of the financial melt-down in 2008. In 2014, the Treasury issued its first EUR bond since 2006, a 6-year issue with a coupon of 2.5%. The rest of the Nordic facilities were repaid and the following year the Treasury and the Central Bank paid in full the remainder of the program loans.

In 2011, the authorities announced a revised long-term strategy for capital account liberalisation. The strategy was set out focusing on forging a unique solution between private entities. Several steps were taken in the first years, but following the launch of a renewed comprehensive strategy for capital account liberalisation in the spring of 2015, authorities reached a consensual agreement with the creditors of the failed banks' estates and their respective winding-up boards.

From the authorities' point of view, it was essential that the resolution of the estates should not destabilize the balance of payments going forward. The estates of the fallen financial institutions finalised composition agreements by the end of 2015, by accepting the so-called stability conditions put forward by the Central Bank of Iceland and the government. These resulted in those estates voluntarily transferring assets worth almost 20% of the country's GDP to the Treasury as stability contributions. The next phase in the liberalisation strategy involved offshore ISK holdings, of which a small portion remains and should be dealt with this spring. The third and last phase of the strategy consisted of restrictions on residents' capital movements, which were removed in the spring of 2017.

Implications of the crisis for public debt management framework

Organizational changes in debt management

Treasury debt management was in the hands of an independent institution until 2007, when this was abolished, and daily administration and management of central government debt was transferred to a special division within the Central Bank, Government Debt Management, under a contract between the Ministry of Finance and the CB. Government Debt Management ensures that borrowing and debt management comply with the strategy set out by the Ministry. In 2010, an attempt was made to strengthen the organisational structure and increase coordination, supervision and overview of debt management issues

within the Ministry by appointing a new Head of Funding and Debt Management to work closely with GDM on debt management issues.

Enhancing transparency and predictability

In the wake of the crisis increased emphasis was placed on transparency and predictability in debt management. That proved to be an important factor in rebuilding confidence and restoring trust in the economy and state finances. Systematic promotional work, e.g. through meetings with investors, bankers, rating agencies and other stakeholders, ensured they were informed and updated on developments and prospects in Iceland. These efforts had a positive effect on investors, as subsequently demonstrated by high demand for Treasury paper when Iceland began to access international capital markets again. The fact that Iceland consistently delivered on, and even exceeded plans and forecasts, was doubtless no less important in boosting market confidence. As was adhering to a realistic strategy.

The rating agencies were a key focus from 2008 onwards and direct efforts were made to keep them well informed about developments in the country. Even though the rating upgrades came at a rather slow pace, Iceland was back in the A category of all the rating agencies within 10 years' time.

In addition to the above, some other changes were made to increase transparency and predictability in debt management following the crisis. An annual prospectus for issuance had been published for years but in 2010 a very important step was taken when a Medium-Term Debt Management strategy was introduced. The Medium-Term Debt Management Strategy (MTDS) lays down the government's plans for financing its activities for the next 5-year period. The aim is to map out a clear policy with quantitative targets, thereby creating a framework for more specific debt management measures. Its principal objective is to ensure that the Treasury's financing needs and obligations are met at the lowest possible cost consistent with a prudent risk policy. It is also intended to encourage further development of efficient domestic primary and secondary markets for government securities. Besides setting out debt management objectives and guidelines, the strategy describes the current composition of the debt portfolio, inherent risk factors and contingent liabilities. It also explains the institutional structure of debt management and how information disclosure to market agents and investors is carried out.

Building up a liquidity buffer

In consultation with the IMF, the decision was taken to build up strong liquidity buffers after the crisis, both in domestic currency as well in FX. The domestic buffer target was set at ISK 120 billion (around 6% of GDP), sufficient to meet the largest payments due and debt service for almost one year. Similarly, Treasury held FX assets against foreign reserve loans, so that its net FX position was close to neutral. These significant buffers played an important role in re-establishing stakeholders' trust in the sovereign. As the years passed, and its importance waned, the domestic buffer was lowered to ISK 80 billion and then again to ISK 40 billion. As capital account liberalisation progressed, the need for large foreign reserves also diminished.

Use of liability management exercises

At the beginning of 2017, the Treasury adopted an active liquidity management program. It allows the Treasury to take and grant short-term loans in the market to smooth out fluctuations in its deposit accounts. The aim is to maintain a deposit balance as close as

possible to ISK 40 billion at any given time. Conditions could arise necessitating higher balances for a short period – for instance, when large Treasury bond maturities are drawing near. At year-end 2018, the Treasury’s cash balance was around ISK 104 billion, well over target, but in anticipation of a large note issue maturing in early February. The decision on setting the target of ISK 40 billion, took into account the largest anticipated fluctuations in Treasury’s cash flow, both positive and negative. The first loan agreements in connection with liquidity management were made in Q1/2017. Their frequency increased gradually in 2017, but then diminished in 2018 due to market conditions. At the same time, predictions of the Treasury’s liquidity position have become more accurate, as they are based on estimated daily revenues and expenses, together with payment flows from revenues and loans granted.

In the past four years, the Treasury has undertaken several liability management exercises. In 2015, it repurchased half of the outstanding amount of a bond issue maturing in 2016. In the spring of 2017, a tender was made for the entire outstanding amount of a bond issue maturing in 2022, with almost 90% participation. In December 2017, the Treasury made an offer for all the outstanding amount of its EUR bond issue of 2014. Investors holding around 53% of the issue accepted the offer. In tandem with this buy-back, the Treasury issued a new EUR bond of 500 million maturing in 2022 with a 0.5% coupon.

An enhanced risk management framework for contingent liabilities

Risk management and management of contingent liabilities have improved steadily over the last 10 years. However, one of the most important factors contributing to fiscal stability and debt sustainability is the adoption of the Organic Budget Act in late 2015. This legislation promises to reform and improve the overall premises and framework of fiscal policy-making and budget implementation, emphasising longer-term planning, sustainability and prudence. The Act contains a fiscal rule based on a set of generic values, together with quantitative parameters, which essentially focus on medium-term fiscal balances, debt limits and debt reduction. These parameters largely correspond to those incorporated in the Fiscal Compact to which many EU countries have subscribed. During the budgeting process and long-term planning, increased emphasis has been placed on risk and scenario analysis and stress tests. Further improvements are intended in coming years.

Current environment

Against the background of sustained economic growth achieved in recent years, central government debt has fallen steadily from its peak at around 90% of GDP in 2011. The overall debt trajectory has been even more favourable than anticipated. A strong economic and fiscal position, together with an improved regulatory framework, provide Iceland with a solid base going forward. Gross central government debt is expected to be close to 20% of GDP by end 2023, according to the current fiscal plan.

Numerous lessons learned during the crisis – and the bail-in principle adopted with the emergency legislation enacted by the Icelandic Parliament in October 2008 – have played a positive role in shaping current thinking on how to respond to, and to mitigate financial crises. While government debt is low by comparison with other OECD countries, the objective going forward will be to maintain an acceptable level of outstanding debt. Furthermore, compared to many OECD countries, Iceland’s demographics are relatively favourable, which is an important factor for assessing long-term fiscal sustainability. The focus, going forward, will be on creating an environment, in which the economy can foster and build increased resilience.

3.5. Ireland

Ireland lost its market access in 2010 and made a full return to bond markets in 2014, following the end of its three-year EU/IMF Programme. This section summarises the challenges faced from a debt management perspective during this stressed market period from losing investment grade status to losing market access. It also outlines some of the key responses and steps taken on the way to return to full market access, including addressing refinancing risk, enhancing investor relation programme and changes in the auction pricing model.

Economy and public debt dynamics in the run-up to the crisis

The size and composition of Ireland's General Government Debt (GGD) has changed significantly since the early 2000s. For example, in 2006 GGD amounted to only 28% of modified Gross National Income (GNI).⁴ This debt was largely comprised of fixed-rate bonds and retail debt products.

Ireland's property bubble burst in 2007 and then it was hit by the 2008 global financial crisis. Its domestic banking system nearly collapsed. The Government was ultimately forced to recapitalise the banks, following the blanket guarantee of September 2008. It injected up to EUR 64 billion (50% of GNI in 2011) into the banks to restore their capital base.

Nominal GDP contracted by 10% in 2009, while unemployment rose to 16% of the labour force at the peak. Liquidity conditions in the banking system deteriorated and Ireland's Government bond market came under severe pressure. Ten-year bond yields increased rapidly towards 9%. The State had to withdraw from financial markets and ultimately enter a financial assistance programme in November 2010.

The Government agreed, on 28 November 2010, to a three-year financial support programme for Ireland by the EU and IMF. The programme amounted to EUR 85 billion, with EUR 17.5 billion of this coming from Ireland's own resources – its National Pension Reserve Fund. External support amounted to EUR 67.5 billion, including funding from the IMF, EFSF, EFSM and bilateral loans from the UK, Sweden and Denmark.

A phased approach to regain market access

The Programme of assistance gave Ireland breathing space, yet it faced huge challenges. For Ireland's National Treasury Management Agency (NTMA), the technical difficulties included reduced credit lines from market counterparts and requirements for daily collateral margining. Ireland undertook a phased approach to regaining market access. This was divided into three key stages: Preparatory-work, phased re-entry and normalised market access. The first step involved transparent communication with market participants, significant investor engagement and a credible recovery plan outlined by the State. This was followed by short-term issuance, opportunistic switches and product diversification. The final stage saw a return to a regular schedule of bond auctions.

Preparatory Work

During the preparatory work phase, communication with investors and wider market participants was key. Despite being locked out from private debt markets, the NTMA led Ireland's re-engagement with investors and rating agencies. Ireland's story had become complicated and needed to be explained.

Maintaining strong relationships with Primary Dealers (PDs) was also an important part of the strategy. This was difficult in an environment when Ireland was not issuing debt. PDs were important for their market knowledge, secondary trading role and significant investor connections.

In May and June 2011, the NTMA completed its first non-deal roadshow to Europe, the United States and Asia. This trip unearthed pioneering investors who bought in large size in the secondary market. Ireland's bond prices bottomed in July 2011. For the following three years, the NTMA covered each investor centre in Europe, North America, Asia and the Middle East at least once annually. The Treasury built rapport with investors, while outlining the path to recovery. The message was to under-promise on Programme targets, counting on the Government to over-deliver.

Communication with official institutions was also imperative. The Government met the EU/IMF Programme targets and delivered on the fiscal reforms as promised. They also put in place the necessary policies to address the banking crisis. The domestic banks were heavily recapitalised and restructured in the first quarter of 2011. The Government also outlined a path towards a primary budget surplus, which was achieved by 2014.

Ireland's Government bonds remained under pressure until the low of July 2011. Ten-year bond yields peaked at 14%, while spreads over Germany were 11 percentage points. Other European countries were facing similar crises. Rating agencies had significantly downgraded Ireland's sovereign rating. Ireland faced a series of downgrades between 2009 and 2011. During that period, the rating went from AAA to BBB+ with Standard & Poor's and Fitch and to sub investment grade with Moody's. A return to full market access was not achievable in 2011, yet the NTMA maintained a presence in the Euro Commercial Paper (ECP) market. This enabled the NTMA to raise short-term money and to stay in contact with both Primary Dealers and market participants. Retail debt also remained an important funding source during this period as consumers moved from the domestic banks in favour of the sovereign.

Re-entry phase

By 2012, Ireland had built a track record under the EU/IMF Programme. The banking reforms and fiscal consolidation between 2009-2011 were increasingly recognised by the market. The NTMA communicated this progress to market participants in a systematic way through non-deal roadshows, conference calls and email updates. Market prices began to recover which allowed Ireland to start its phased re-entry into the debt market.

During this stage, the NTMA looked for opportunities to undertake strategic issuance and switching activity, gradually moving to longer-term instruments. This started with a switch in January 2012. Ireland exchanged EUR 3.53 billion, or 30% of the outstanding 2014 bond, for a new 2015 bond. This was an opportunistic transaction. The timing was favourable and was linked to the introduction of a three-year LTRO facility by the ECB. Further switching activity was undertaken later in 2012.

In July 2012, the NTMA resumed auctions under its short-term Treasury Bill programme. The first T-Bill auction saw three-month money issued at 1.8%. While the size was small and the tenor short, it had the effect of announcing a return prompting investors to reinstate credit lines for Ireland. These auctions continued throughout 2012 and 2013, with rates falling quickly as market presence was re-established and the recovery took hold.

Improvements in the overall market environment further assisted Ireland's efforts with market re-engagement. One of the most significant was the ECB announcement on Outright

Monetary Transactions (OMT) in August 2012. This development further improved market sentiment towards the Irish bond market. The NTMA was able to issue a new five and existing eight year bond on a switch basis, just one month after returning with three month treasury bills. Further interest rate reductions and term extensions on Ireland's official borrowings were also seen as positive developments, which lowered borrowing costs.

Significant landmarks were reached in 2013. Ireland issued bonds by syndication for the first time since losing market access. The first of these was a syndicated tap of the five year bond in January. A total of EUR 2.5 billion was issued at a yield of 3.32%. This was followed by a new ten-year bond in March 2013, the first new 10-year issuance since January 2010. A total of EUR 5 billion was issued, maturing in March 2023. The yield was 4.15%.

Despite these early successes, the NTMA did not yet believe that it had restored full access to the market. Ireland had not undertaken any auctions since 2010 - issuance to date was largely opportunistic. The NTMA made or supported a number of other policy decisions to both improve debt sustainability and prudently manage the large debt stock. This included the second extension of EU loan maturities (EFSF and EFSM), the conversion of the IBRC Promissory Note to long-term Floating Rate Notes, and the build-up of prudential cash balances.

Full market access

At end-2013, Ireland was well positioned to exit from the EU/IMF Programme on schedule. The NTMA had undertaken pre-funding, building up prudential cash balances to cover the next 12-15 months requirements. This strategy allowed Ireland to exit the Programme without the need for a precautionary credit line.

The aim at this stage was to reinforce the reputation of Ireland as a stable and sustainable participant in debt markets. During 2014, Ireland announced an annual funding plan and held regular bond auctions, issuing almost EUR 12 billion in long-term bonds.

A return to a regular schedule of auctions was important, to allow greater liquidity in Irish government bonds. The model changed to a single-price auction, at the recommendation of Primary Dealers. This was to reduce over-bidding and make the auctions more accessible to clients. During 2014, the NTMA also undertook a liability management exercise in the form of a bond buyback and switch of the bond maturing in April 2016. This extended the weighted average life of the outstanding debt profile.

Credit rating changes, including an important upgrade by Moody's to investment grade, finally reflected these emerging trends. Therefore, 2014 was deemed to be the year in which full market access was restored.

Current market environment

Ireland's return to the primary debt markets was challenging. The size and extent of the financial crisis led to a deep loss of confidence. It therefore involved a concentrated focus on investor engagement, short-term issuance, opportunistic transactions, and finally the return to regular auctions. At the same time, favourable current conditions have cemented Ireland's market return. This has been assisted in part by the introduction of a quantitative easing programme by the ECB, keeping interest rates low and driving investor appetite for long-dated bonds.⁵ Since 2014, Ireland has issued close to EUR 70 billion, at a weighted average maturity of 13 years, and a weighted average yield of 1.4%. The Government debt ratio peaked at 120% of GDP in 2012 and fell to 68% at end-2017. It should be noted that

the recent decline in the GGD/GDP ratio is primarily as a result of a sharp rise in GDP stemming from the activities of multinational companies based in Ireland.

There has been a strong turnaround in Ireland's debt dynamics. This is due to the measures taken by the Government to improve the public finances, the return of economic growth and the measures taken at a European level to calm the wider euro crisis. Ireland has now fully repaid the IMF loan of EUR 22.5 billion. This was repaid early and replaced with lower cost market funding. Ireland has also made efforts to smooth its debt profile, buying back shorter-dated bonds. As a result, the refinancing requirement for the 2018-2020 period has been almost cut in half. The estimated weighted average maturity of Ireland's long-term marketable and official debt was 11.2 years at end-2017.

Nevertheless, Ireland recognises the still-elevated levels of public debt.⁶ The NTMA remains focused on the task of borrowing on behalf of the government and managing the national debt in order to ensure liquidity for the Exchequer, and to minimise the interest burden over the medium-term. The NTMA attached significant importance to monitoring liquidity conditions in the government securities markets, regulatory changes and the trends in Primary Dealer markets.

Looking forward, it is important to remain engaged with investors and increase efforts to diversify both the investor base and sources of funding. With this in mind, the NTMA continues with its investor relations programme, undertaking regular visits to the United Kingdom, the United States, Europe, and Asia. The NTMA's strategy has been to focus on longer-term holders of government debt, increasingly in continental Europe. The NTMA's issuance of Ireland's first sovereign Green Bond in 2018 was an important diversification step. A total of EUR 3 billion was issued at a yield of 1.4%. This accessed a new category of investor and provided a new debt instrument that meets untapped investor demand.

3.6. Portugal

Sovereign debt dynamics, which were already weak before the crisis, deteriorated further during the crisis. With limited market access between 2011 and 2013, the debt management office took a vigilant approach in re-engaging with markets. In this respect, priority is given to reducing refinancing risk, broadening investor base, and building cash buffer against liquidity risk.

Economy and public debt dynamics in the run-up to the crisis

The Portuguese economy was subject to two very significant shocks in the late 1990s, which likely had a considerable impact on the accumulation of macroeconomic imbalances, which emerged in the late 2000s. The global economic integration of emerging economies, from the Eastern European countries to the Far-East Asian countries (not least since China's entrance in the WTO), implied a very significant increase of the competition faced by Portugal's most traditional exporting sectors. On the other hand, the run-up to the euro area implied an abrupt reduction of nominal interest rates (e.g. the 3-month money market rate declined from 18% in 1991 to close to 4% in 1998), which boosted domestic demand and significantly reduced savings.

In the subsequent decade, the current account posted consecutive deficits in excess of 5% of GDP, which were perceived at the time to be at the core of a new investment cycle that would enhance productivity, but were actually coupled with a poor economic performance, as GDP growth averaged little more than 1%, diverging from the euro area. This implied a significant increase of external debt (the international investment position deteriorated

from -10% of GDP in 1996 to about -100% in 2008), which left the Portuguese economy highly vulnerable to the shocks that hit the global economy, and in particular the euro area from late 2009.

Following Greece and Ireland in 2010, Portugal requested economic and financial assistance from the IMF, EC, and ECB (henceforth EU-IMF institutions) in April 2011. The 3-year Programme involved a financing package amounting to EUR 78 billion, which was defined to cover the State's borrowing needs until September 2013.

As the market risk perception on the Portuguese sovereign debt mounted in 2011, the issuance of medium- and long-term (MLT) bonds was suspended and the stock of T-Bills was cut by almost 40%, with a sole focus on 3- and 6-months maturities. Outstanding retail instruments also dropped significantly. Hence, at the end of 2011 the debt composition changed substantially, with the most common components declining, while EU-IMF loans already accounted for roughly 20% of the total.

Reactions to the challenges in debt management between 2012 -2013

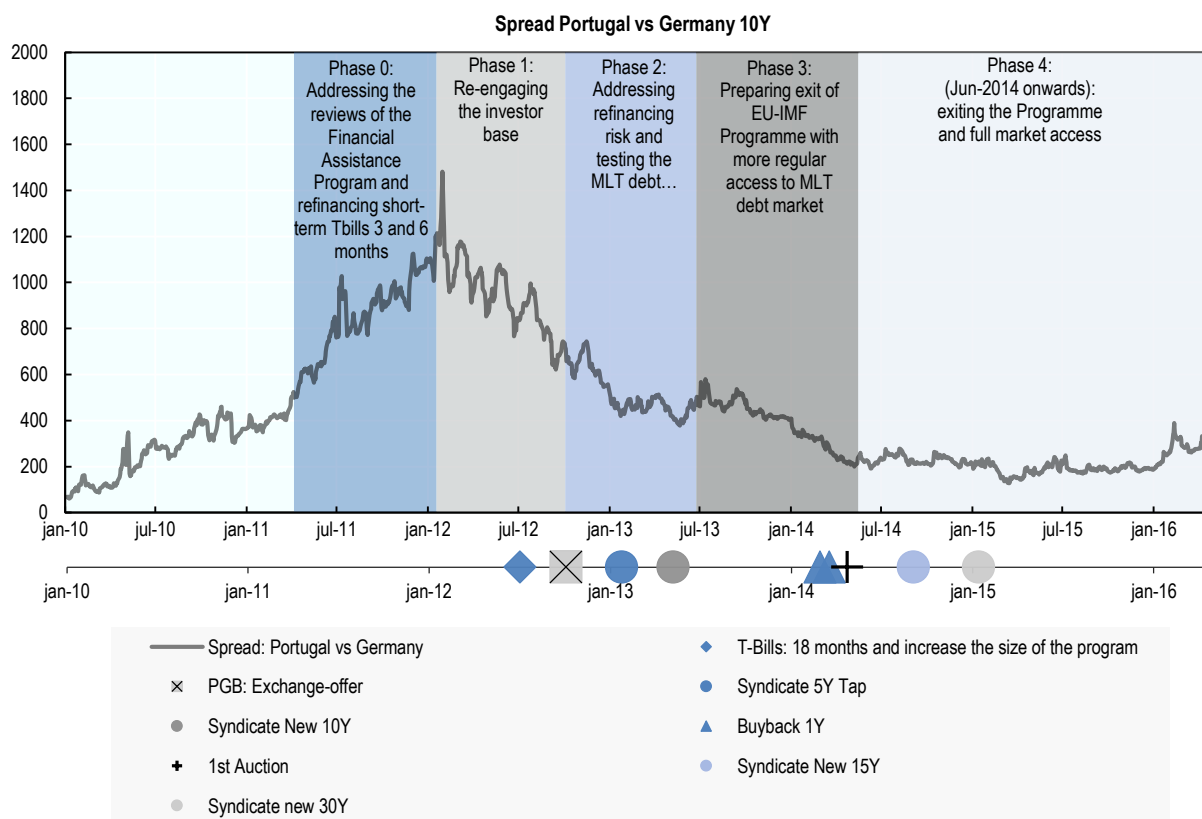
Implementation the EU-IMF programme

The early stages of the EU-IMF Programme were marked by a continued deterioration of market conditions. When the Portuguese rating was downgraded below investment grade, some investors were forced to sell their positions in Portuguese Government Bonds (PGBs) at short notice, as the instruments dropped out from relevant market indices. Until the end of 2011, Portugal was out of the MLT debt market, but it maintained the T-bill programme active, although the market changed completely, becoming mainly domestic driven as international accounts were leaving the country and, for a period of nine months (until Dec-2011), it was only possible to issue 3- and 6-month maturities. The average rates were close to 5%, the average maturity at year-end 2011 was close to 45 days and the total size of the programme decreased to EUR 11 billion. Hence, the financing needs over this period were solely covered by EU-IMF loans, which were front-loaded to cover the redemption of MLT debt, the reduction of the T-bill and retail debt stocks, and still allowed a substantial increase in the cash position.

Re-engaging with the investor base

The first stage of the process to regain market access can be placed in the beginning of 2012, as some early signs of market stabilization emerged. In the run-up to the exit from the Programme that was scheduled for the 2nd quarter of 2014, Portugal started to prepare for regaining full market access. Portuguese authorities embarked on a number of marketing actions directed to the traditional European investors, but perhaps more interestingly, directed to investment communities in the United Kingdom and the United States. As some of these investors were more familiar with adjustment processes in other jurisdictions (outside the euro area), they were in a more favourable position to assess the success of the Portuguese Programme. The investor base had shifted significantly, as a consequence of the change in credit risk perception. While more traditional "buy-and-hold" investors, as pension funds and insurance companies, left the PGB market, newcomers, as hedge funds, notably from the United States, took a more active participation. There was some evidence of market stabilization, as secondary market flows from non-residents turned positive (namely from the United Kingdom and the United States and Primary Dealers' quoting compliance resurfaced.

Figure 3.3. Effects of the Financial Assistance Program in Portugal



Source: Debt Management Office Portugal.

The T-bill market started to improve, and the steady decrease in rates allowed the Portuguese Treasury and Debt Management Agency (henceforth IGCP, Agência de Gestão da Tesouraria e da Dívida Pública) to extend the maturities up to 18 months. By year-end 2012, the average maturity was 6 months and the total size of the programme was EUR 17 billion. IGCP also decided to adopt higher remuneration conditions for Saving Certificates (CA), reversing the downward trend in the stock of these instruments.

Addressing refinancing risk

Portugal progressed in correcting macroeconomic imbalances. In particular, the current account balance turned positive in 2013, fiscal consolidation brought down the structural deficit by about 7 percentage points of potential GDP between 2009 and 2013 and a broad array of structural reforms were implemented. One of the main challenges of the transition period was posed by the large borrowing requirements in the near future, which made Portugal more prone to unanticipated external shocks. Despite the fact that 2014 was fully funded in 2013, Portugal had a heavy calendar of financing needs in the following years, and requested, together with Ireland, an extension of the weighted average maturity of EFSM/EFSF loans for a period of 7 years. As preparation for the first syndicated deal since the start of the Programme, an exchange offer was conducted (1-year bond for a 3-year bond), minimizing the refinancing needs for upcoming years. The marketing actions taken, together with this liability management transaction, proved crucial for the first syndicated

deals of MLT debt conducted in early 2013. In effect, Portugal executed the first syndicated deal, printing EUR 2.5 billion of the existing 5-year benchmark in January 2013. In May, a new 10-year benchmark bond (amounting to EUR 3 billion and priced at around 5.7%) was launched through yet another syndication. The success of these transactions can be assessed by diversified investor participation and positive performance in secondary market. The T-Bill programme became more regular with a combination of short- and long-term maturities, rates came down to levels closer to other European countries, and international participation started to broaden.

Exit from the EU-IMF Programme

Despite maintaining the sub-investment grade status, the three major credit rating agencies also took the first positive steps in this period: Moody's upgraded the rating by two notches (from Ba3 to Ba1, in May and July 2014), while Fitch (BB+, positive outlook in April 2014) and S&P (BB, stable outlook in May 2014) improved the outlook. IGCP launched a new fixed rate debt instrument (i.e. Savings Plus Treasury Certificates) designed for retail investors, promoting the medium-term savings of households and hence widening the domestic investor base – in total, the retail market would surpass EUR 9.5 billion between 2013 and 2015. Early 2014 was marked by a strong improvement of the PGB credit risk, as the 10-year PGB-Bund spread in the secondary market declined from more than 400bps to around 200bps, and IGCP tapped the 5- and 10-year bonds in January and February, for a total amount of EUR 6.25 billion anticipating the repayment of debt securities maturing in forthcoming years, smoothing the redemption profile, extending duration and conveying a positive message to the market. The next logical step was to resume PGB auctions, which occurred in April, with a EUR 750 million tap of the 10-year benchmark.

Before reintroducing auctions as the common venue for MLT debt issuance, the auction type was re-addressed in the end of 2013, beginning of 2014. Several in-depth analyses suggested that the single-price or Dutch auction method is more adequate to clear markets that observe higher volatility, because it has higher transparency and it incentivises participation from investors who may be less informed. To address the risk of overbidding that this price method may involve, IGCP adopted some monitoring indicators, which were included in the Primary Dealers' regular performance appraisal scoreboard. As a result of this analysis, IGCP decided to introduce the single-price auction method. Portugal exited the EU-IMF Programme in May 2014, according to schedule, without drawing down the final tranche.

Restoring full market access

From June 2014 onwards, Portugal not only reinforced market access by holding regular bond auctions in different maturities, but also widened the investor base, achieving a very remarkable issuance in EUR on the 10-year bucket, amounting to EUR 4.5 billion. Afterwards, new syndicated issuances were conducted in longer maturities. These deals provided clear indications that the PGB market was attracting strong investor demand, with a high quality book, well-representative of full market access. In the T-Bill market, in 2015, IGCP changed the issuance pattern, reducing the number of lines available, in order to make each line bigger and more liquid, as the total programme size remained fairly constant. The issuance calendar continued to have one auction per month, but redemptions occurred only once every two months. Liquidity improved and bid-offer spreads became even tighter, approaching Italian and Spanish levels.

Medium and long-term policy responses

In the Portuguese debt market, turnover decreased significantly during the EU-IMF Programme and the bid-offer spreads increased sharply. While both these indicators are now similar to what could be observed before the crisis, the volatility is still substantially higher, which may be a symptom of a less efficient price discovery process and/or lower credit rating than prior to the crisis. In the last years, Portugal has re-established market confidence with regular issuance of both bond auctions and syndications. However, the need for more flexibility can be attested by the fact that the weight of syndications in the overall MLT debt issuance is now higher than before the crisis (about 50% in 2014-15, as compared with less than 20% in 2010). Moreover, the average maturity was significantly extended, reaching more than 8 years, and in 2014-15 the share of issuance in the 15-30y bucket represented almost 20% of the total issued amount. Regarding the domestic and international allocation in PGB auctions, domestic Primary Dealers take up 10%-15% of an auction on average. Since 2013, net issuance of retail instruments has averaged more than EUR 2 billion/year, with the outstanding amount of these instruments reaching a historical record of more than EUR 20 billion at the end of 2015.

Investor base: The investor base changed significantly during the Programme. Before the crisis, the allocation was very well balanced across euro area countries and a strong distribution among pension funds and insurance companies. In the first issuances after entering the Programme, there was a strong take up from the investors in the United Kingdom and the United States, specifically from hedge funds. More recently, while there is a clear shift towards a distribution closer to the one observed pre-crisis, there is still a strong take-up from the United Kingdom and domestic investors. Moreover, the weight of debt securities held by non-resident private investors is still significantly lower than before the crisis, but similar to that observed in other peripheral countries. The change of investor base implies a continuous and close communication with existing and prospective investors, crucial to increase their awareness on the execution of the financing programme at each point in time, and hence minimize the risk of surprising the market at any new issuance announcement.

Lessons learned from the debt crisis

Flexibility and consistency: One of the main lessons of the sovereign debt crisis was that DMOs need to constantly adapt to challenging and shifting environments and market access is mostly a “work in progress” objective. On the one hand, the uncertainty and relatively low liquidity that has characterized the market since the crisis implies the need for more flexibility in executing the issuance programme (e.g. higher cash reserves; auctions announced with a shorter lag; to perform extra liability management exercises - exchange offers - in order to prepare the market before new syndications; more issuance through syndications and less via auctions). On the other hand, IGCP acts consistently in terms of its debt issuance, following an adequate balance between predictability and flexibility.

Communication: A comprehensive investors’ presentation, with an encompassing description of the recent developments in the Portuguese economy and financing programme, is regularly updated at IGCP’s website, together with brief research notes on major macroeconomic developments. Regarding the issuance strategy, IGCP adopted a conservative approach with the intention to deliver a reliable message.

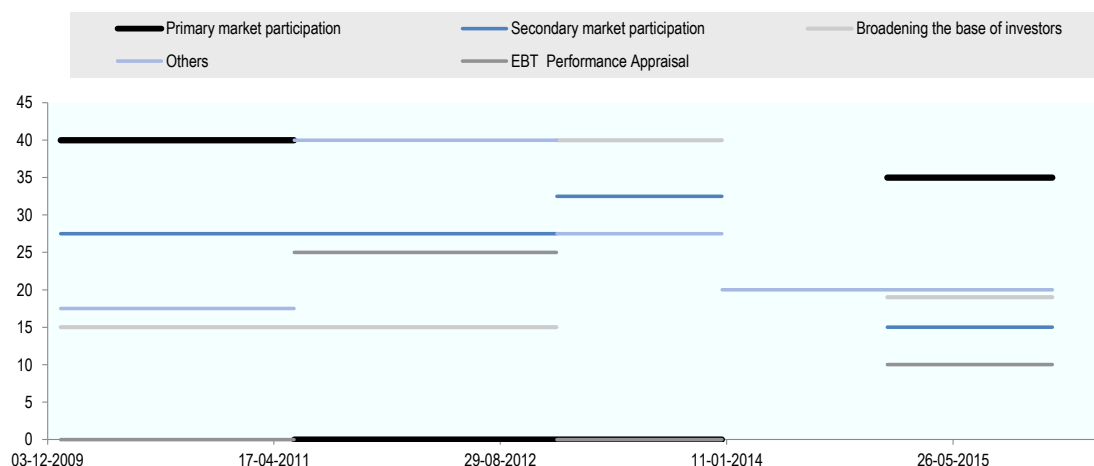
Redemption profile: Since mid-2012, IGCP carried a strategy based on smoothing the redemption profile and extending duration, in order to mitigate the refinancing risk. As

preparation for the first syndicated deal, an exchange offer was conducted on October 3rd, 2012, where a 1-year bond (maturing in September 2013) was bought, in exchange for a 3-year PGB (October 2015), thus minimizing the refinancing needs for upcoming years. And since then, buybacks and bond switches have been present in IGCP's annual funding strategy.

Cash position: The State's cash position is now substantially higher than before the crisis: it averaged a little more than EUR 1 billion between 2005 and 2010, but it has been in excess of EUR 10 billion since Jun-2011, as IGCP has a general objective of pre-emptively financing about 40-50% of the following year's financing needs. As explained above, this has been an important feature to inspire confidence among investors and to avoid issuance pressure in times of market volatility.

PDs and evaluation: An interesting feature of the Portuguese case is that, unlike what happened in other euro area countries, the number of PDs has actually increased since the crisis. Primary dealership evaluation has been shaped up in the past couple of years to facilitate a more effective delivery of debt management objectives. Despite the fact that some operational objectives have shifted during the process of regaining full market access, primary dealership incentives have always been directed at strengthening liquidity provision, as market access hinges decisively on secondary market liquidity. Over this period, several changes have been introduced in the PDs' performance appraisal, to reflect the different stages of the process of regaining market access, with the emphasis on broadening the investor base still playing a more relevant role than before the crisis (Figure 3.4).

Figure 3.4. Primary Dealer Performance Appraisal, Portugal



Source: Debt Management Office of Portugal.

Notes

¹ Country sections in this chapter provided by the national debt management offices of Greece, Iceland, Ireland and Portugal. An earlier version of the discussions concerning Ireland and Portugal were published in a discussion paper “Accessing sovereign markets – the recent experiences of Ireland, Portugal, Spain, and Cyprus” by the European Stability Mechanism in June 2016.

² Market access is often referred to a sovereign’s ability to obtain necessary funding with reasonable and sustainable conditions in financial markets.

³ This is based on decisions 2009/415/EC of the Council of the European Union – EEL135/30-5-2009, 2010/320/EU and decision of the Council of the European Union – EEL145/11-6-2010.

⁴ Gross National Income (GNI) is a metric created by the Central Statistics Office to modify GDP for the impact of multinationals’ activities.

⁵ Between March 2015 and December 2017, the ECB purchased EUR 1.9 trillion in the euro area public sector bonds. Irish Government bonds accounted for just over EUR 25 billion of this total purchasing amount.

⁶ The absolute level of debt remains high as Ireland’s general government debt was over EUR 200 billion in 2017.

References

- Guscina A., S. Malik, and M.Papaioannou (2017), “*Assessing Loss of Market Access: Conceptual and Operational Issues*”, International Monetary Fund Fiscal Affairs Department, Washington DC, <https://www.imf.org/en/Publications/WP/Issues/2017/11/15/Assessing-Loss-of-Market-Access-Conceptual-and-Operational-Issues-45347>
- OECD (2013), *OECD Sovereign Borrowing Outlook 2013*, OECD Publishing, Paris http://dx.doi.org/10.1787/sov_b_outlk-2013-en
- OECD (2014), *OECD Sovereign Borrowing Outlook 2014*, OECD Publishing, Paris, http://dx.doi.org/10.1787/sov_b_outlk-2014-en
- Bassanetti Antonio, Carlo Cottarelli, and Andrea Presbitero (2016), “*Lost and Found: Market Access and Public Debt Dynamics*”, IMF Working Paper, WP/16/253 December, 2016, <https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Lost-and-Found-Market-Access-and-Public-Debt-Dynamics-44498>
- World Bank (2005), “*Public Debt and Its Determinants in Market Access Countries*”, March 2005, the WB, Washington DC, <http://siteresources.worldbank.org/INTDEBTDEPT/Resources/468980-1225740508953/MACCCaseStudiesMar05.pdf>
- Ireland NTMA (2017), “*Annual Debt Report 2017*”, Ireland National Treasury Management Agency, Ireland Dublin, <https://www.ntma.ie/publications/2018>

Annex A. OECD 2018 Survey on Primary Markets Developments

Annex A is available ONLINE ONLY at the following DOI:

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Annex B. OECD 2018 Survey on Liquidity in Government Bond Secondary Markets

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