BANCO DE ESPAÑA
Eurosistema

ECONOMIC BULLETIN 1/2018
ANALYTICAL ARTICLES

Global funding trends in capital markets in 2017

Alberto Fuertes, Luis Molina, Luna Romo and Emilio Muñoz de la Peña

13 March 2018

The total volume of bond issuance in 2017 remained similar to that in previous years, edging down slightly as a result of the drop in public-sector issuance. As usual, there were significant differences between the regions and quarters analysed. By quarters, the year got off to a good start, with strong growth in the volume of issuance in the first quarter, followed by a slight deceleration. This pattern possibly reflects some issuers seeking to bring forward their placements in anticipation of worsening financial conditions, given the context of progressive monetary policy tightening. By region, the drop in issuance by the United States stands out, alongside the strong performance of the emerging markets. There was also a marked increase in the volume of placements in higher-risk segments, such as corporate and high-yield bonds, and in emerging markets, which reached record levels.

GLOBAL FUNDING TRENDS IN CAPITAL MARKETS IN 2017

The authors of this article are Alberto Fuertes, Luis Molina, Luna Romo and Emilio Muñoz de la Peña, of the Associate Directorate General Economics and Research.

The total volume of bond issuance in 2017 remained similar to that in previous years, edging down slightly as a result of the drop in public-sector issuance. As usual, there were significant differences between the regions and quarters analysed. By quarters, the year got off to a good start, with strong growth in the volume of issuance in the first quarter, followed by a slight deceleration. This pattern possibly reflects some issuers seeking to bring forward their placements in anticipation of worsening financial conditions, given the context of progressive monetary policy tightening. By region, the drop in issuance by the United States stands out, alongside the strong performance of the emerging markets. There was also a marked increase in the volume of placements in higher-risk segments, such as corporate and high-yield bonds, and in emerging markets, which reached record levels.

Introduction

The performance of international financial markets in 2017 was characterised by stability and the continuation of historically low levels of volatility, in a context of low interest rates and a strong appetite for risk. This was despite a number of factors potentially generating uncertainty, particularly the shift in the economic policy stance in the United States, announced by the new Trump administration, or the normalisation of US monetary policy. The volume of issuance was similar to that of the previous year, with a slight drop in bond issues between the two years, mainly as a result of the reduction in government bond issuance. Moreover, the volume of placements in the higher risk segments, such as corporate high yield and emerging markets, reached record levels.

This article analyses the main trends in securities issuance activity last year,[1] highlighting the factors that may have had the most significant impact on each market segment. Building on this information, we have also included an estimate of the net volume of funding received by the corporate non-financial sector in the main developed economies. This estimate, which combines information on corporate non-financial sector issuance with domestic and cross-border bank lending data, gives an additional view of the non-financial private sector's net finance and debt flows.

The following section describes developments in capital markets worldwide in 2017. Subsequent sections analyse the main features of issuance activity in public debt markets, non-financial corporate bonds, the banking sector, emerging markets and other markets. The final section discusses the development of net funding to the non-financial corporate sector in the main developed regions. Two boxes are also included: the first analyses the recent bout of financial turbulence, and the second discusses the main trends and developments in the issuance of "green bonds", a market whose volume has grown considerably in recent years, achieving record figures in 2017.

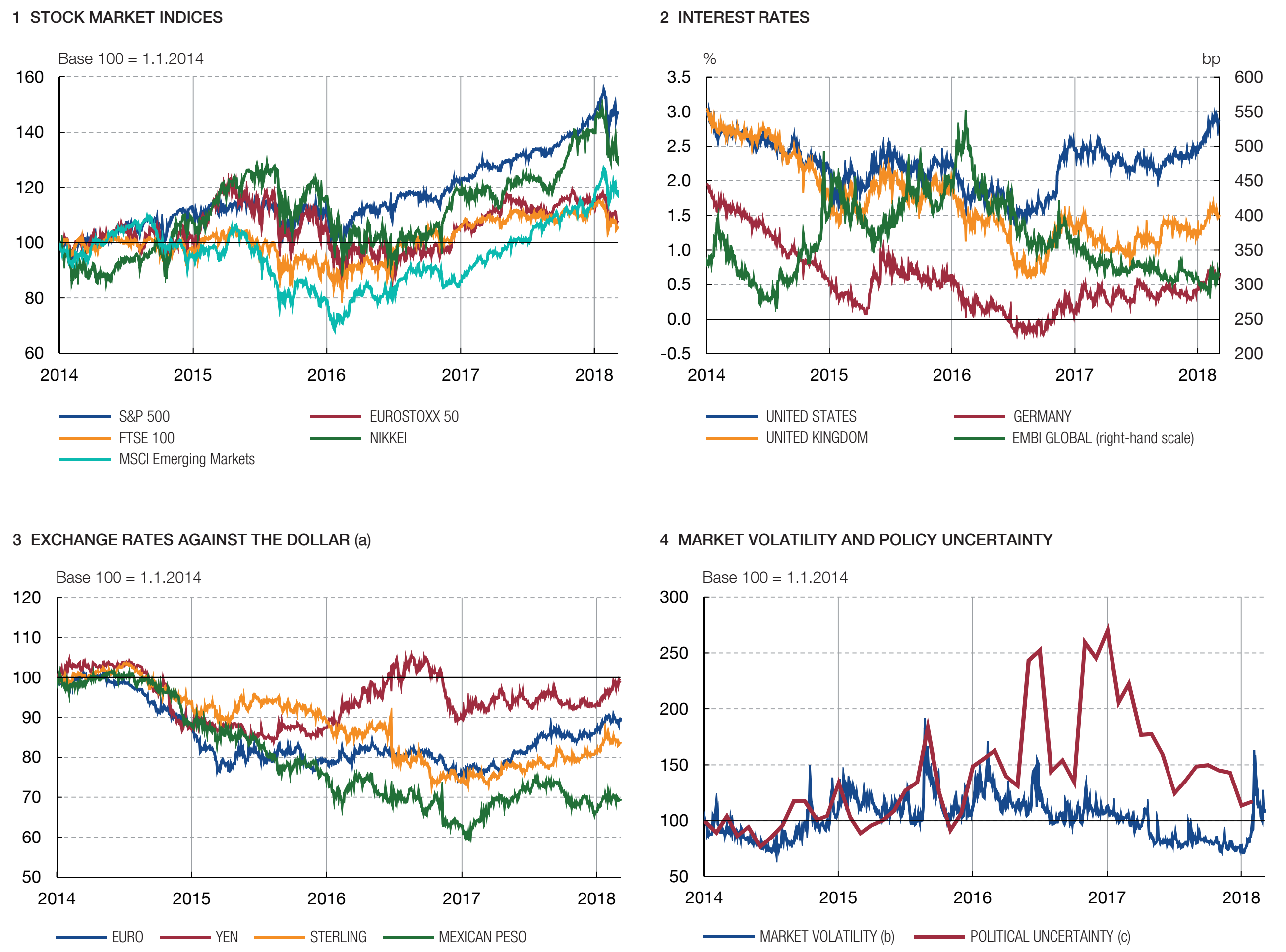
Backdrop to global financial conditions

2017 can be considered a period of relative calm on international financial markets. Macroeconomic and political uncertainty barely had any impact on market performance

1 The analysis focuses on gross security issues on capital markets for maturities of over one and a half years, using the Dealogic database as the main source.

GLOBAL FINANCIAL CONDITIONS

CHART 1



SOURCES: Datastream and Economic Policy Uncertainty.

a An increase (decrease) denotes an appreciation (depreciation) of the currency against the dollar.
b Average volatility of the bond market (MOVE), the stock market (VIX) and the euro, yen and sterling exchange rates against the dollar.
c Global economic policy uncertainty index *(Global EPU Index).*

apart from occasional increments in volatility, which decreased overall and remained very low throughout the year. This occurred against the backdrop of a recovery in the pace of global growth and an upward revision of forecasts, in conjunction with rising stock markets, which reached historical highs in the United States and Japan. Following up on its announcements, the US Federal Reserve gradually implemented its monetary policy normalisation plan. However, ten-year interest rates barely moved and financial conditions remained loose throughout the year (see Charts 1.1 and 1.2).

Nevertheless, early 2017 was characterised by market caution in the wake of the US presidential election in November 2016. The long-term government bond yield rose significantly and the dollar appreciated, but these movements halted in the following months in the light of the uncertainty surrounding the content of the policies announced by the new Trump administration. Stock-market indices continued to rise, however, setting new records in the US, and, as mentioned, this continued throughout the year, while volatility decreased.

Over the course of the year, a number of political events with the potential to affect financial market behaviour had only a minor impact and caused barely more than occasional increments in volatility. This was the case of the various elections in Europe (France, the United Kingdom and Germany), with milestones in the progress of the Brexit negotiations and other geopolitical events. In any event, global political uncertainty gradually eased, after peaking in late 2016, thus supporting the prevailing low levels of volatility (Chart 1.4).

The context of good macroeconomic data, with stronger-than-expected growth in activity in the main regions, and a favourable outlook for 2018, combined with an absence of significant inflationary pressures, fostered a gradual change in the monetary policy stance. In the United States, the Federal Reserve raised the federal funds rate three times over the course of the year, in line with the announced pace of normalisation, and began to shrink its balance sheet in October. Despite these measures, long-term US sovereign debt rates remained stable and their implied volatility dropped, possibly helped by the Federal Reserve's communication policy, which has been very explicit about the projected path of interest rates and the pace of balance sheet reduction, in contrast with the uncertainty and volatility arising in 2013 during the so-called "taper tantrum".[2]

In the United Kingdom, the Bank of England moderated its lax monetary policy stance, with a rise in the official rate in November, the first after the financial crisis. However, it has no plans to reduce its stock of bonds acquired during its asset-purchase programmes. In the euro area and Japan, monetary policy remained more accommodative. In the case of the euro area, the ECB's asset purchase programme ran until 2018, although the amounts were smaller. For its part, the Bank of Japan continued its asset purchase and yield-curve control programmes

In emerging markets a certain degree of uniformity was apparent, with rising political risk and sovereign rating downgrades in some of the large economies. Nevertheless, there was an upturn in activity, as was the case in the advanced economies. In conjunction with the context of global appetite for risk, this encouraged the carry trade and stimulated inflows of portfolio capital in these regions, with rising exchange rates against the dollar, tightening sovereign spreads –in some cases to levels close to historic lows– and strong increases in stock market indices.

The year ended with the adoption of tax reform in the United States, which may have significant consequences for the country's macroeconomic and financial situation, and therefore for the conditions under which corporate bonds are issued. In Europe, the uncertainty caused by the difficulty of forming a government in Germany after the September elections was resolved by an agreement between the two main parties to build a coalition. However, in Italy the scenario for 2018 is uncertain in the wake of the elections on 4 March, as none of the parties achieved a sufficient majority to form a government, obliging them to look for post-electoral agreements.

In early 2018, the main perceived risk affecting financial market performance was the possibility of an event triggering an upturn in volatility, given its extremely low level. Such an event may result in a tightening of financial conditions, affecting access to capital markets, particularly among more heavily indebted and higher risk borrowers. There are several things that could trigger a correction of this kind, such as faster-than-expected monetary policy normalisation in the main advanced economies, linked to a bigger-than-

2 In May 2013, the then chairman of the Federal Reserve, Ben Bernanke, said that the rate the Federal Reserve's asset purchases was likely to start slowing at the year. This unexpected announcement led to many investors selling a large part of their fixed-income portfolios, pushing up government-debt yields and volatility.

expected upturn in inflationary pressures. In early February various corrections of this kind occurred, although it is still too early to assess the implications of these changes for financial conditions and the volume of issues in the various segments (see Box 1). Moreover, the possible overvaluation of some markets in the United States, such as high-yield-debt and stock markets[3] could be an additional focus of risk, facilitating the reproduction of high volatility episodes.

Primary bond market activity

The volume of total bond issuance in 2017 remained similar to that in previous years, edging down as a result of the drop in public sector issues (see Table 1). Chart 2 shows issuance activity over the last few years. As usual, there are significant differences between the regions and quarters analysed.

By quarters, the year got off to a good start, with strong growth in the volume of issuance in the first quarter, followed by a slight deceleration. This pattern possibly reflects the behaviour of certain issuers seeking to bring forward their placements in anticipation of worsening financial conditions, given the context of progressive monetary policy tightening. By region, the drop in issuance by the United States stands out, alongside the strong performance of emerging markets.

These trends were underpinned by both demand- and supply-side factors. On the demand side, investors' behaviour was shaped by the context of low volatility, risk appetite, and the search for yield, which has fostered access to finance in higher risk segments, such as emerging markets. On the supply side, government issuance drove developments globally, with the United States declining strongly, while nevertheless remaining the most important sector in terms of issuance volumes. The decline in banking sector issues could have been driven partly by the abundant funding from central banks and issues by banks in previous years in order to meet certain regulatory requirements, particularly in the United Kingdom and the United States.

GOVERNMENT BOND MARKETS IN DEVELOPED COUNTRIES

In 2017, gross government issuance in developed countries slackened somewhat, continuing the trend observed in recent years in a context of fiscal consolidation. The decrease affected almost all the main regions, but was most intense in the United States (Chart 3.1). The euro area was the exception, as issuance increased slightly, whereas in Japan and the United Kingdom it also decreased. The rate of fiscal consolidation implemented in the last few years is shown more precisely by the change in the volume of net issuance (Chart 3.2), which has been declining gradually and, in some cases, such as the United States, was negative in 2017.[4] In terms of issuers, the bulk of issuance is still centralised, with treasuries accounting for the majority of the securities placed on markets (Chart 3.4).

The downward trend in government bond issues could nevertheless be reversed in 2018. This might be the case in the United States in particular, where the tax reform adopted in December 2017 and the recent budget agreement entail an increase in the borrowing requirement. Indeed, the US Treasury's plans point in this direction: the report of the "Treasury Borrowing Advisory Committee" (TBAC),[5] published in August, mentioned a

3 The price-earnings ratio of the S&P 500 index was 21.6, well over its historical average of 16.5. This ratio is a traditional indicator of share-price overvaluation.

4 As only issues with expiries of over 1.5 years have been recorded, a negative net issue volume does not necessarily mean the government is running a surplus.

5 https://www.treasury.gov/press-center/press-releases/Pages/sm0142.aspx

RECENT DEBT MARKET DEVELOPMENTS: ISSUANCE VOLUMES

TABLE 1

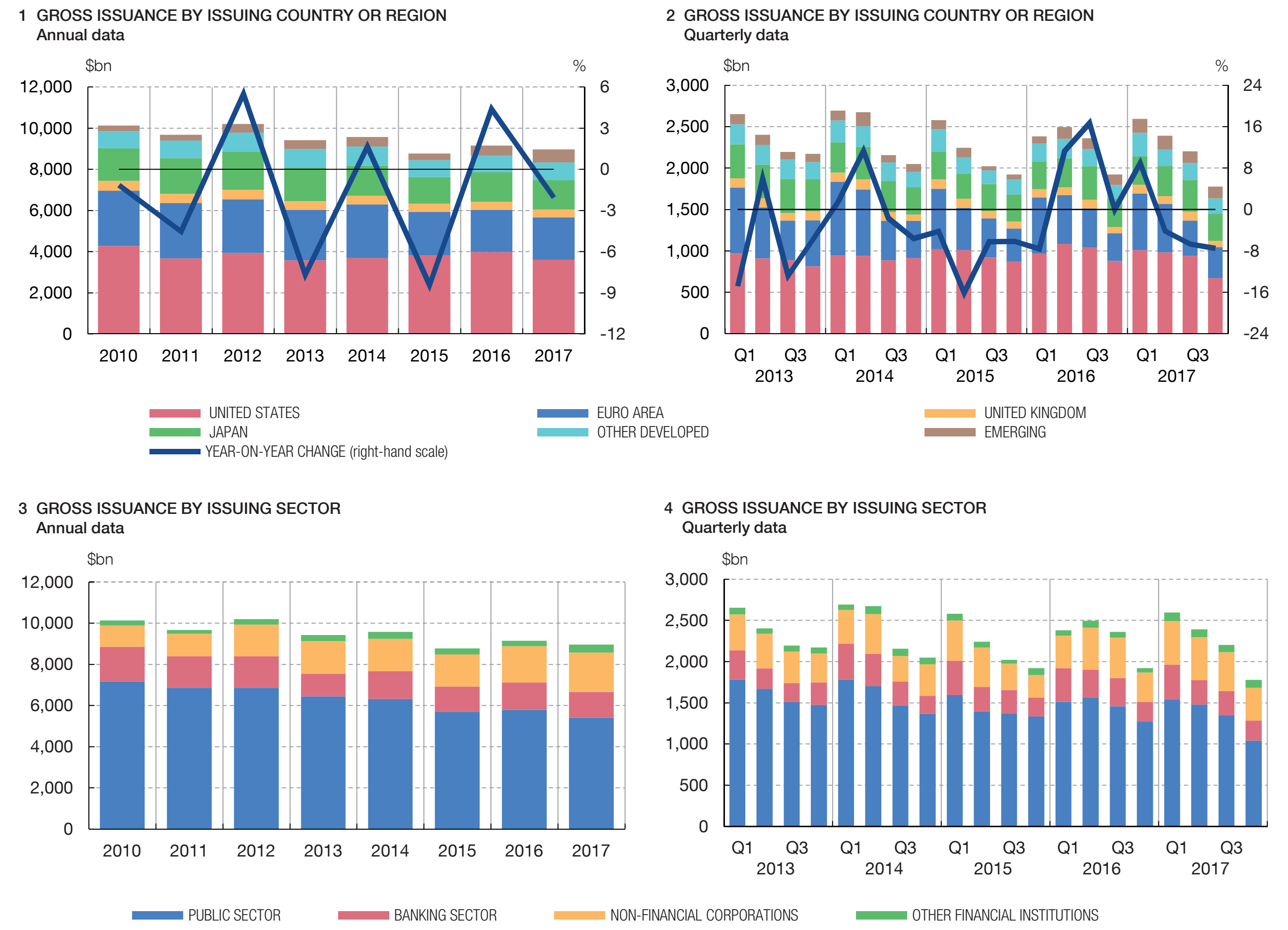
$bn

	2016	2017	Annual change 2017 (%)	2017			
				Q1	Q2	Q3	Q4
TOTAL BONDS (a)	**9,144**	**8,957**	**-2.05**	**2,593**	**2,389**	**2,199**	**1,775**
TOTAL BONDS, DEVELOPED ECONOMIES	**8,657**	**8,332**	**-3.75**	**2,423**	**2,220**	**2,057**	**1,632**
TOTAL BONDS, EMERGING ECONOMIES	**487**	**624**	**28.25**	**170**	**169**	**142**	**143**
TOTAL BONDS, BY COUNTRY							
Developed countries	8,657	8,332	-3.75	2,423	2,220	2,057	1,632
United States	3,965	3,594	-9.35	1,006	978	939	670
Euro area	2,066	2,063	-0.15	686	583	424	371
United Kingdom	382	391	2.39	107	99	108	77
Japan	1,428	1,415	-0.85	339	363	384	330
Other developed countries	816	869	6.38	285	197	203	183
Emerging economies (b)	487	624	28.25	170	169	142	143
TOTAL BONDS, BY SECTOR/INSTRUMENT							
Public Sector	5,799	5,408	-6.75	1,543	1,477	1,346	1,042
Developed countries	5,627	5,203	-7.53	1,472	1,427	1,305	999
United States	2,520	2,101	-16.64	583	573	571	374
Euro area	1,342	1,358	1.21	441	394	304	219
United Kingdom	178	164	-7.88	53	37	39	35
Japan	1,257	1,220	-2.98	286	328	311	296
Other developed countries	329	360	9.39	109	95	81	75
Emerging economies	172	204	18.86	71	50	40	43
Non-financial corporations	1,752	1,917	9.43	528	521	470	398
Developed countries	1,514	1,622	7.14	463	437	391	331
United States	883	922	4.42	259	255	226	182
Euro area	350	320	-8.56	106	92	49	73
United Kingdom	83	107	28.37	18	30	42	18
Japan	82	112	36.38	29	24	40	19
Other developed countries	116	161	39.34	51	36	34	40
Emerging economies	238	295	24.02	65	84	79	67
Banking sector	1,329	1,257	-5.42	421	296	297	242
Developed countries	1,252	1,132	-9.59	387	261	276	208
United States	421	365	-13.25	111	97	95	62
Euro area	339	333	-2.01	119	86	65	63
United Kingdom	98	79	-19.49	27	23	13	15
Japan	67	66	-1.70	21	7	26	13
Other developed countries	327	290	-11.39	109	49	77	55
Emerging economies (c)	77	125	62.33	35	35	22	34
Other financial institutions	264	375	41.99	101	94	86	93
United States	141	206	46.43	53	53	47	53
Euro area	34	52	50.53	20	11	6	15
United Kingdom	23	41	82.90	10	9	13	9
Japan	21	17	-16.82	3	4	7	3
Other developed countries	45	58	28.49	16	17	12	13
Memorandum items							
Covered bonds (d)	216	208	-3.78	79	53	39	37
Euro area	109	99	-8.60	42	30	21	21
Other	107	109	1.08	37	23	18	16
High yield bonds	425	574	35.18	160	158	123	133
Developed countries	360	442	22.76	125	112	98	107
United States	255	284	11.31	80	75	69	61
Euro area	65	69	6.24	21	15	8	24
United Kingdom	14	31	127.42	7	9	6	10
Japan	7	15	115.03	4	0	11	0
Other developed countries	19	43	119.45	13	13	4	12
Emerging economies	65	132	104.34	35	47	25	26
Syndicated loans	4,515	4,777	5.81	1,221	1,295	1,000	1,263
Developed countries	3,902	4,241	8.70	1,097	1,142	882	1,121
United States	1,538	1,794	16.62	451	486	382	475
Euro area	832	849	2.00	213	238	181	217
United Kingdom	347	385	10.88	108	107	68	102
Japan	561	527	-6.03	163	114	113	137
Other developed countries	623	687	10.17	162	197	137	190
Emerging economies	613	536	-12.57	124	153	117	142

SOURCE: Dealogic.

a Estimated totals. Data exclude securitisations and short-term debt instruments.
b In emerging economies, only issues on international markets are included.
c Other non-bank financial institutions are included in the banking sector of emerging economies.
d Covered bonds issued by all institutions are included, so that the issuer base is broader than the banking sector.

GROSS BOND ISSUANCE BY SECTOR AND COUNTRY (a) CHART 2



SOURCE: Dealogic.

a Excluding securitisations and short-term debt instruments.

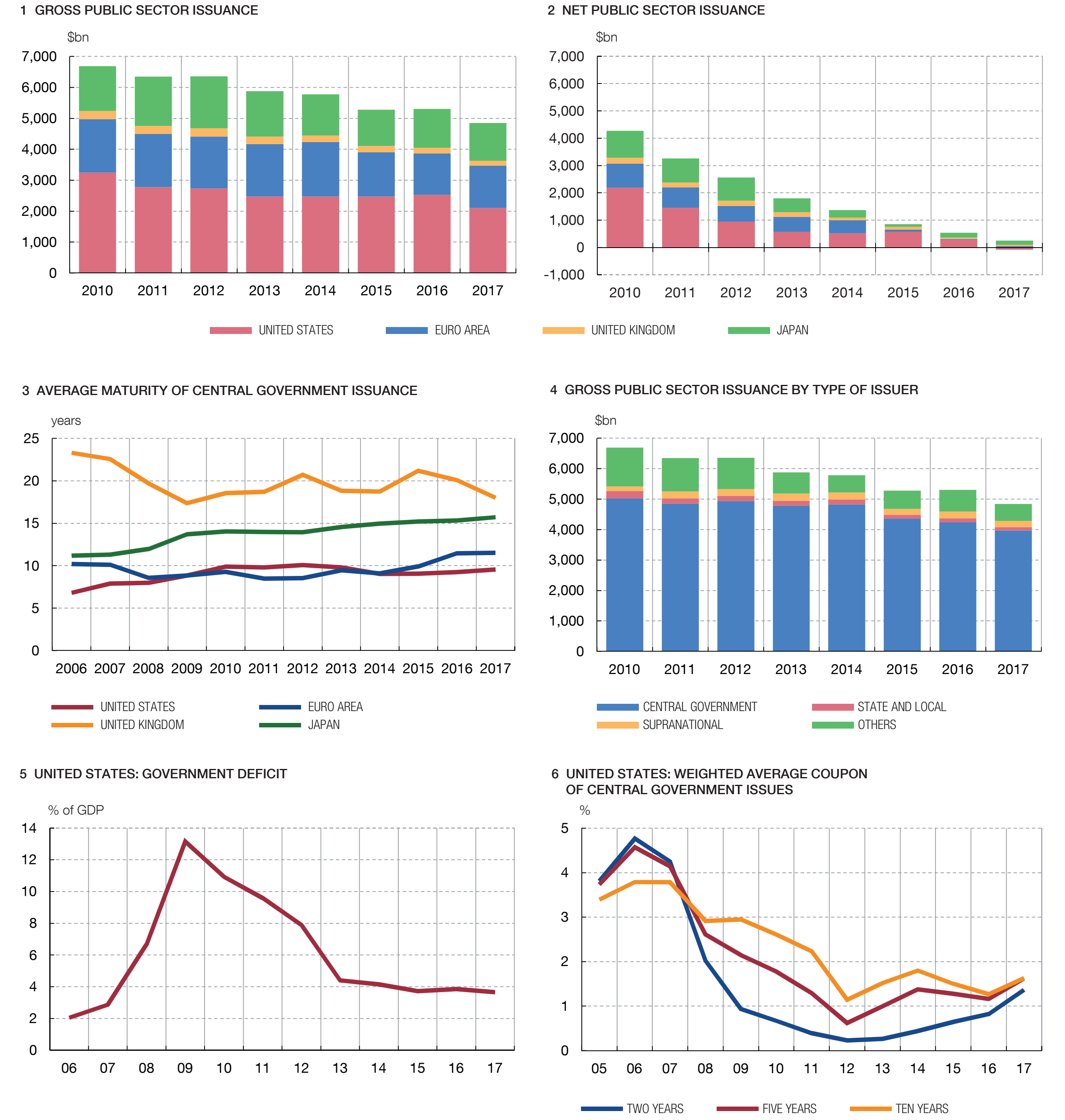
possible increase in the government borrowing requirement resulting from the forecast increase in the fiscal deficit. As regards issue maturities, the latest TBAC[6] report recommended that a significant share of the borrowing requirement be covered by treasury bills, which are short-term securities,[7] as well as issues at maturities of two to five years, so as to offer an attractive balance between costs and risk in the current context of low real interest rates, a very low term premium and growing fiscal deficits.[8] Finally, Chart 3.6 shows how the interest rates on issues continued to rise across the entire maturity spectrum in 2017, but more intensely in the case of short-term than longer term issues.

In 2017, average maturities of issues increased in Japan and the United States –where government debt continues to have the shortest average maturity among the main economies– while remaining unchanged in the euro area and shortening significantly in the United Kingdom (Chart 3.3). In the United States the Treasury has weighed up the option of issuing debt with maturities of over 30 years, as other countries such as Belgium, Ireland

6 https://www.treasury.gov/press-center/press-releases/Pages/current_TBACReportPressRelease.aspx
7 Treasury bills issues are not included in the charts, as they have maturities of less than a year.
8 On 31 January the US Treasury announced an increase of two billion dollars a month for each of the debt auctions with maturities of two and three years, together with an increase of one billion dollars a month for all auctions and long-term debt (maturities of 5, 7, 10 and 30 years).

GOVERNMENT DEBT MARKET (a)

CHART 3



SOURCES: Dealogic and International Monetary Fund (WEO).

a Excluding securitisations and short-term debt instruments.

and Austria have been doing.[9] This possibility, mentioned by the Treasury secretary, would be destined to create a type of high quality long-term asset and would only be embarked upon if there were sufficient investors interested in it.[10] Demand for this type of asset mainly comes from defined-benefit pension plans, which account for 40% of pension

9 The Austrian treasury issued its first 100-year bond in September, placing approximately €100 million at a yield of 2.1%.

10 https://www.bloomberg.com/view/articles/2017-06-26/treasury-s-ultra-long-bonds-have-no-natural-demand

plans in the United States, a far smaller share than in Japan or the United Kingdom, where they account for 82% and 96%, respectively.[11]

NON-BANK PRIVATE FIXED-INCOME MARKETS IN DEVELOPED COUNTRIES

Debt issuance on capital markets by non-financial corporations (NFCs) remained as buoyant as they had been in 2016, benefiting from a favourable financial market environment to set a new issuance record (Chart 4.1). Certain differences across regions and quarters were discernible over the course of the year, resulting from the uncertainty surrounding the Trump administration's economic policies, monetary policy decisions in the main regions, and episodes of heightened market volatility, which affected some specific issues.

Issuance grew fastest in the first quarter, driven by progress in the United States and Japan. In the United States, the expectations of tighter financial conditions resulting from toughening monetary policy and the positive impact on the policies announced by the Trump administration seem to have stimulated issues in that quarter, becoming less buoyant as the uncertain content and difficulties implementing these policies became apparent.

Specifically, the uncertainty over the final scope and entry into force of the tax reform, which was not adopted until December, could lead some companies to delay or postpone their issuance decisions. Moreover, the text finally adopted might make issuance less attractive to companies for two reasons. First, the tax reform lowered the tax rate on repatriated earnings, potentially enabling companies to utilise this reduction to draw on funds accumulated abroad, rather than tap the capital markets. Second, the tax deductions available for interest on debt have been capped, making this funding route less attractive.

For its part, the US Federal Reserve's policy of gradual monetary normalisation does not seem to have significantly affected companies' financing conditions, which remain loose. Funding costs moved downwards somewhat and only picked up in early 2018 (Chart 4.7). There was also no significant increase in volatility during the normalisation process, such that, overall, the impact of the Fed's monetary policy on corporate issues in 2017 seems to have been limited.

Among the main developed regions, Japan and the United Kingdom, saw the biggest increase in NFC issuance in 2017. In Japan, the biggest increase took place in the first quarter, a period characterised by the Bank of Japan's intervention to keep ten-year rates close to 0% against a background of across the board rises in other regions. Monetary policy remained loose, with the reference rate at -0.1% and asset purchases around JPY 80 trillion a year, encouraging a search for yield, which favoured the corporate segment, among others.

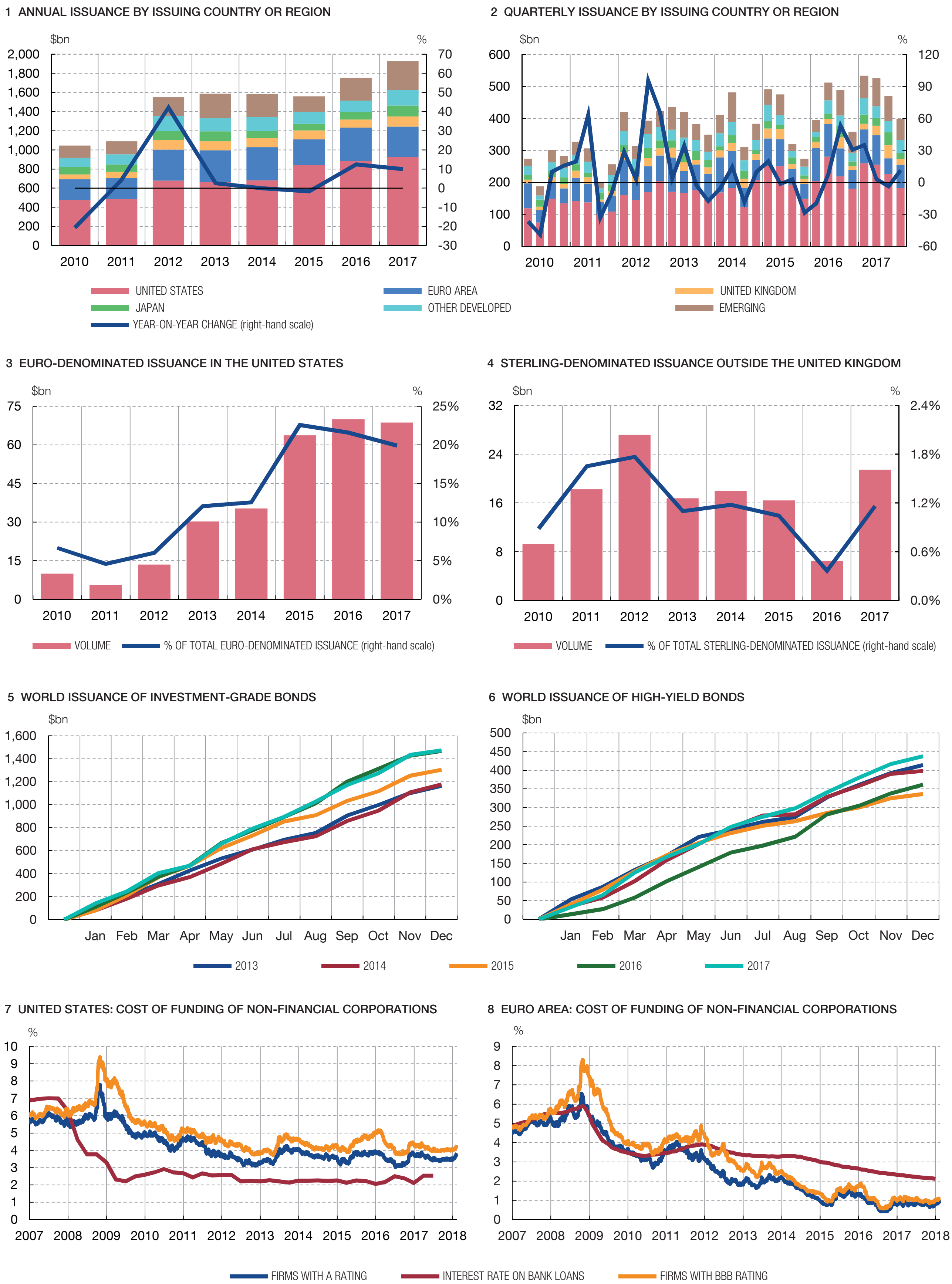
For their part, NFC issues in the United Kingdom increased markedly, unaffected by the Brexit process or the results of the June general elections, which were somewhat unfavourable for the government. In fact, the volume of sterling issuance outside the United Kingdom recovered after dropping to historic lows in 2016 (Chart 4.4). This positive performance was not affected by the winding down of the Bank of England's corporate bond purchase scheme at the end of April,[12] while funding costs remained stable over the course of the year.[13]

11 See "Global Pension Asset Study published by Willis Waters Watson https://www.willistowerswatson.com/en/insights/2017/01/global-pensions-asset-study-2017

12 http://www.bankofengland.co.uk/markets/Pages/apf/corporatebondpurchases/default.aspx

13 The cost of funding in sterling for non-financial corporations stood at around 2.6% in 2017, but had edged up to 2.8% by 8 February 2018.

GROSS ISSUANCE OF NON-FINANCIAL CORPORATIONS (a) CHART 4



SOURCES: Dealogic, US Federal Reserve, European Central Bank and JP Morgan.

a Excluding securitisations and short-term debt instruments.

The euro area was the exception to the general trend, as non-financial corporate issues underwent a slight decline, although from high levels. The volume issued could be affected by the expectations of less accommodative monetary policy. This shift may have also affected issuance in euros by companies outside the euro area ahead of less attractive future financial conditions. For example, issues by US companies dropped from the maximum reached in 2016 (Chart 4.3). Meanwhile, one-off events, such as the escalation of tensions between the United States and North Korea, triggered bouts of market tension potentially affecting issuance, particularly in the second half of the year. Funding costs remained relatively constant in this area (Chart 4.8).

Finally, it is worth noting the performance of high yield issues, which recovered to reach record levels in the year, after the negative impact of financial market turbulence on the highest-risk sectors in 2016. Investment grade issues also reached record levels, moving up slightly from the previous year, which had also been highly positive for this sector. Another vibrant market was that for green bonds (see Box 2). Although it still represents a small share of the market, issuance reached an all-time high, with a brisk pace of issues, mainly concentrated in NFC issuance.

BANK BOND MARKETS IN DEVELOPED COUNTRIES

The volume of issuance by the banking sector in 2017 dropped in year-on-year terms in all the quarters of the year and all the geographical areas analysed (Chart 5.1). The decrease took place in a context of favourable financing conditions (Chart 5.6) and low market tension, and was concentrated basically in two segments: issuance by banks in the United Kingdom (-19%) and by Federal Home Loan Banks[14] in the United States (-13%).

Bank issuance in the euro area dropped slightly relative to 2016 in a context of greater optimism about the situation of banking institutions, supported by the region's favourable activity data (Chart 5.3). In part, this decrease seems to reflect the banks' structural trend towards deleveraging, along with an increase in the share in the ECB's TLTRO II operations in March, which reduced issuance requirements in those segments not strictly necessary to cover the regulatory capital and resolution requirements. In this regard, the rate of issuance of "senior non-preferred bonds" (SNPs) was particularly brisk in 2017, above all in the case of systemically important financial institutions in those countries in which there is specific legislation on these instruments (France, Belgium, Spain and Italy)[15] (Chart 5.5). Issues of CoCos (AT1)[16] also increased, subject to less uncertainty as they were generally relatively unaffected by the losses emerging in the framework of certain resolution processes.[17] Finally, issues of green and sustainable bonds continued to rise in 2017 (USD 5 billion), supported by more vigorous debate on these assets and investors' growing concern about their portfolios' exposures to carbon risk.

14 Federal Home Loan Banks (FHLBs) comprise a system of regional cooperative banks guaranteed by the US government. The system's mission is to provide member financial institutions with liquidity to enhance housing and community lending.

15 This new class of senior debt would absorb losses before "senior preferred bonds" in the event of an entity's resolution. The option chosen in the EU to comply with MREL and TLAC is "contractual subordination", following the European Commission communication in late 2016 and the amendment to the European resolution directive adopted at the end of 2017. This contrasts with the existing German approach (statutory subordination) and that in the United Kingdom, United States and Switzerland (structural subordination). The contractual solution has been adopted in a number of countries, including France, Spain, Belgium and Italy. Despite high SNP issuance, senior debt in the euro zone was 5% down from 2016. SNP issues were concentrated in the largest banks, due to the TLAC requirements defined in late 2015 and coming into force in 2019 to 2022. By contrast, European banks, including the smaller ones, are still waiting for more specific information about their 2018 MREL targets.

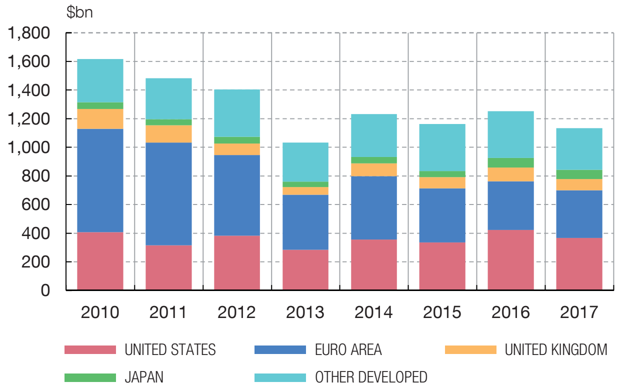
16 Contingent Convertible Bonds (CoCos) were at the epicentre of the turbulence in early 2016 arising out of the doubts regarding the regulations and the ability to pay of certain banking institutions – Fuertes et al. (2017).

17 Unlike senior debt, subordinated debt suffered losses in the winding up of Banca Veneto and Banca Popolare de Vicenza and the resolution of Banco Popular. On top of this it is necessary to add investors' partial losses on AT1 in Monte dei Paschi and Bremer Landesbank's cancellation of an AT1 bond coupon payment in June.

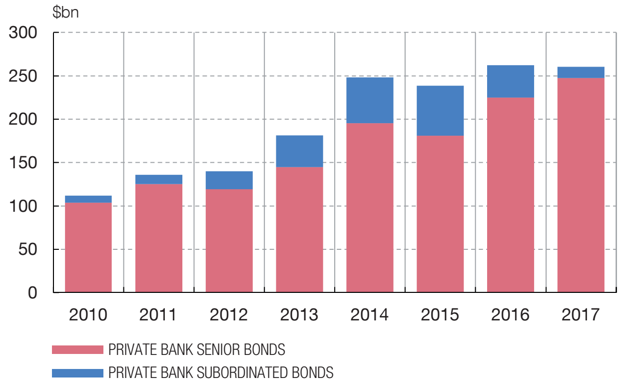
GROSS ISSUANCE OF BANK BONDS (a)

CHART 5

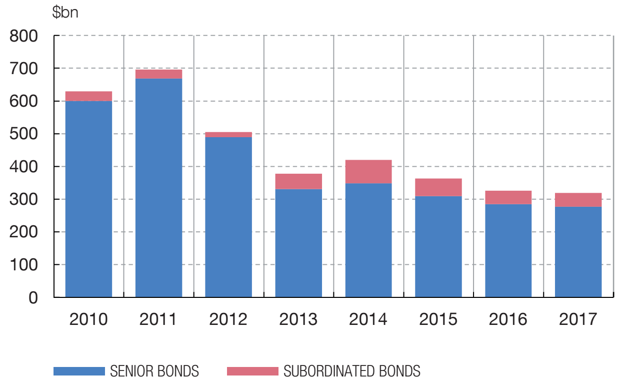
1 BY ISSUING COUNTRY OR REGION



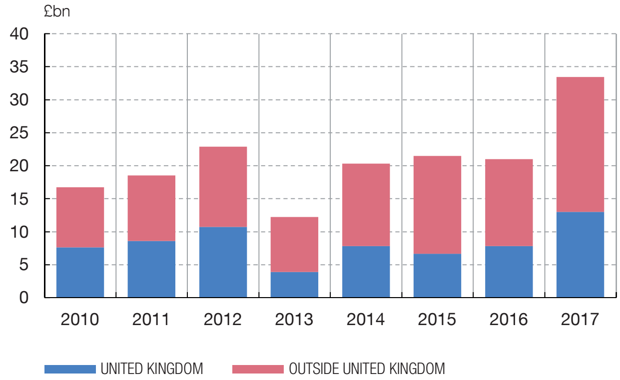
2 UNITED STATES: BY TYPE OF ISSUE



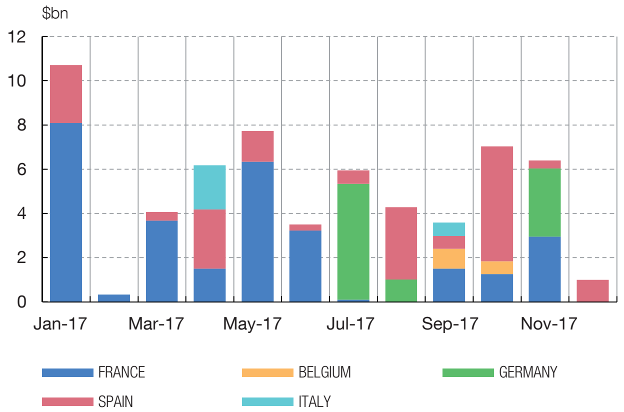
3 EURO AREA: BY TYPE OF ISSUE



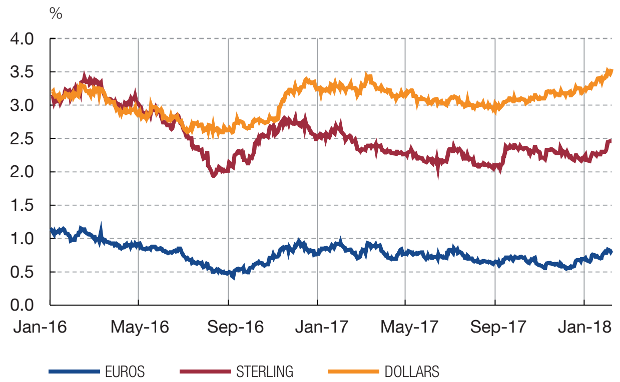
4 STERLING-DENOMINATED BANK ISSUANCE (b)



5 SENIOR NON-PREFERRED ISSUANCE (a)



6 IBOXX SENIOR BOND YIELDS



SOURCE: Dealogic.

a Excluding securitisations and short-term debt instruments.
b Excluding short-term debt, securitisations, government-backed debt and retained issues.

Covered bond issuance in the euro area edged up (+2%), although net volumes remained negative. This market continued to be strongly influenced by ECB purchases under the Covered Bond Purchase Programme (CBPP3), and the need to issue bonds to meet regulatory requirements. The high demand for these instruments was made clear by the return of Greek banks (such as Piraeus Bank and National Bank of Greece) after many years of absence from the market. For their part, covered bond issues outside the euro area were 12% down from 2016, although Non-European covered bonds can be expected to benefit from the new Basel III reform, which cuts the risk weighting on covered bond exposures as of 2022 (top quality bonds will have a weighting of 10% instead of 20%, for example). At European level, a proposal for the harmonisation of the definition of guaranteed debt is expected from the European Commission in the first quarter of 2018.

After a vibrant year for the UK market in 2016, the drop in gross issuance in the United Kingdom in 2017 is striking given the attractiveness of sterling as a currency of issue (bank issuance in sterling rose to GBP 33.4 billion, its highest level since 2009)[18] and the sterling's stable funding costs (Chart 5.6), which have as yet been unaffected by the progress of negotiations over the country's exit from the EU. As in the euro area, the decline in issuance could be due to a degree of market funding substitution by the central bank (through the Bank of England's Term Funding Scheme). Moreover, as their regulatory objectives were defined some time ago, UK banks had less issuance momentum in 2017 than their European counterparts. Issuance decreased across all categories of debt, except covered bonds, which were up from 2016, in parallel with the return to the market of certain issuers, such as Barclays and RBS.

US commercial banks took advantage of issuance cost stability to launch a similar volume of issuance as in 2016 (Chart 5.2), with growth in senior debt (+10%) standing out, particularly in the case of debt eligible for TLAC compliance,[19] in contrast with the decrease in issuance of subordinated debt (-66%). The good results of the Comprehensive Capital Analysis and Review (CCAR) and the stress tests generated optimism about US banks, bolstered by tax reform, the progress of monetary policy normalisation and the US government's new banking regulation and supervision stance.

EMERGING MARKETS

2017 was another positive year for emerging market issuance, reaching a new all-time high (USD 625 billion, 28% higher than the previous peak in 2016)(Chart 6.1).

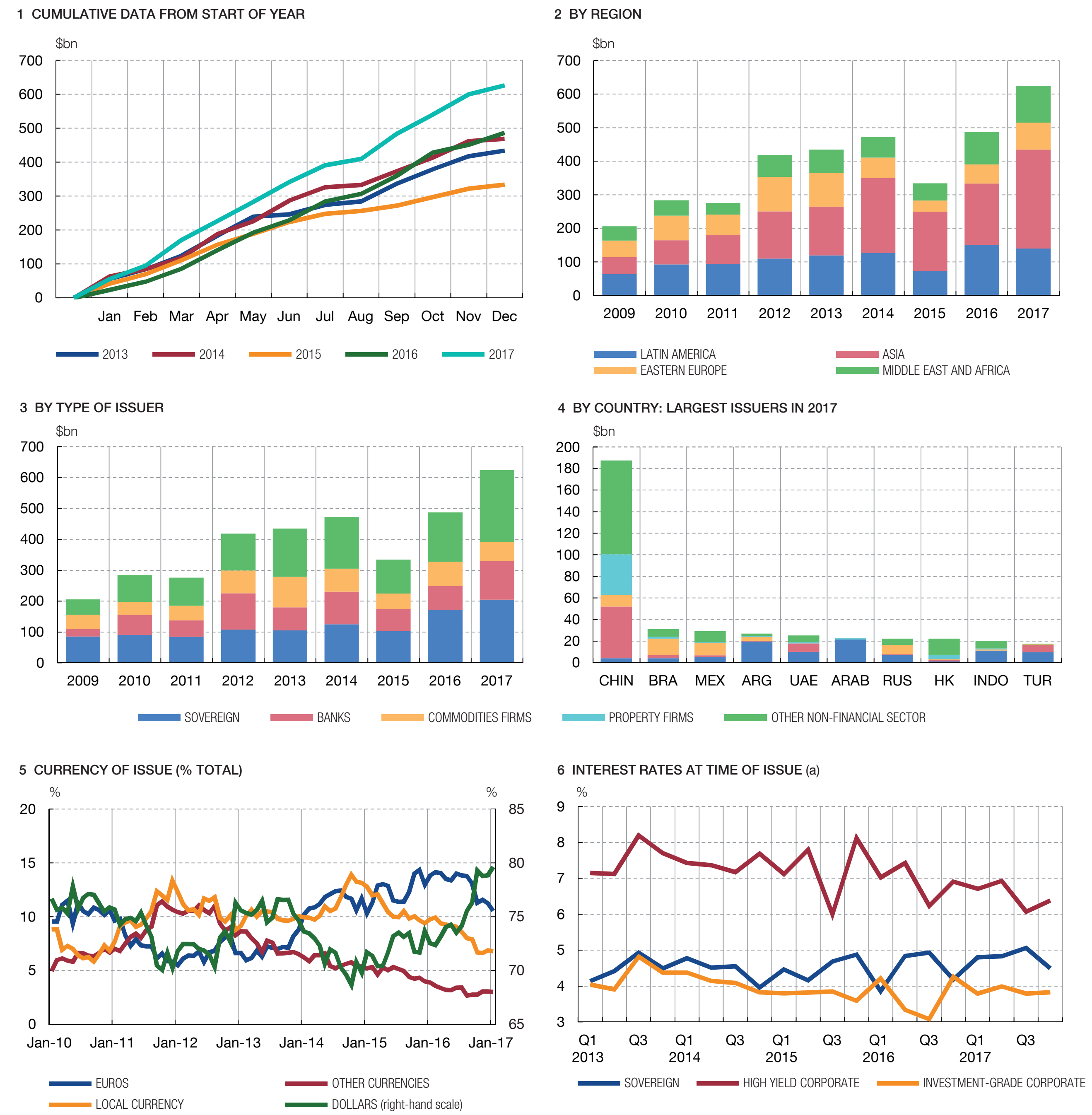
In addition to the global factors already discussed, the context of recovery was especially favourable for issuance in these economies, particularly those reliant on commodities, and especially on the oil sector. However, idiosyncratic risk factors, including those affecting large markets (such as Brazil, Turkey or Argentina) did not noticeably alter the volume of issuance or their conditions, which remained highly favourable. The average interest rate at the time of issuance rose by just 35 bp for sovereign issuers, 12 bp for investment-grade corporations, and it dropped by almost 40 bp for high-yield corporates (Chart 6.6), while average maturities grew by more than a year for sovereign issues and between four and five months for high-risk and investment-grade corporates, respectively. Moreover, the range of companies and sovereigns accessing the market widened, with 628 different issuers in 2017, compared with 451 in 2016.

18 Issuance in sterling by both foreign and UK banks increased. The reasons may include the attraction of a broad investor base and lower costs of borrowing via currency swaps.

19 The Fed completed the TLAC regulations for the United States at the end of 2016. These data are subject to certain amount of leeway given the difficulty of identifying the debt issued by a holding company for compliance with this regulation.

GROSS EMERGING ECONOMY ISSUANCE (a)

CHART 6



SOURCE: Dealogic.

a Excluding sovereign issues.

By region, the biggest increase in issuance was seen in Asia, followed by Eastern Europe, while issuance in Latin America decreased somewhat, the data for 2016 being skewed by Argentina's return to the market in April (Chart 6.2). By issuer type, the increase in financial sector issuance stood out, led by Asian banks (specifically, Chinese and Hong Kong banks) as well as by other companies, particularly Chinese property firms, which accounted for 20% of the country's total issuance (and 19% in Hong Kong) (Chart 6.3). The rationale behind these issues may be to circumvent the regulations on leverage and credit implemented by the country's authorities over the course of 2017. This increased recourse to external financing by Chinese companies led to a change in their traditionally greater reliance on local markets. Thus, issuance on the local market as a share of total corporate issuance dropped to 72% in 2017 (88% in 2016). This trend was particularly marked in the property sector (56% last year compared with 91% in 2016).

Sovereign issuance rose by 19% in 2017, largely owing to issues by Middle Eastern oil exporting countries. Thus, issuance by Saudi Arabia, Oman, the United Arab Emirates, and Kuwait totalled a quarter of all emerging country sovereign issuance. Argentina was able to maintain a rapid pace of issuance despite its difficulties meeting its inflation and government deficit targets. The strong performance of issuance was also manifest in the return to the market of certain high-risk countries, whether classed as such for geostrategic reasons or as a result of a deterioration in their economic indicators (such as Turkey, which issued over USD 9.5 billion in sovereign bonds), or a worsening of the institutional climate, reflected in a downgrade to the outlook and sovereign rating (such as Brazil, which issued USD 4 billion in sovereign bonds and USD 8 billion through the state-owned oil company, Petrobras). Countries with low sovereign ratings also issued bonds. In 2017, sovereign issues with a rating below investment grade accounted for almost half the total, compared with 32% in 2016. Moreover, demand for issues exceeded supply by a wide margin, not only in the case of countries with a high rating (such as Saudi Arabia) but also higher-risk countries (such as Argentina, Iraq and Bahrain).

The increased appetite for yield was reflected in the strong increase in high-yield corporate issues (102%), in contrast with the more modest growth in investment-grade issues (15%). The average rating of issues remained at the BBB level reached in 2016. Issuance in foreign currency increased again, with dollar-denominated issuance being most significant (83% of the market) (Chart 6.5). In 2017, the internationalisation of the Chinese currency appeared to slow, despite various central banks announcing their intention to increase the proportion of their reserves in yuan. Thus, Chinese corporate and sovereign issues on international markets in yuan accounted for just 1.7% of the country's total issuance (6.7% in 2016), while issuance by other emerging countries in yuan dropped from 0.4% to 0.1% of the total.

The trends described above continued into 2018, partly reflecting high levels of maturities scheduled for this year, and that, at the end of 2017, the share of investors' portfolios in emerging economies was below its peak. Sovereign issues continue to stand out, particularly those by Middle Eastern and Latin American countries (28% of the total), together with those by Chinese property companies.

Other markets

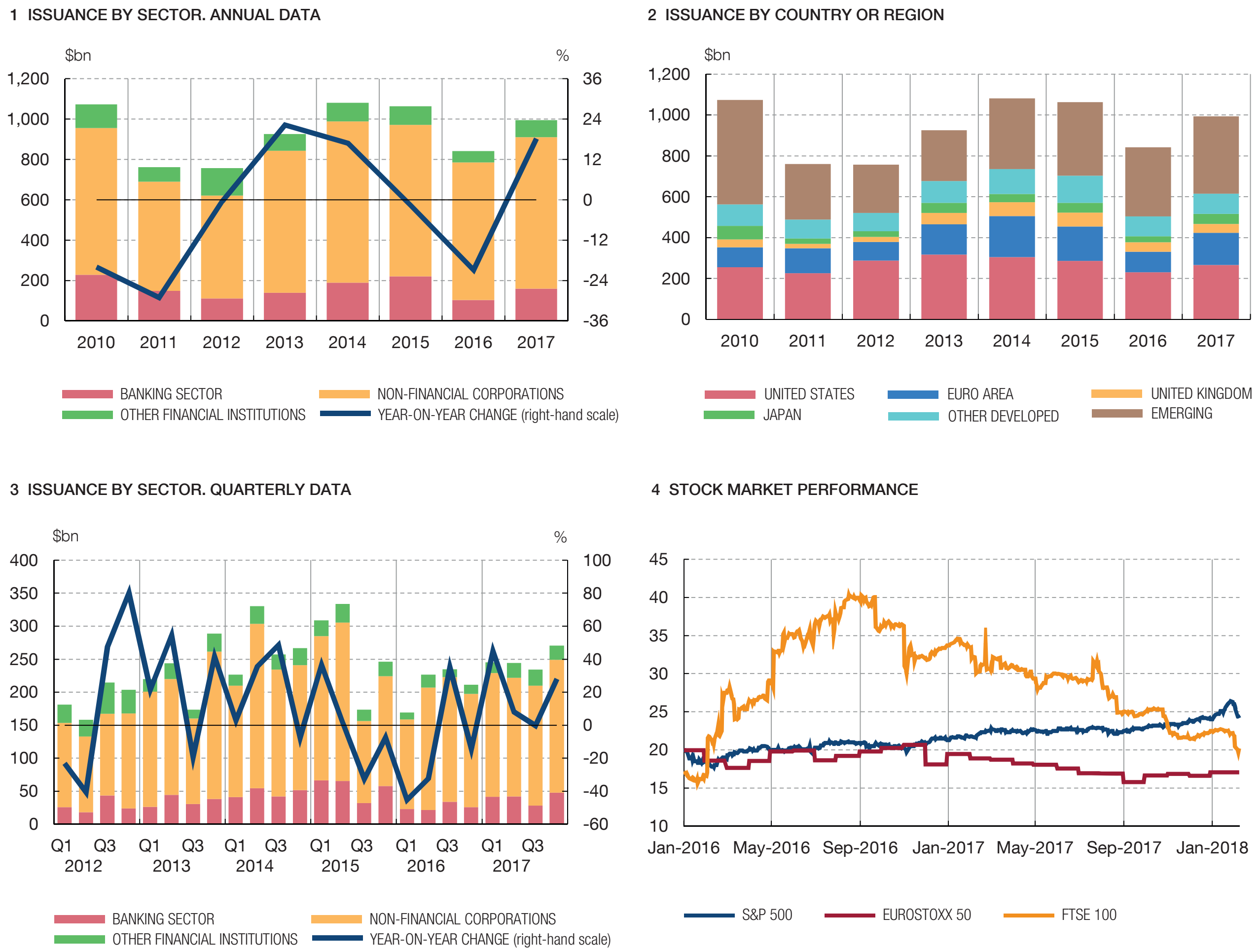
EQUITIES

Equity issues were bolstered by solid global economic growth, the low-interest-rate environment, low levels of volatility, and strong performance of the main stock market indices. In this context, there was a recovery in primary equities markets after the steep drop in 2016. Securities issuance rose by almost 18% in year-on-year terms (Charts 7.1 and 7.2), with particularly strong growth in the last quarter (Chart 7.3). The improvement was broad-based across sectors and regions, except in the United Kingdom, and strongest in the euro area and banking sector. The increment was common to all the share classes examined, although the recovery in initial public offerings (IPOs), which is usually the most volatility-sensitive sector, was particularly strong.

By regions, there was a marked increase in issuance in Japan (+71%) and the euro area (+57%). The most significant European issues were follow-on offerings (new offerings of shares that are already listed on the stock market) from the banking sector, either to fund

SHARE ISSUANCE BY SECTOR AND COUNTRY

CHART 7



SOURCES: Dealogic and Datastream.

acquisitions or to improve the capital ratio. Moreover, some of the banks that were bailed out in the crisis, such as Allied Irish Banks, returned to the stock market via IPOs. The UK equities market ended the year with mixed results: on the one hand, the volume of issuance was down 11%, but on the other, the number of issues was the highest since 2007. Therefore, although the uncertainty over the forthcoming Brexit and the cancellation of a number of issues on the London market might have had a negative impact, this was limited, in a context of moderate gains by the FTSE 100 and low volatility.

In the United States, issues were boosted by IPOs, which doubled in volume in 2017 relative to 2016 (USD 42 billion). By sectors, the momentum of the technology sector stood out (Snap was the biggest technology IPO since Facebook in 2012) and the financial sector, and in particular, “Special Purpose Acquisition Vehicles”,[20] issues of which broke historical records. In this context, price/dividend ratios on US stock markets continued to rise, reaching levels well above their historical average[21] and raising doubts as to the sustainability of the upward

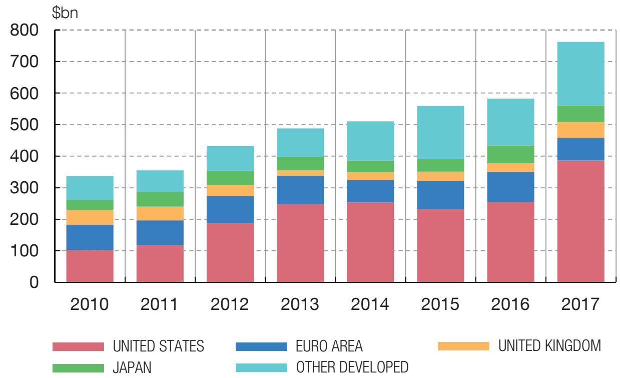
20 These are companies that raise funds with which to acquire other companies within a specified period of time. They are considered to be a high risk investment. Worldwide issues in 2017 exceeded the peak recorded in 2007.

21 Thus, for instance, for the S&P 500 this ratio reached a level of 23.2 on 26 January 2018 by then dropped to 21.1 on 9 February, as a result of financial market turbulence. These levels are still above the historical average of 17.3 over the last ten years.

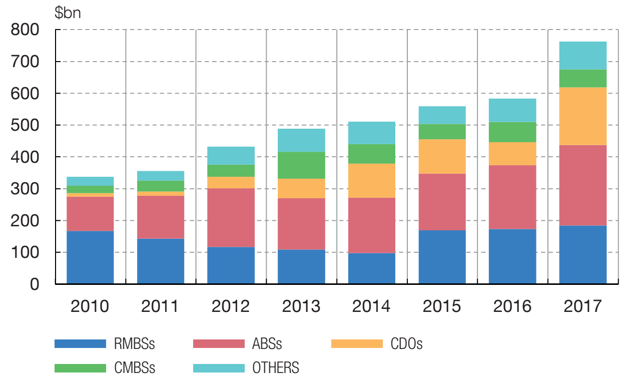
INTERNATIONAL SECURITISATION ISSUANCE BY COUNTRY AND COLLATERAL TYPE

CHART 8

1 BY ISSUING COUNTRY OR REGION



2 BY COLLATERAL TYPE



SOURCE: Dealogic.

trend in share prices in 2018 (Chart 7.4) (see Box 1). Emerging country issuance increased despite the decline in issuance by China, which remained the main issuer. Issues in India and Brazil also stood out, led by Petrobras Distribuidora SA's IPO.

SECURITISATIONS AND STRUCTURED PRODUCTS

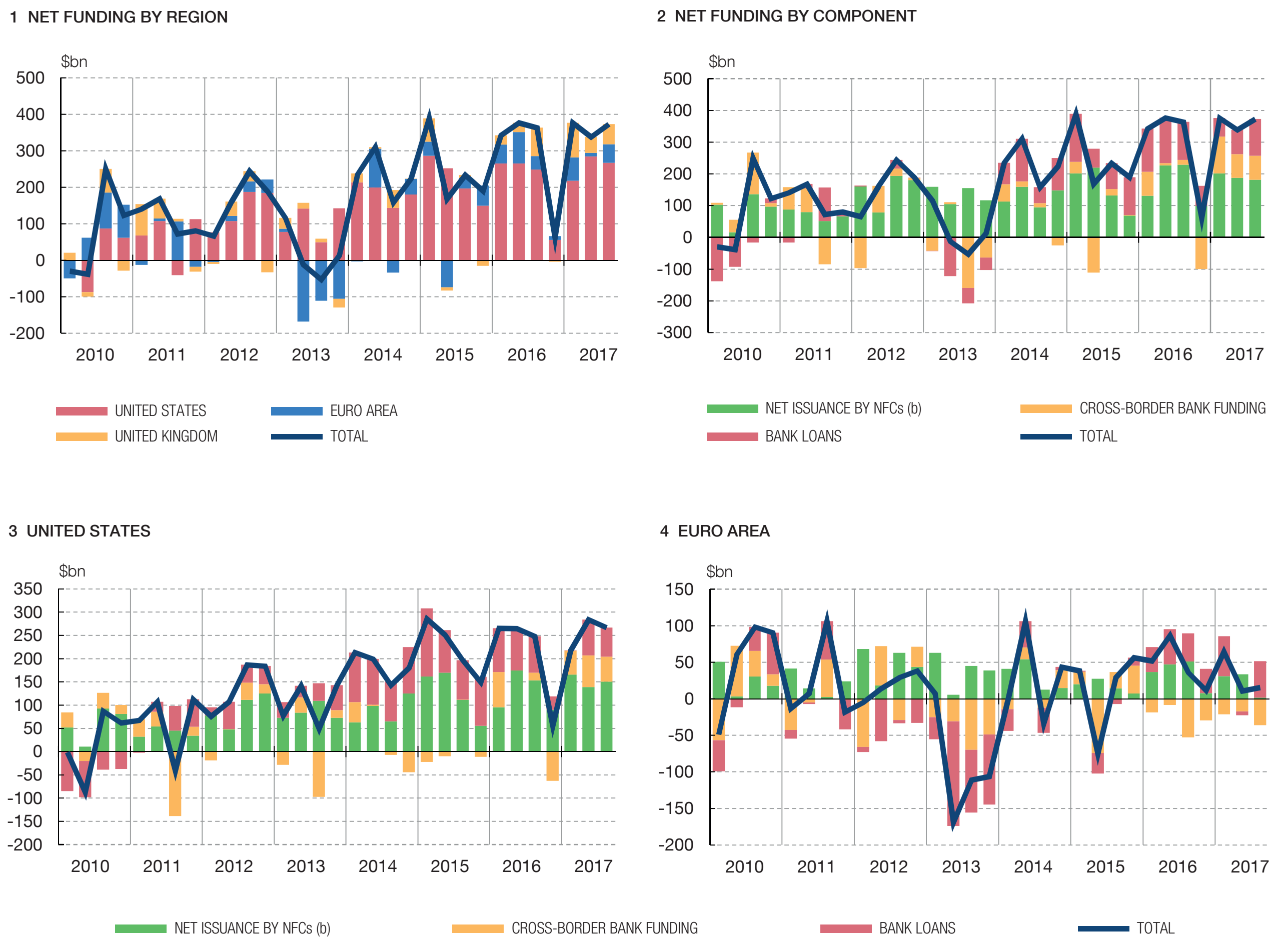
Securitisation issues rebounded strongly in 2017, in line with the higher risk segments, rising to USD 762 billion, growth of 33% from 2016 and the highest level since 2005 (Charts 8.1 and 8.2). By way of comparison, average growth in the previous three years (2014-2016) was just 6%. Nevertheless, on a broader perspective, issues in 2017 came to just 30% of total securitisation in 2006, the all-time high. The biggest increment was seen in the first quarter of the year (51% year-on-year), spurred by CDOs (collateralised debt obligations) the highest risk products in this category: the volume of CDO issues exceeded USD 181 billion, the highest figure since 2007. Issuance of asset-backed securities (ABSs) rose by 30%, while the volume of commercial mortgage-backed securities (CMBSs) dropped by 8.6%. Residential mortgage-backed securities (RMBSs) grew by 6.2%, although there was a year-on-year drop in the second half of the year.

By countries, the most significant increase was seen in the United Kingdom and the United States, although volumes were much smaller than in 2006 (17% and 35%, respectively). This buoyancy was spurred by the improvement in the fundamentals of the assets securing these issues. The default rates on consumer loans and credit cards dropped to below 2% in the United Kingdom,[22] having peaked at 9% in 2009. Mortgage borrowers' debt service was close to its lowest level since 2007, and the unemployment rate and total number of unemployed fell to historical lows over the course of the year. In the case of the United States, 2017 was the seventh straight year of job growth and rising average household incomes. The unemployment figure was its lowest since 2001, and house prices rose at their fastest rate since 2014. Moreover, the US Treasury Department published a report in October 2017 recommending, among other things, that the current requirements for secured products be relaxed, which could give an additional stimulus to the market in 2018.[23]

22 In any event, in its latest Financial Stability Report the Bank of England advises caution regarding the progress of consumer credit, noting that lenders would be attributing much of the drop in the default rate to an improvement in the implicit quality of borrowers and not the better macroeconomic conditions, thus expanding consumer credit, which grew by 10% in 2017. See https://www.bankofengland.co.uk/-/media/boe/files/financial-stability-report/2017/november-2017.pdf.

23 See "A Financial System That Creates Economic Opportunities - Asset Management and Insurance", US Department of The Treasury, October 2017.

NET FUNDING TO NON-FINANCIAL CORPORATIONS BY REGION AND COMPONENT (a) CHART 9



SOURCES: Dealogic, Datastream and Bank for International Settlements.

a Quarterly flows in billions of dollars
b Issuance by non-financial corporations.

Securitisations in Japan and the euro area declined in 2017. In the euro area this was a result of the prospects of a change in the European Central Bank's asset purchasing policy together with the need to clarify some of the new rules issued by the ESMA on this type of asset. Lastly, in other areas securitisation was buoyant, reaching levels in 2017 close to the historical maximum. Within this group the role of Chinese issuers stands out, having increased their issuance by 64% to account for 8.9% of the market.

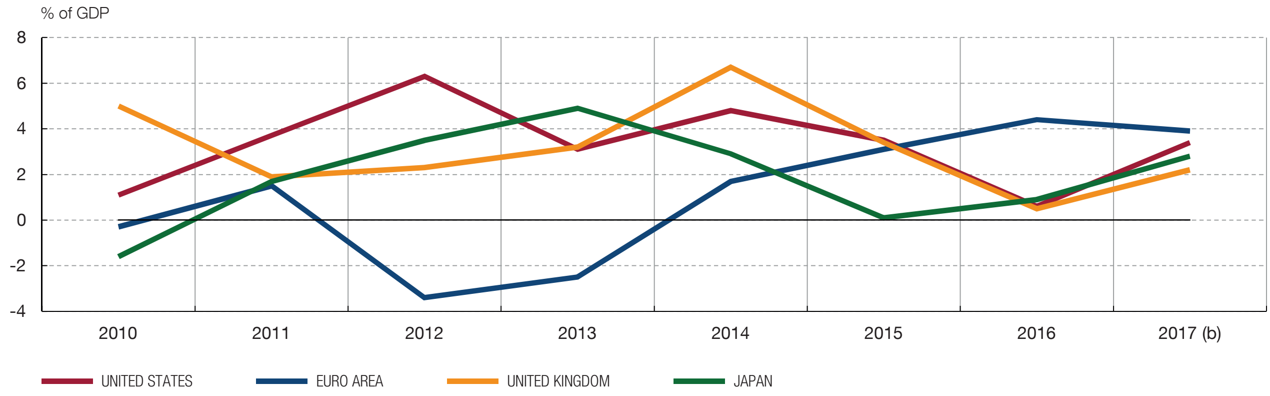
NET FUNDING

This section reviews the net funding of the non-financial corporate sector in the main developed regions (the United States, euro area and Japan), which includes not only net bond issues, but also bank lending, unlike the rest of article, where the focus is on the conditions of issuance and business in primary markets.

The proxy used to measure net funding includes net bond issuance by NFCs, bank lending to the non-financial private corporate sector (excluding purchases of fixed-income securities) and cross-border bank financing. Using this measure of total net funding limits the scope somewhat compared with using the Financial Accounts, but it provides an indicator that is comparable across regions and that is available much earlier.

INVESTMENT IN DEVELOPED COUNTRIES (a)

CHART 10



SOURCE: International Monetary Fund (WEO).

a Gross fixed capital formation, as a percentage of GDP.
b Forecasts.

According to data available as at the third quarter of 2017, net funding of the non-financial corporate sector performed positively in the first three quarters of the year, recovering from the sharp drop in the last quarter of 2016 (Chart 9.1). Total funding flows for the three areas analysed came to USD 1,086 million, shared out similarly in all the quarters analysed. In terms of the sources of funding, the capital markets continued to predominate, although a recovery was observed in bank financing, which accounted for almost half of the total (Chart 9.2).

By geographical area, the biggest funding flows were into the United States, where capital market funding predominated (Chart 9.3). Domestic bank financing remained stable, as a secondary source of finance, with growth of cross-border bank financing standing out, reaching a record of USD 174 billion in the first three quarters of the year. The favourable performance of bank financing flows, particularly in the second and third quarters, was driven by the improvement in credit conditions, although the performance of demand was weaker.[24]

The volume of net funding in the euro area remained positive in the first three quarters of 2017, but did not recover. Although corporate finance in the euro area has traditionally been more dependent on the banking sector than in the United States, since 2016 net funding obtained from capital markets has established itself as an alternative to bank finance. The net volume of bond issuance in the third quarter was very small, however, in line with the drop in gross issuance, with total funding flows being kept positive by domestic bank financing. This strength of bank financing in the third quarter coincided with a strong upturn in credit demand, in a context of an easing of conditions for granting credit.[25] In contrast to the United States, cross-border bank financing weighed on funding flows into the euro area, which have been negative since the first quarter of 2016.

Financing flows were very dynamic in the United Kingdom in the first three quarters of 2017, cross-border bank finance and, to a lesser degree, funding from capital markets pushing volumes to their highest levels since the global financial crisis. Levels of domestic bank lending remained very low.

24 *Senior loan officer opinion survey on bank lending practices. Credit standards applied to large and medium firms. Demand by large and medium firms. Federal Reserve* https://www.federalreserve.gov/data/sloos/sloos.htm.

25 *The Euro Area bank lending survey. Credit standards applied to large firms. Demand by large firms. ECB.* https://www.ecb.europa.eu/stats/ecb_surveys/bank_lending_survey/html/index.en.html.

It is worth noting that the positive developments in net funding seen since 2014 were reflected in productive investment in 2017, as gross fixed capital formation rose strongly in both the United Kingdom and the United States, while its pace of growth consolidated in the euro area (Chart 10).

Conclusions

Capital markets remained dynamic in 2017, supported by the appetite for risk and search for returns, in a context of low volatility, less political uncertainty than in 2016, and a recovery in global growth.

The main pockets of instability in relation to the economy arose from uncertainties over the content and implementation of the Trump administration's economic policies and the possible effects of monetary policy normalisation, and in the political and geostrategic arena, from the electoral processes in Europe, negotiations over Brexit and tensions between the United States and North Korea. However, these events had only a limited impact on capital markets, which, except in isolated cases, continued to perform positively throughout the year, particularly in the higher-risk segments. This situation persisted into early 2018, although episodes of financial market turbulence like that in early February, could affect the volume of issuance. For the moment, the volume of issuance has remained very high in practically all segments.

The rate of normalisation of monetary policy, shaped in turn by the trend in inflation expectations, could trigger a change in financial markets, as confirmed by the recent period of volatility and risk aversion. Meanwhile, changes in fiscal consolidation processes in the main economies could affect governments' borrowing requirements. Growing deficits in the United States could raise the US Treasury's borrowing requirements, giving rise to bigger public sector issues.

In emerging countries, being a higher risk segment, the impact of potential surprises on the path of monetary policy normalisation may be significant: higher interest rates in the developed markets and heightened volatility would reduce risk appetite and the search for returns by investors. Additionally, as these issuers are heavily reliant on dollar-denominated securities, the path on foreign exchange markets and the upturn in uncertainty could end up affecting the cost of exchange rate hedging and ultimately market access.

13 March 2018

REFERENCES

BANK FOR INTERNATIONAL SETTLEMENTS (BIS) (2017). Green bond Finance and certification. Quarterly Review, September 2017.
CLIMATE BONDS INITIATIVE (CBI) (2017). Bonds and Climate Change: The state of the market. September 2017.
— (CBI) (2018). Green Bond Highlights 2017. January
G20 GREEN FINANCE STUDY GROUP (GFSG G20) (2017). G20 Green Finance Synthesis Report 2016. September 2016.
HIGH-LEVEL EXPERT GROUP ON SUSTAINABLE FINANCE (HLEG) (2017). Financing a Sustainable European Economy. Interim Report, July 2017.
ICMA (2017). The Green Bond Principles 2017. 2 June.
ZERBIB, O.D. (2017). The Green Bond Premium. Working Paper, University of Tilburg, October.

Last year's period of relative calm on financial markets, characterised by low volatility, and an appetite for risk, was interrupted in the first few days of February by a sharp drop in stock market indices, against the backdrop of a progressive increase in the expect pace of interest rate hikes by the US Federal Reserve. This episode illustrates the potential effects of a context of monetary policy normalisation, where investors are uncertain about its intensity, and a financial market configuration that differs from that prior to the global financial crisis, in which passive investors have gained in importance and the influence of new operators, such as those trading on trends in volatility has risen.

February's episode broke out following the strong US employment and wage growth data, released on Friday 2nd February, and the FOMC's communiqué on 31 January[1] taking a positive view of developments in the US economy. The publication of the data bolstered investors' expectations of official interest rate hikes,[2] triggering a drop in US stock markets on the 2nd, although long-term government bond yields continued to rise and volatility only edged up slightly (Charts 1 to 4).

There were further sharp drops on US stock markets on Monday 5th February, with markets falling by around 4% (S&P 500 -4.1%; Nasdaq -3.8% and Dow Jones -4.6%)[3] with a sharp increase in

1 https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm.

2 On 2 February the discounted probability on futures markets of the Fed's raising interest rates three times in 2018 reached a peak of 64%, falling back to 51% on 12 February.

3 Falls in stock markets were amplified by a number of factors, such as automatic selling when the initial drop passed certain price thresholds, or the large share of investors with passive strategies who tend to replicate the course of a stock-market index, thus feeding back into market movements.

Chart 1
DEVELOPED COUNTRY STOCK MARKET INDICES

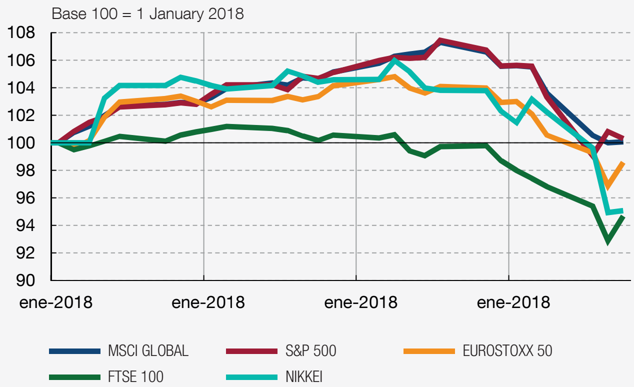


Chart 2
IMPLIED VOLATILITY INDICES

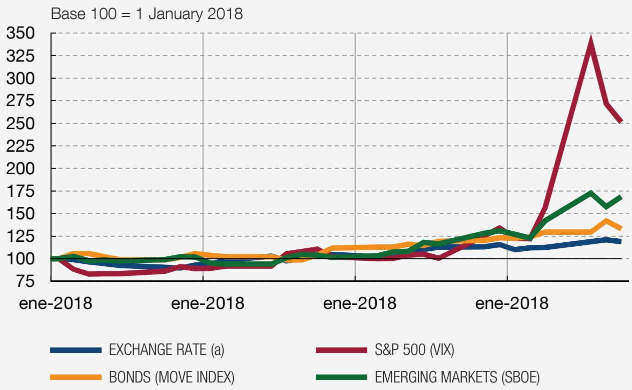


Chart 3
TEN-YEAR BOND RATES

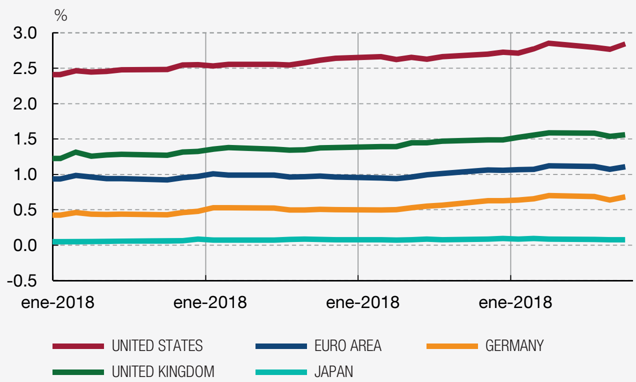
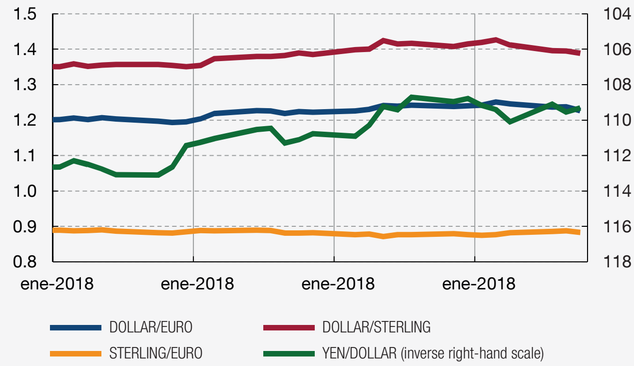


Chart 4
DEVELOPED COUNTRY INTEREST RATES (b)



SOURCE: Datastream.

a Average three-month volatilities of dollar/euro, dollar/sterling and yen/dollar.
b An increase represents a depreciation of the dollar against the other countries and of sterling against the euro.

volatility (the VIX index reached 37%, a level not seen since August 2015 during the turbulence caused by the devaluation of the Chinese yuan). This gave rise to a sentiment of risk aversion and search for safe-haven assets, pushing down the yield on US government debt (ten-year bond yields dropped by 14 bp) and spread across the main international stock markets, which also suffered severe drops. Volatility remained high over the following days, with further drops in stock market indices, although long-term rates recovered, returning to pre-February 5th levels.

The impact of this episode on financial conditions has so far been limited, as it has been confined to stock markets. Changes in macroeconomic fundamentals and the expectations brought by wage data proved to be somewhat irrelevant. Nevertheless, the structural changes in the way financial markets operate significantly amplified the financial impact of the news. A longer-lasting and more solidly grounded episode of this type could ultimately affect issuance conditions on primary markets, particularly in those segments beset with doubts about the prices reached.

The goal of the Paris Agreement reached at the COP21[1] is to limit global temperature rise to the range of 1.5-2 degrees above pre-industrial levels, and to achieve financial flows that are consistent with a path of low greenhouse gas emissions, and with sustainable development. In this context, "green finance" is understood to be finance for investments yielding environmental benefits, within the broader context of sustainable development.[2] Specifically, "green bonds" are debt instruments intended to finance or refinance assets relating to climate change mitigation and adaptation, as well as assets with other positive environmental impacts. These include, for example, energy efficiency, diversity conservation or sustainable transport projects.[3] These instruments are therefore a fundamental tool in mobilising the resources necessary to comply with the Paris Agreement. In this regard, the OECD estimates, for example, that around USD 6.9 trillion will be required annually from 2015 to 2030 to finance the infrastructure necessary just to halt climate change alone. To achieve these figures it is necessary not only for governments to act through public investment, but also for the private sector to act.

One of the problems in developing primary markets for green bonds is the lack of standardisation. There is currently no single framework for identifying green bonds. One of the more successful approaches is based on the "Green Bond Principles" (GBP) created by a group of investment banks in 2014. These voluntary principles offer "guidelines that recommend transparency and disclosure and promote integrity in the development of the Green Bond market". Their cornerstone is the use of the proceeds of green bonds for projects with environmental benefits that have to be evaluated and quantified by the issuer. These principles have served as the basis for numerous "green labels" internationally,[4] such as the "Climate Bond Standard and Certification", developed by the "Climate Bond Initiative", which establishes the criteria for verifying the credentials of a green bond and more specific definitions definitions than those provided by the Green Bond Principles. In addition to these international certifications, some countries and institutions have developed their own guidelines and taxonomies (China, Brazil, the European Investment Bank, etc.). Bonds with green certification or labelling are only one part of the universe of "climate-aligned bonds", a broader concept which includes bonds from institutions involved in the low-carbon economy, mostly companies that receive over half their income from clean technologies, also known as "pure play" green companies, but whose bonds have no formal certification. It is estimated that in mid-2017 there was a balance of USD 895 billion in climate-aligned bonds, of which USD 221 billion had a green label.[5] These labels are expected to become more common as standardisation progresses.

1 In December 2015, Paris hosted the Conference of the Parties (COP21), at which almost 200 countries signed the first binding global agreement to avoid climate change and mitigate emissions at global level.

2 "G20 Green Finance Synthesis Report 2016", G20 Green Finance Study Group, September 2016.

3 "The Green Bond Principles 2017", ICMA, 2017 and "Financing a Sustainable European Economy" Interim Report by the High-Level Expert Group on Sustainable Finance (HLEG), July 2017.

4 See "Green bond Finance and certification", BIS Quarterly Review, September 2017. This article describes in detail the features of several green bond certification schemes around the world.

5 See "Bonds and Climate Change: The state of the market", Climate Bond Initiative (CBI), September 2017.

Chart 1
GREEN BONDS BY COUNTRY

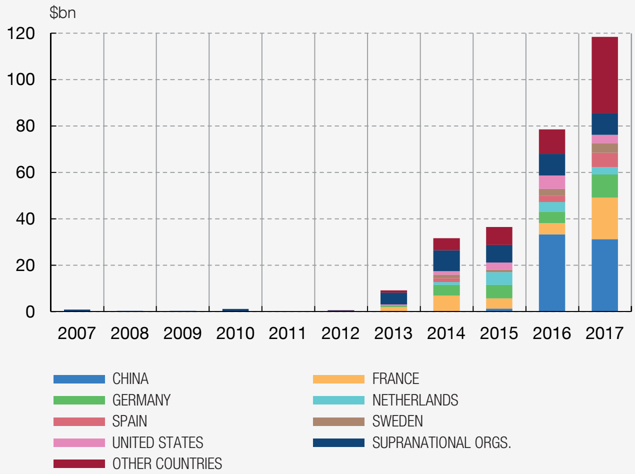
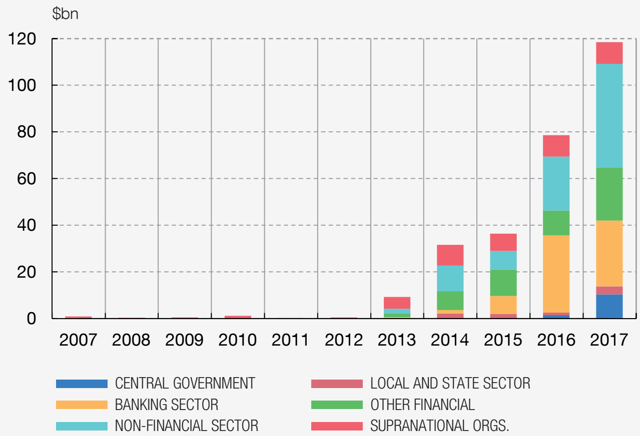


Chart 2
GREEN BONDS BY SECTOR



SOURCE: Dealogic.

In any event, public issuers and international organisations can play an important role in developing this market. The first green bond was issued by the European Investment Bank (EIB) in July 2007. The immediately following years were characterised by low volumes of issues, the central role of supranational institutions and public agencies (EIB, World Bank, Landwirtschaftliche Rentenbank) and the high rating given to green bonds (AAA). At the end of 2013 the first corporate sector bonds were issued (BOAML and Electricité de France) and, coinciding with the publication of the Green Bond Principles, the market tripled in volume in 2014 compared to the total in previous years. The market continued to grow uninterruptedly until 2017, when it beat a historical record with the issuance of more than USD 118 billion in assets of this kind.[6] Additionally, the diversity of issuers has increased substantially, in terms of both origins and sectors, together with the class of instruments (covered bonds and green securitisation).

The main issuer countries over the last decade were China, France, Germany and the United States (Chart 1). It is no coincidence that countries with ambitious climate agendas at government level and/or national standards for green bonds have taken the leadership role. The non-financial sector is the main issuer, followed by the banking sector, other financial institutions and supranational agencies (Chart 2). Sovereign issues, such as those by Poland, France and certain cities and regions (Tokyo, Quebec), also stand out.[7] Issues of the former are significant, not only in order to meet national decarbonisation targets, but also to add security and support market development within countries. Additionally, the development of a secondary market for these assets facilitates the market's valuation of climate change risk and plays a catalytic role in mobilising resources through other instruments.

6 According to the CBI "Green Bond Highlights 2017" report (January 2018), bond issuance in 2017 reached USD 155.5 billion. The data used in this article refer to bonds identified by Dealogic as green bonds in accordance with the ICMA principles, excluding short-term bonds, securitisation bonds and sustainability bonds, which devote their proceeds to both green and social projects. There are other more comprehensive lists of green bonds, such as the Green Bond Database, Moody's, Bloomberg and that of CBI.

7 Despite the announcement of the United States' withdrawal from the agreement in June 2017, green bond issuance by US cities and regions was robust in 2017 (not included in our data). Moreover, Apple issued a second green bond for a value of USD 1 billion, aimed, among other things, at financing renewable energy.

The success of green bonds in recent years is related to the growing interest in this asset class among investors (many of whom are institutional investors) who view the transparency in the use of the proceeds positively, while also using them to meet requirements in certain countries, such as France, where these agents are required to take climate change risk into account in their portfolio management. Additionally, although the risk of green bonds is, a priori, the same as that of conventional bonds,[8] a negative issue premium has been reported on these issues.[9] This would be sufficient to cover the costs of specific certification and may be the result of a combination of the mismatch between supply and demand in the green bond market.

Despite their rapid growth, green bonds accounted for just 1.2% of total bond issuance in 2017 and are still a long way from covering the financing needs of the transition to a green economy. Some of the obstacles they face are the lack of standards and commonly accepted definitions,[10] the shortage of green projects suitable for funding, and the difficulty of aggregating small value projects in a single bond. To foster these markets there are consequently a number of initiatives at international level arising from the G20, the European Commission as well as national legislation. The content of these initiatives is wide-ranging, including developing specific legislation to define the concept of green instruments (covered bonds and green securitisations), commitments to decarbonisation, political stimulus for green projects, and the creation of detailed standards and taxonomies.[11]

8 At least in so far as payments depend on the return on the issuer's total balance. This allows them to access investors who do not have a green mandate (CBI, 2017).

9 See "The Green Bond Premium", Olivier David Zerbib, University of Tilburg, October 2017, and BIS (2017).

10 Therefore, the standards of the Central bank of China consider clean coal projects to be green, although the sector does not meet the international standards for green bonds. This lack of standardisation and checks on green bonds entails a risk of "greenwashing".

11 Since early 2017, work has been under way on harmonisation of definitions by the EIB and Central Bank of China. The expert commission set up by the EU for sustainable finance recommended the creation of a European level standard based on the GBP. The French energy transition law provides for an obligatory declaration on environmental issues and the government of Luxembourg has announced the creation of specific legislation to on green covered bonds in the country.