Deutsche Bank
DB Research

EU Monitor
Global financial markets

Corporate bond issuance in Europe

Where do we stand and where are we heading?

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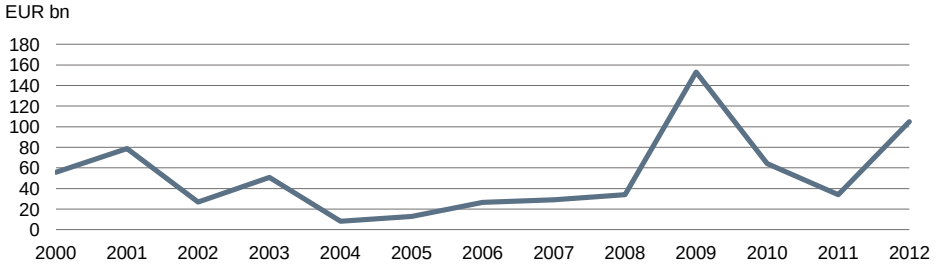
The corporate bond market in Europe has become a focus of attention. In the aftermath of the crisis, European corporates have started to use debt capital markets more intensively, the volumes of corporate bonds issued have grown and yields have come down. While offering opportunities to European corporations in the shape of low-cost external financing, this steady trend also poses challenges for investors.

The remarkable growth in debt capital markets points to a structural change in corporate financing in Europe. As the availability of bank lending has been shrinking in some countries, mostly due to the enduring impact of the financial crisis and new regulatory requirements, corporations are increasingly turning to debt capital markets. Having said this, the extent of this trend differs substantially between the core and peripheral euro-area economies.

High investor demand due to search for yield sentiment is fuelling corporate bond issuance. While the fact that banks are paying roughly the same or even higher rates for their refinancing than their customers no doubt has pushed corporate debt markets, the main driver for the high issuance volumes seems to be investors' search for yield in a low interest rate environment. As sovereign bonds are offering historically low yields, corporate bonds have turned into a significant investment alternative in the present market conditions.

In the era of Knightian uncertainty and high liquidity, strong growth in corporate bond market calls for a closer examination of potential overheating. As yields are falling across all rating classes, HY corporate bonds in particular are looking increasingly expensive in the eyes of many observers. If the strong demand were to sour as a result of a recession or an increase in sovereign bond yields, HY corporations in particular could find access to funding constrained and consequently default probabilities/numbers would increase.

Net issuances of long-term non-financial corporate debt securities in Europe



Sources: ECB, DB Research

1. Introduction

Recently, the corporate bond market in Europe has taken centre stage. The reasons for this heightened attention are certainly understandable: investors are pouring increasing amounts into non-financial corporate bonds, yields have come down, and issuance volumes have been rising. After reaching record-high issuance levels in 2009, European investment grade (IG) corporate bonds witnessed their second highest issuance activity in 2012 with issuance volume totalling USD 483bn via 981 deals according to Dealogic, a data provider. Taking advantage of the lowest bond yields in the last 10 years or so, non-financial corporations in Europe are issuing high volumes of bonds to raise financing, often substituting for other sources of funding, in particular bank loans.

By triggering radical changes in market conditions, the economic turmoil in Europe seems to be responsible for the trends in corporate bond markets. Indeed, there are a number of factors that would seem to favour a larger role for corporate bond issuance in the financing of European companies:

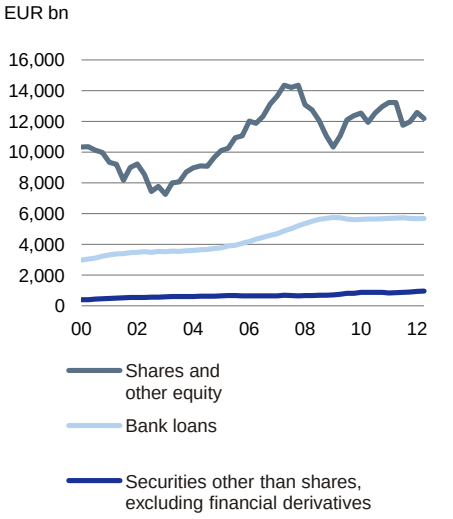
- Many European banks are being forced to deleverage their balance sheets due to higher capital requirements and other regulatory changes as well as due to a shortage of capital.
- Spreads between corporate bonds and bank bonds have narrowed and, in some market segments, even shifted in favour of corporate issuers.
- Investor demand for corporate bonds has increased as a result of
  - Low government bond yields
  - A shift in investor preferences from financial bonds to IG corporate bonds
- Firms and their management/owners have become more open to using capital-market-based financing.

Taking all these factors into account, high corporate bond issuance is therefore not surprising. However, the rally in corporate bond market also raises the question of whether recent developments are sustainable and whether risks are accumulating. More specifically, in the meantime the market is, in the eyes of many observers, looking increasingly expensive as yields are falling. Markets are clearly vulnerable to a sudden increase in bond yields or a severe recession.

Against this background, this article will take a closer look at the trends underlying the recent developments in corporate bond markets in Europe. While a consensus has emerged that the non-financial corporate bond market is enjoying a take-off, we shall start by asking whether this is really the case. In doing so, we shall undertake a cross-country analysis and take a look at the unusually strong growth in issuance in those countries where banks are struggling and/or bank lending is limited. We shall then analyse the underlying factors that may have triggered this take-off in greater detail. More specifically, we shall focus on the cost of bank loans and the unusually high investor demand, which may lead to higher bond issuance volumes. Later on, we shall examine whether the upward trend in bond prices is already tantamount to a corporate bond bubble. To do so, we shall focus on corporate bond yields and analyse whether they have been falling disproportionately relative to the high issuance levels. Finally, we follow a complementary approach based on alternative benchmark scenarios to estimate the potential mark-to-market losses in a hypothetical bond market bust scenario.

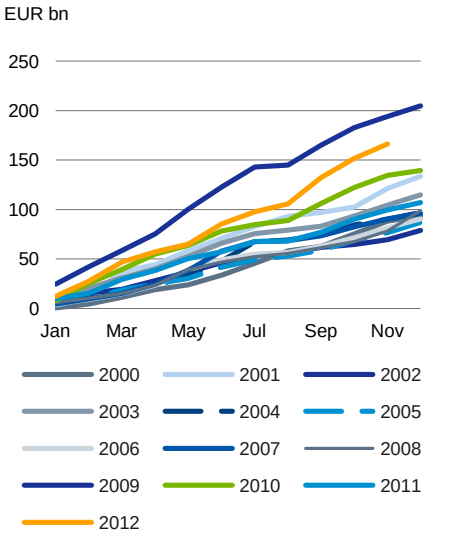
In order to carry out the above-mentioned analysis, this paper is organised as follows. Section 2 describes the corporate financing structure in Europe and

Non-financial corporations' liabilities 1



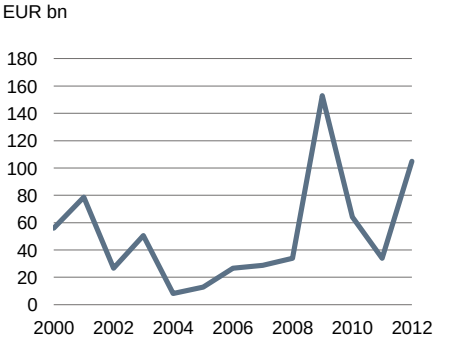
Sources: ECB, DB Research

Gross issuances of long term debt securities 2



Sources:ECB, DB Research

Net issuances of long-term non-financial corporate debt securities in Europe 3



Sources: ECB, DB Research

current trends in the corporate bond market. Section 3 takes a closer look at the drivers that may trigger issuance volumes, such as the cost of bank loans and the "search for yield" sentiment. Section 4 sheds light on the evidence of overheating in these markets by discussing the potential disadvantages and consequences. Section 5 then analyses the channels which may affect the direction of yield changes and we present a sensitivity analysis to get a feel for the size of potential losses on corporate bond holdings. Section 6 contains the conclusion.

2. Trends in corporate bond issuance

a) Development of corporate financing in Europe

The availability of alternatives to debt capital markets such as bank loans and equity markets shapes the structure of corporate financing. Any analysis of corporate bond markets must therefore include a view on developments in those alternative sources of corporate finance.

Prior to the start of the crisis, European corporations took advantage of easier access to both bank loans and equity markets for refinancing purposes. As a result, non-financial corporations in Europe have relied on sources other than debt capital markets for their external financing. As sources of funding for European non-financial corporations bank loans and equity markets amount to EUR 5,682 bn and EUR 12,178 bn, respectively – compared with just EUR 962 bn for corporate bonds and other debt instruments outstanding in balance sheets of non-financial corporations in Europe (chart 1).[1]

Notwithstanding the big difference in terms of outstanding amounts, (potential) changes in financing trends have received greater attention. Indeed, an exclusive focus on large stock numbers accumulated in the past – which naturally do not change quickly – may ignore important changes and trends in the present. The question that therefore arises is whether there is any empirical evidence that these trends in fact already constitute a secular change in the structure of European corporate bond markets.

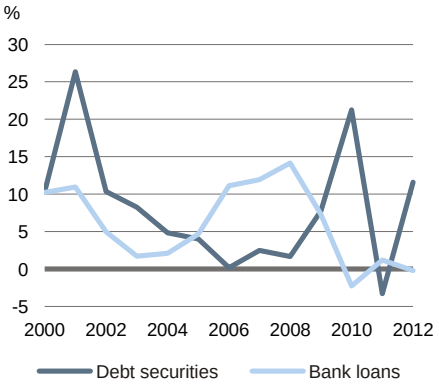
At first glance, debt capital markets do indeed seem to be growing in Europe. Looking at year-by-year data, cumulative issuance year-to-date suggests that 2012[2] was the year with the second highest issuance activity since the start of the millennium. Following the all-time-high issuance volumes in 2009, issuance volumes had dropped substantially in 2011 as a result of the negative market sentiment in general. However, as the riskiness of sovereign bonds in peripheral European countries increased, non-financial corporate bond issuance rebounded from its lows hit in 2011 and displayed an upward trend in net volumes in 2012. In fact, monthly net issuance volume reached the highest value for the last 10 years or so in September 2012 (chart 2 and 3).[3]

The trend becomes even more visible when looking at the medium-term development of growth rates for corporate debt securities (chart 4). Apart from the decrease in 2011, the growth rate for gross corporate bond issuances has shown a steady upward trend over recent years. Overall, from the first quarter of 2009 to the first quarter of 2012, an almost 11% cumulative growth rate is observed in outstanding amounts. Contrary to this expansion in debt capital markets, growth in bank loans has remained quite low and even posted negative growth rates in 2010 as well as 2012.

[1] Euro-area countries.
[2] Available data up to November.
[3] The figures in March 2001 were almost the same.

Corporate bond issuance in Europe

Annual growth rates 4



Sources: ECB, DB Research

All in all, corporations seem to have reduced their reliance on bank loans starting in 2009 and have replaced it by issuing debt securities. Prima facie, this appears to point to a structural shift in favour of debt capital markets – a notion that is plausible given the reduced capability of banks to provide financing to the rest of the economy – and the prospect of a continued impairment of that capability. However, this is not the first time that it looks as if a structural change were taking place in these markets: A 26% increase in long term debt securities could already be observed in 2001 allied with weak growth in bank lending growth from 2002-2004. Moreover, for the first time in decades, dividend yields of some corporations are as high as their bond yields. Accordingly, there are already signs of investors heading back to equity markets.

In this respect, further analysis of the developments in corporate financing is necessary. To do so, we employ standard statistical methods on hypothesis testing. Taking the collapse of Lehman as the breakpoint, we test[4] for each of non-financial corporations' funding sources – i.e. bank loans, equity and debt securities – two hypotheses:

— H1) The amounts are about the same on average for the pre and post-crisis periods

— H2) The amounts are higher, on average, in the post-crisis period than in the pre-crisis period

Table 6 presents the results for two different hypotheses. Controlling for differences in variability between two periods, as the volatility of the two periods differs significantly for all of the three channels of financing, not being able to reject the first hypothesis would imply an insignificant change in average financing employed through time on that channel in statistical terms. Meanwhile, rejecting the first hypothesis should be considered together with rejecting the second one. Rejecting the first and the second hypotheses together would imply a decrease in the use of the respective financing line, whereas rejecting the first one but not being able to reject the second one would imply an increase in average use of the respective financing channel.

The test value of the first hypothesis on equity indicates that equity issuance did not change on average in statistical terms during the period of interest. The uses of bank loan and debt securities, on the other hand, differ for the pre- and post-crisis periods. The hypothesis that bank-loan dependence is higher in the post-crisis period is also rejected as indicated by the fact that bank loans as means of corporate financing have decreased during the post-crisis period. Meanwhile, the second hypothesis on debt securities cannot be rejected. This indicates that unlike bank loans, the use of debt securities is higher on average during the post-crisis period. Taken together, there is evidence that corporate bonds are developing into a meaningful alternative to bank loans in the long run. In our view, the impact of regulation of the banking sector, the overall interest rate environment, and market liquidity will determine the longevity of this take-off in the issuance of debt securities.

Table 6

Hypothesis	Equity	Bank loan	Debt securities
Amount utilized is same at pre- and post-crisis period	Not rejected	Rejected	Rejected
Amount utilized is more at post-crisis period than pre-crisis period	Rejected	Rejected	Not rejected

Big vs small Firm bond issuance 5

In principle, any analysis of corporate bond markets should differentiate between large and small firms, as access to and usage of bond markets differs markedly between those two groups. There are fixed costs for accessing the corporate bond market and it is easier for big firms to absorb these costs. Once paid, the average cost to issue bonds decreases, which means that large firms can and do adjust borrowing volumes more easily. Also, absolute issuance volumes by large firms are obviously larger and may therefore obscure trends in issuance by smaller firms.

Differences in company size are also important for cross-country analyses as corporate structures differ across Europe. A big proportion of the workforce in Italy and Spain are employed by small firms with less than 50 employees, whereas large firms play a bigger role in Germany and the UK.

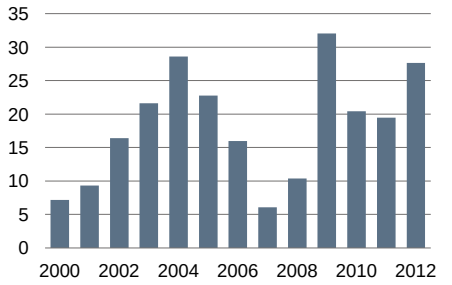
Unfortunately, statistics on bank lending as well as on corporate bonds do not differentiate according to firm size and, hence, do not allow for a more detailed analysis.

[4] We employ monthly data on issuance volumes from January 2002 to December 2012 representing 131 observations for each of the series. Tests are conducted at 1% significance level.

Corporate bond issuance in Europe

Germany: Gross corporate bond issuance 7

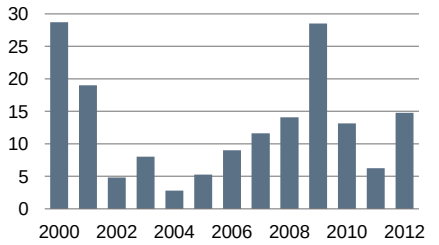
EUR bn



Sources: ECB, DB Research

Netherlands: Gross corporate bond issuance 8

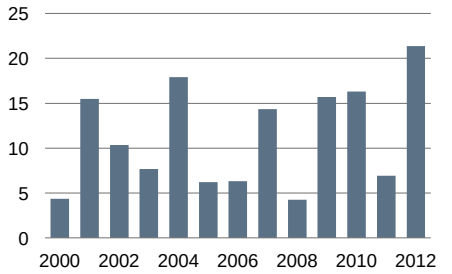
EUR bn



Sources: ECB, DB Research

Italy: Gross corporate bond issuance 9

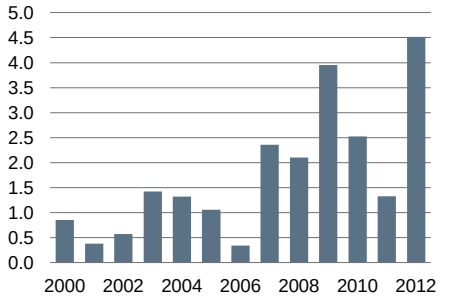
EUR bn



Sources: ECB, DB Research

Spain: Gross corporate bond issuance 10

EUR bn



Sources: ECB, DB Research

b) Cross-country heterogeneity in banks' willingness and ability to provide loans

Looking at European averages may actually obscure some of the underlying dynamics, given the stark differences in economic and financial performance of European economies over recent years. A country-by- country analysis of issuance volumes can help shed light on this heterogeneity.

Charts 7 to 10 present the gross issuance trends of long-term debt securities for core and peripheral euro-area economies. Starting with the core economies, Germany from 2001 to 2004 had a period where in 2004 corporate bond issuance was as high as in 2009. During this period, 2003 issuances were even higher than the issuances in 2010 or 2011. This development reflects the difficulties in the German banking sector at the time and points to a substitution of bank loans by corporate bond issuance, which subsequently was reversed again, as bank lending recovered. In 2007, issuance hit the lowest level in this millennium and started to increase thereafter. Germany recorded its highest corporate bond issuance in 2009.[5] Following this peak, issuance volumes decreased and have stabilised at almost pre-crisis values. Another core economy, the Netherlands, exhibits a similar pattern, posting its highest issuance in 2009. The Netherlands had an upward trend starting in 2004 and lasting until 2009. Following 2009 there was a reversal and issuance fell back to its pre-crisis level.

In summary then, after hitting an all-time high in 2009, corporate bond issuances in core euro-area economies cooled down subsequently and remained relatively low in 2012. This in turn suggests that the surge in corporate bond issuance in these markets was mainly driven by the temporary uncertainty over the stability of the banking sector in 2009, but that, as fears over banks' stability in core EMU countries subsequently receded, no decisive and lasting shift from bank lending to corporate bonds has taken place yet.

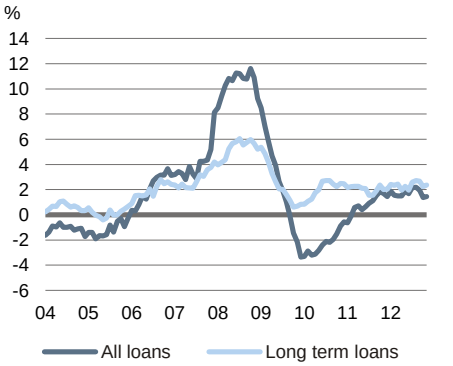
Debt issuance in peripheral countries such as Italy and Spain, by contrast, has a slightly different structure. While annual issuance volumes have generally been more volatile in these markets, issuance volumes have held up better since 2009 and peaked in 2012 in Italy and Spain.

Availability of bank lending explains these contrasting developments well. In Germany, a slight dip occurred in 2009, and following the financial crisis, bank lending is now continuing its recovery started in 2010 (chart 11). In the Netherlands, the trend is similar to Germany (chart 13). In Spain, by contrast, the tightening in the availability of bank loans that started in 2009 still persists. In Italy, following the weak recovery from 2009 to 2012 bank lending growth in 2012 trended down as sharply as during the crisis period from 2008 to 2009. As bank lending shrinks, it is not unreasonable to assume that substitution for corporate bonds in peripheral countries is occurring.

These trends would presumably be even more pronounced were it not to be for the paradox that those companies which have most reason to replace loans from their home countries' weak banks with corporate bond funding are mostly headquartered in countries where economic prospects are weak. Put differently, while most European companies tapping corporate bond markets are pre-sumably multinational, they still have a home bias and are thus heavily exposed to their respective home economy. Firms headquartered at Europe's periphery and aiming to replace bank loans with corporate loans will therefore find it more difficult to do so than firms from Europe's core economies, who, as shown above, ironically face less of a pressing need to find alternatives to bank funding. Hence corporate bond issuers may actually have differing motives: for core country firms, corporate bonds may primarily represent a good opportunity to lower overall funding costs, given bond yields that are low in absolute terms

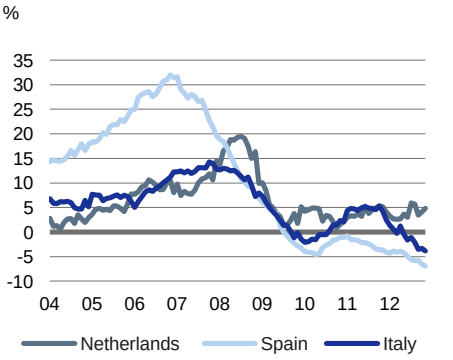
[5] Available data for 2012 is up to November.

Growth rates of bank lending to non-financial corporations in Germany 11



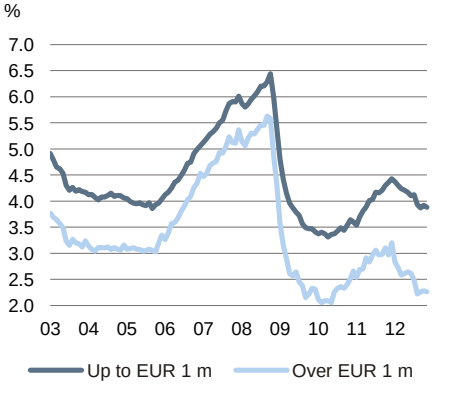
Source: ECB

Growth rate of bank lending to non-financial corporations 13



Source: ECB

MFI interest rate for new loans to non-financial corporations 15



Loans other than revolving loans and overdrafts, convenience and extended credit card debt

Sources: ECB, DB Research

and low relative to the costs of bank loans (see below), whereas for firms from the periphery corporate bond issuance may be motivated more by the search for substitutes for bank loans.

To sum up, the difference in corporate bond issuance between core and peripheral countries seems to go hand in hand with the availability of bank lending in these countries. As banks in peripheral countries struggle, this pushes corporations to look for alternative financing channels.

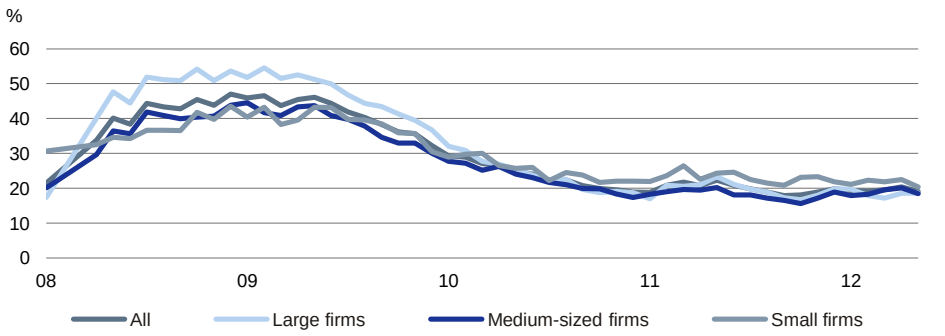
Corporate demand for bank lending 12

A complementary analysis for bank lending is the demand for bank lending. Surveys on access to finance for companies may help observers to understand this demand at the micro level. The ECB, for instance, conducts a biannual survey among a large number of large to small firms to shed light on their access to finance. According to the ECB statistics, in the second half of 2012, 20% (in net terms) of company managers perceived a deterioration in the availability of bank loans. The availability of bank loans was assessed most negatively in peripheral countries, such as Spain or Italy, with a net 30% of respondents reporting a decrease in availability. In Germany, by contrast, a net 4% of survey respondents reported an increase in the availability of the loans. Not only the availability but also the willingness of banks to provide loans differs between core and peripheral countries. According to survey respondents, in Germany the willingness of banks to give credit increased by 7% in net terms, whereas in Spain and Italy there were deteriorations of 51% and 39% respectively.

Comparing the data for 2012 with that of 2009, there is still an improvement in perceptions in all countries. The perceived deterioration in availability of bank loans came to about 31% (net percentage of respondents) compared to 22% in 2012.

National surveys, such as the ifo Kredithürde for Germany, display a similar trend to that of the loan availability in core countries. Following the deterioration trend in availability from 2008-2010; there is now a trend of easier bank loan availability which started in 2010, confirming the results of ECB statistics.

Non-financial corporations reporting difficulty in getting bank loans 14



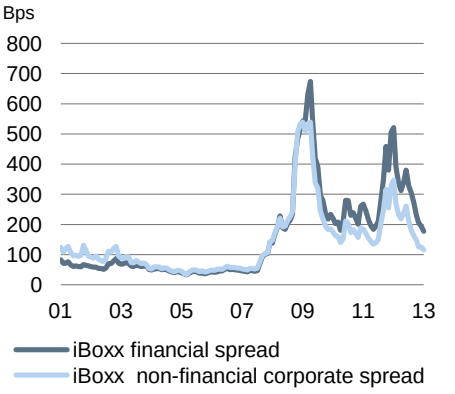
Source: ifo

3. Potential drivers of corporate bond issuance

a) Cost of bank lending

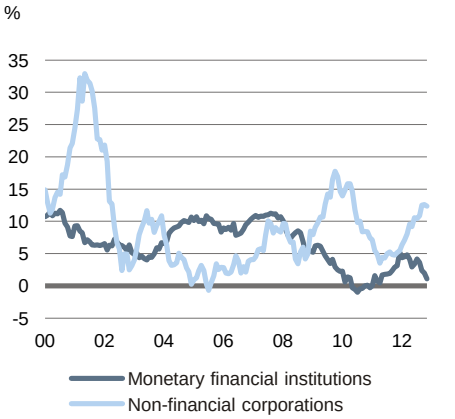
As discussed in the introduction, theoretically one would assume that the willingness of companies to tap the corporate bond markets would be negatively correlated with the relative price of alternative sources of finance, chiefly bank loans. As banks' refinancing costs have increased in the wake of the financial crisis and following regulatory changes and as some banks, driven by the need to deleverage due to regulation and capital constraints, may be forced to reduce their assets, a greater role for corporate bonds could be expected.

Financial vs non-financial spreads 16



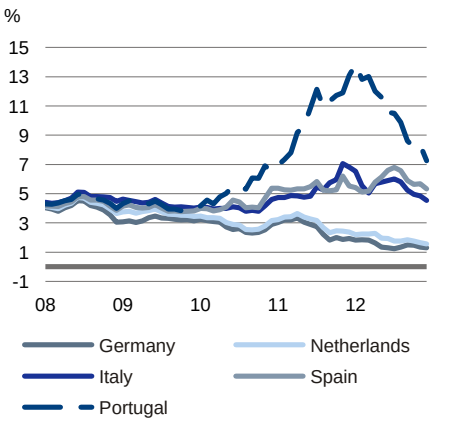
Sources: Markit, DB Research

Growth rate of securities other than shares issued 17



Sources: ECB, DB Research

Government bond yields in Europe 18



Sources: ECB, DB Research

The cost of bank lending can i.e. be gleaned from the ECB's Euro area MFI interest rate statistic for new loans to businesses (chart 15).[6] At first glance, this data series do not seem to suggest a rise in the costs of bank lending for euro-area firms; rather, the data shows a noticeable decline in the interest rates charged to non-financial corporations over recent quarters. However, it needs to be kept in mind that the decline in loan rates primarily reflect the ECB's monetary policy aimed at keeping lending rates at very low levels.

A better insight into the relative costs of bank lending can therefore be gained from looking at banks' own refinancing costs which obviously provide the floor for rates charged to firms. In this context bank bond yields are illustrative. Chart 16 presents the spread of European IG financial bond index yields (iboxx) to the benchmark index. Prior to the start of the crisis, the yields on bank bonds were broadly stable and around 50 bps above the benchmark. However, with the outbreak of the financial crisis, financial bond spreads started to fluctuate and spreads jumped to an all-time high of 673 bps in April 2009. Following the slowdown in 2010, in 2011 spreads started to increase again in 2011 and as of January 2013 stand at 177.3 bps above the benchmark. This indicates that the costs of funding via debt securities increased considerably from 2008 onwards, pushing up the financing costs of the banks. Also presented in Chart 16 is the spread of IG non-financial corporate bond index yields (A rated) to the benchmark index. The figures for this index have traditionally been above or about the same as financial corporate yields. Since 2011, however, the average cost of bank debt has soared above the yield paid by IG firms in capital markets. As of January 2013 the difference between the two is around 61 bps indicating that banks are borrowing at significantly higher rates than their customers. If this trend were perpetuated, the traditional role of banks as intermediaries would obviously be called into question.

The impact of higher financing costs for banks relative to firms is also reflected in the development of growth rates, relative to each other, of the debt securities issued by NFCs and banks over time. Prior to September 2008, MFI debt securities had a stronger growth rate than their non-financial counterparts. With the start of the crisis, this trend in growth rates flipped and non-financial corporation debt securities' growth rates have outperformed those of MFI securities.

b) Investor demand

The other driving factor for the development of corporate bond markets is investor demand. The main trigger of investor sentiment for sure is the search for yield in a low interest rate environment. Since the start of the sovereign debt crisis, safe-haven government bonds have offered historically low rates. Having AAA ratings, German and Dutch sovereign bonds are offering the lowest yields for over a decade. Peripheral euro area countries obviously offer higher yields, but are no longer regarded as safe investments by many investors. In fact, following recent downgrades, some of the peripheral sovereigns are no longer investment grade and therefore many institutional investors are no longer allowed – in accordance with prudential investment rules – to invest in these bonds. As a consequence, for investors seeking a higher yield with little additional risk, investment grade corporate bonds appeared to be an attractive alternative. Not only the low yields offered by core euro-area sovereign bonds but also the deterioration in investor perception regarding peripheral country sovereigns and financial institutions affected investor demand. IG non-financial corporations can and do take advantage of this extensive demand by raising money on the bond markets at a very low cost.

[6] Loans other than revolving loans and overdrafts, convenience and extended credit card debt.

As a result of strong investor demand, spreads on investment grade corporate bonds have decreased substantially since 2012. These spreads are almost zero now for the highest rating category. For instance, the AAA-rated corporate bond spread over German Bunds in December was only 0.02%, as compared to 1.1% in January 2012.

4. Overheating in the bond market

As the boom in the corporate bond market continues against the backdrop of high investor demand, the question arises of whether there is a risk of over-heating in this market segment. Theoretically, a disproportionate rise in issuance volumes of lower-rated debt, accompanied by a sustained reduction in yields on those issues, would point to such a risk.

Looking at the data, it can be observed that European high yield (HY) corporations have been able to place high issuance volumes since Q2 2010. In fact, volumes have never before been so high as in 2012 (chart 19). Benefiting from the search for yield sentiment, corporations with low credit ratings have now been issuing record volumes of bonds for three years in a row. Some of this, no doubt, reflects a structural trend as the HY segment is still under-developed compared with its US counterpart. However the rise in volumes certainly also reflects the current market environment. Not only the volumes but also the relative share of HY corporate bonds in total debt capital markets (DCM) has increased (chart 21). Since 2010 there has been an upward trend in the relative shares of HY bonds. In other words, European DCM issuance is slowly moving down the rating curve. Though the share of HY corporate bonds in DCM has been rising in Europe, the figures are still low compared to US where HY issuance is the highest at USD 352 bn, according to Dealogic.

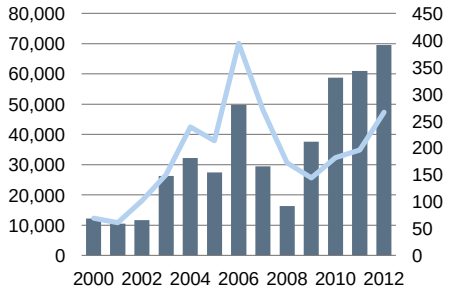
For investors looking to invest in HY bonds, it is important to compare the yields on these bonds with their riskiness. In an environment where non-IG company risks are no longer offset by a higher default premium, investors may face potential losses. Against this background it is noticeable that higher issuance volumes have recently gone hand-in-hand with a yield compression (chart 22). Starting from the peak values reached in the wake of the Lehman bankruptcy, spreads on corporate bonds across all rating categories have fallen fairly consistently until the flare-up of the sovereign debt crisis in spring 2011. Following a rise in spreads thereafter, spreads have again started to decline.

It is certainly instructive to compare spread developments in the pre-crisis period with that over the recent quarters. While spreads are low in both periods, most obviously if compared with the crisis period, yield compression across rating categories was more pronounced in the 2005-08 period than it is now. For instance, the yield gap between AA and BBB rated corporate bonds was 49 bp in January 2007, but stands at 158 bps now. This suggests that, notwithstanding a search for yield, investors are still more discriminating with regard to risk than they were prior to the crisis.

However, it needs to be kept in mind that this in itself may not be sufficient to safely assert that investors are sufficiently cognizant of risks: As a result of greater uncertainties in global markets and the recent extreme events such as the sovereign crisis in Europe or the collapse of Lehman, investors are facing a market environment that can be characterized as being marked by Knightian uncertainty. Unlike the usual risks where the odds of future states are known, in Knightian uncertainty the future states themselves are unknown and it is almost impossible to assign reasonable probabilities to different scenarios. In such an environment, the risk differentiation between different rating categories should be more pronounced than before.

European HY corporate bonds gross issuance 19

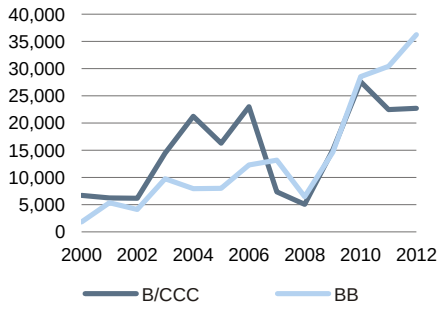
EUR m (left), no Deals (right)



Sources: Dealogic, DB Research

HY volumes by rating 20

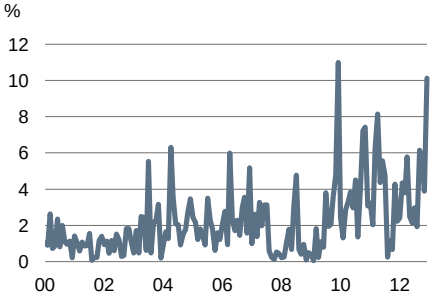
EUR m



Sources: Dealogic, DB Research

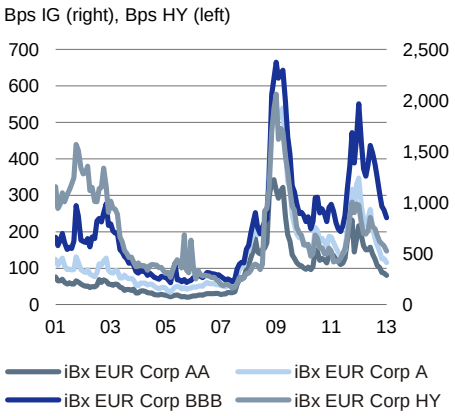
Share of HY bonds to overall DCM in Europe 21

%



Sources: Dealogic, DB Research

Spread wrt to benchmark index iboxx 22

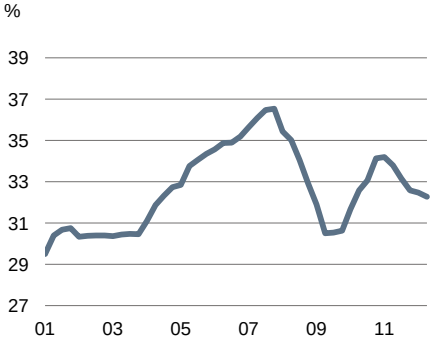


Sources: Markit, DB Research

Debt-to-income ratio of non-financial corporations 23

Sources: Eurostat, DB Research

Net income ratio of non-financial corporations in the euro area 24



Sources: ECB, DB Research

The use of revenues raised from bond issuance may also shed light on a potential overheating in these markets. If corporations do not utilise the proceeds from bond issuance to strengthen the underlying business, they could weaken their capital structure. In this respect, the earnings outlook of non-financial corporations is especially important. The debt-to-entrepreneurial income ratio is a conventional measure of debt sustainability. As the crisis shakes the economies in Europe, this ratio hit the highest levels of the last decade mainly as a result of low corporate incomes – and this, it should be noted, at a time of record low interest rates. After a decrease in 2010, the ratio started to rise again in 2011, which raises concerns regarding the sustainability of indebtedness of non-financial corporations.

Corporate finance theory also argues that an increase in profitability of a firm, as proxied by the net income ratio (net entrepreneurial income divided by net value added), should correspond to falling bond yield for that firm. Put differently, a fall in corporate bond yields should be supported by an increase in the profitability of non-financial corporations. With the start of the crisis, profitability of the non-financial corporations in Europe decreased sharply, whereas corporate bond yields shot up in reaction to investors fleeing from risk. Although there was a period of recovery starting from 2010, non-financial corporations experienced another downward trend in their profitability in 2012. In this respect, the decrease in yields does not go hand in hand with higher corporate profitability either.

All in all, the evidence suggests that, while there does not seem to be an imminent risk of overheating in the corporate bond markets, the risks of a corporate bond bubble have increased, mostly due to investors' search for yield. Naturally, the HY segment of the market is most at risk: if the strong demand for corporate paper were to sour as result of a recession, it would be problematic for HY corporations to find funding and consequently the default probabilities/ numbers would increase, especially in light of the fact that alternatives such as bank loans would not be easily forthcoming.

5. Rising yields expose bondholders to market losses

As already documented, the recent boom in European corporate bond issuance combined with strong demand from investors and declining yields has created vulnerabilities. Should yields increase again, bondholders who have accepted current low yields would find themselves facing losses as the higher market rates would make their old low-yielding bonds less valuable. Indeed, a rise in interest rates would arguably have a much bigger impact on market values than changes in credit risk.[7]

The catch is that higher yields could be the consequence if things get worse and if things get better. A renewed escalation of the euro debt crisis or the failure to address fiscal issues in the US in a constructive way could boost risk aversion among investors once again, triggering a flight to safety and leading to sharply higher corporate bond yields. By contrast, a gradual recovery in Europe, which many observers now expect to gain traction by mid-2013, would be accompanied by a normalisation of benchmark government bonds and possibly central bank rates. This would also push up corporate bond yields. Either way, the current situation may not last.

The actual size and direction of yield changes basically depends on three variables: (a) change in benchmark government bond yields, (b) the change in the yield spread between government bonds and corporate bonds, and (c) potential rating migration. In a recovery scenario, government bond yields would

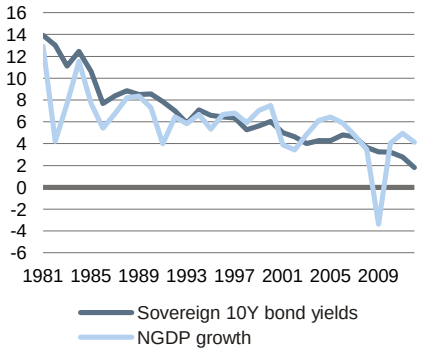
[7] See for instance Fitch Ratings (2012). The "Bond Bubble": Risks and Mitigants. Macro Credit Research. December 2012.

increase (normalisation), the spreads would likely decrease (yield compression) and there should be a bigger chance of rating upgrades. Should the crisis escalate again, the components would move in opposite directions, but the outcome would be a net increase. We will discuss each component briefly below.

a) Benchmark government bonds: step towards normalisation

Long-term, risk-free bond yields roughly equal nominal GDP growth 25

US, %



Soucres: IHS Global Insight, DB Research

Economic theory suggests that risk-free interest rates should be close to nominal GDP (NGDP) growth. This simple rule describes the trend for instance in US government bond yields quite well – until the beginning of the Great Recession (chart 25). Since then, bond yields have been substantially below NGDP growth, suppressed by very expansionary monetary policy and the flight to safety. A similar picture holds for other core government bonds, e.g. in Germany.

A normalisation of rates means that bond yields increase back towards a level indicated by economic fundamentals. In Germany, NGDP growth may amount to around 3.5% trend-wise (~1.5% trend growth + 2% inflation), with NGDP growth and bond yields arguably overshooting such levels when the economy rebounds from recession. This would be a steep hike from currently 1.5% on 10Y German government bonds (as per January 2013). The process of normalisation would likely stretch over several years, though, because the recovery will only take hold gradually, substantial downside risks remain, and monetary policy is set to remain expansionary throughout 2014. The current DB view sees an increase in 10Y German bonds to 2.25% by the end of 2013, rising further to probably 4% in the years to come.

By contrast, should the crisis escalate again, we will likely see a renewed flight to safety with core government bond yields probably declining 50 bp from current levels. Of course, the same flight to safety that depresses government bond yields would also widen spreads on corporate bonds.

b) Risk appetite determines spread compression

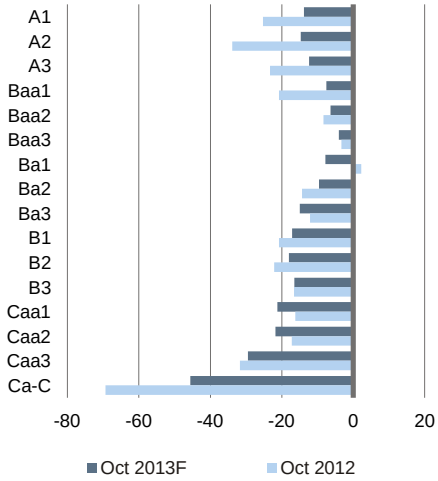
In periods of high-risk appetite, such as during the boom years between 2003 and 2007, there is often a strong yield compression where the return on risky assets is not much higher than that on safe assets. Investors tend to under-price risk. During the boom years for instance, European BBB-rated corporate bonds had a spread of around 110 bp over benchmark bonds. Since then, the spreads have averaged 360 bp, reflecting much higher risk aversion. The emerging stabilisation in the euro debt crisis has once again led to a convergence of bond yields in different rating brackets.

Given that the current compression is still much less pronounced than prior to the financial crisis one can expect a further decline in spreads should the recovery gain traction and risk appetite return. While it is difficult to predict where corporate bond spreads will settle in a post-crisis world, a quick back-of-the-envelope regression suggests that an increase in German government bond yields by 75 bp (our current baseline for end-2013) would be commensurate with a decline in iBoxx AA spreads by 13 bp and iBoxx BBB spreads by 30 bp. Note that the decline in spreads does not outweigh the increase in benchmark yields thus leading to overall higher yields.

In a crisis scenario, corporate bond spreads may easily relapse towards levels seen in the recent past. An increase by 100 bp for AA-rated bonds and 200 bp for BBB-rated bonds would be well within recent experience. Note, that in this scenario, the jump in spreads would outweigh the decrease in benchmark yields.

Fewer net downgrades expected 26

Balance of upgrades (+) and downgrades (-) for global firms during previous 12 months, by initial rating bracket, %



Source: Moody's, DB Research

c) Rating migration has only limited impact

An emerging recovery would also improve the financial conditions for companies, eventually leading to rating upgrades. Those who bought a bond of a BBB-rated company during the crisis might find that company being upgraded during the recovery thanks to a better business outlook. Such an upgrade would mean lower yields (thus an increase in bond value), which would mitigate an increase in market rates.

The rating agency Moody's, for instance, expects an improvement in the global rating drift during this year. It still expects that downgrades by one or more notches (even to default) will outnumber upgrades but the balance between downgrades and upgrades might be less negative than in the previous year (chart 26).

Of course, investors usually factor in the expected rating migration when buying corporate bonds. Only surprises to the upside or downside would then affect the calculation. Even then, the impact on yields might be quite small. If, for instance, the actual probability of a net upgrade by one notch were 10 percentage points higher than expected (an upside scenario) the impact on a portfolio of bonds might only be in the single-digits of basis points.

The rating migration thus may mildly amplify the yield increase in a crisis scenario and mitigate it somewhat in a recovery scenario.

d) What does it mean for market values of corporate bonds?

To get a feel for the size of potential losses on corporate bond holdings we use a sensitivity analysis for three different scenarios on AA- and BBB-rated bond portfolios. Note that traditionally, most corporate bonds that are issued globally fall between these two brackets.

1. Emerging recovery: benchmark government bond yields move gradually towards normalisation, there is further yield compression, and there are a few unexpected rating upgrades. This scenario is arguably closest to the current DB baseline view.
2. Full recovery: benchmark yields move fully back to normal, yield compression is almost back to historical levels, and there are a few more rating upgrades.
3. Crisis mode: risk aversion soars again, benchmark yields decrease on safe-haven flows, but spreads on corporate bonds jump again. Rating migration surprises on the downside.

The sensitivity analysis illustrates substantial loss potential between 3% and 13% on the market value of corporate bond holdings compared to January 2013 levels. The AA-rated portfolio is most susceptible to a full recovery because there is only limited relief from further yield compression. A BBB-rated portfolio might suffer most from a relapse into crisis mode as a further depression in benchmark yields would barely suffice to mitigate the hike in spreads.

Sensitivity analysis 27

AA-rated bond portfolio			
	Emerging recovery	Full recovery	Crisis
Benchmark yields (chg bp)	75	250	-50
Spread compression (chg bp)	-13	-42	100
Rating migration (chg bp)	-2	-5	10
Net effect (chg bp)	60	203	60
Loss market value, % vs Jan 2013	-4.6	-13.4	-4.6
BBB-rated bond portfolio			
Benchmark yields (chg bp)	75	250	-50
Spread compression (chg bp)	-30	-100	200
Rating migration (chg bp)	-2	-5	10
Net effect (chg bp)	43	145	160
Loss market value, % vs Jan 2013	-3.1	-9.2	-11.1

The emerging recovery scenario is associated with market losses of between 4.6% (AA) and 3.1% (BBB). As mentioned in the introduction, in 2012 companies in Europe issued IG corporate bonds worth around USD 480 bn. The combined market loss on these issuances could thus exceed USD 17 bn compared to January 2013 levels.

There are of course a number of mitigating factors. Firstly, investors following a buy-and-hold strategy might not realise market losses (but forgo higher yields). Secondly, investors who bought earlier during the year will often have already seen increases in the market value. Those gains would help to offset potential market losses in the future. Thirdly, investors who have matching liabilities or who can pass on lower yields to clients (e.g. pension funds) might be less affected. Fourth, investors can obviously compensate mark-to-market losses at least partly by coupon payments, especially if the yield rise stretches over a prolonged period.

It is a thornier issue for investors who need to mark-to-market (e.g. banks holding corporate bonds in the trading book) or who need to sell bonds for liquidity reasons. They would have to realise losses (at least accounting-wise). However, the recovery scenarios describe a quite gradual increase in benchmark yields that should leave ample opportunity to adjust or hedge positions.

6. Conclusion

This paper analyses the trends in corporate bond issuance in Europe, which has seen a marked increase of activity and falling yields over recent quarters. Available data suggest that European firms are scaling back their reliance on banks and that corporate bonds are developing into a meaningful alternative to bank loans. Undoubtedly, the impact of regulations on the banking sector, the overall interest rate environment, and market liquidity will determine the persistency of this take-off in the issuance of debt securities.

Meanwhile, a more disaggregated perspective suggests that there are differences between core and peripheral euro area economies. There is evidence of heterogeneity in bank lending and increased bond issuance in peripheral euro-area economies could be partly due to scarce bank loans. More generally, the sovereign debt crisis combined with increased capital requirements from regulation reduce the availability and willingness of banks in peripheral eurozone economies to lend.

We argue that, for the time being, the increase in corporate bond issuances is, to a large extent, a reflection of investor demand. Investors seeking higher yields due to historically low sovereign bond yields prefer corporate bonds in the present market conditions. The search for yield has altered the risk-taking behaviour of investors, which requires special attention. There is a high demand for HY corporate bonds and investors seeking higher yields may underestimate the default risk of these bonds in an era of Knightian uncertainty.

Taken together, while there does not seem to be an imminent risk of over-heating in the corporate bond markets, the risks of a corporate bond bubble have clearly increased. Vulnerabilities clearly are building up as issuance moves down the rating curve and yields are compressed. A back-of-the-envelope analysis of different scenarios suggests that, should corporate yields increase again, bondholders may face mark-to-market losses of 4-14%.

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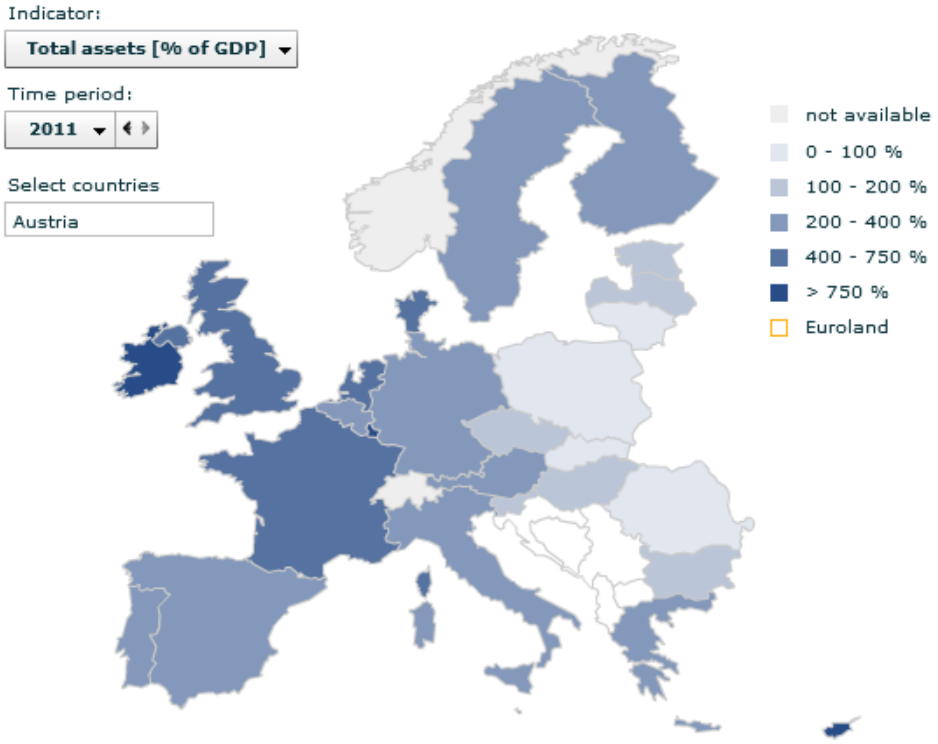
European banking markets

With its dozen main indicators, the Interactive map European banking markets offers a broad overview on structures and developments in the banking systems of EU countries. Data are available on, e.g., market size and lending business, capitalisation levels and profitability measures.



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