

The Future of Global Debt Issuance: 2025 Outlook

SEPTEMBER 2017

Commissioned by:



TABLE OF CONTENTS

EXECUTIVE SUMMARY	4
INTRODUCTION	6
METHODOLOGY	6
THE ISSUANCE PROCESS: AN OVERVIEW	9
AN OVERVIEW OF MARKET SELECTION FACTORS.....	10
A QUICK ISSUER BEHAVIOR EXAMPLE	12
THE CURRENT ISSUANCE LANDSCAPE	14
COSTS AND INTEREST RATES	16
CURRENCY TRENDS.....	18
EXISTING INFRASTRUCTURE, LEGAL CONSIDERATIONS.....	21
INVESTOR DYNAMICS	21
DRIVERS FOR CHANGE	23
EUROPEAN MARKET STRUCTURE DEVELOPMENTS	23
A PAN-ASIAN CSD?.....	26
REGULATIONS AND INVESTOR TRANSPARENCY	28
THE CERTAIN UNCERTAINTY OF GEOPOLITICS.....	31
THE RISE OF THE RENMINBI (AND ASIA).....	33
GOING GREEN	35
TECHNOLOGY EVOLUTION.....	36
STANDARDIZATION TRIALS AND TRIBULATIONS	40
THE FUTURE OF ISSUANCE	42
CONCLUSION: THE OUTLOOK FOR 2025 AND BEYOND.....	44
ABOUT AITE GROUP.....	46
AUTHOR INFORMATION	46
CONTACT.....	46

LIST OF FIGURES

FIGURE 1: RESPONDENT BY TYPE OF FIRM.....	7
FIGURE 2: RESPONDENT'S FIRM BY LOCATION	7
FIGURE 3: INDIVIDUAL RESPONDENT BY FUNCTION	8
FIGURE 4: THE FUNDAMENTALS OF THE CORPORATE DEBT ISSUANCE PROCESS	9
FIGURE 5: THE PROCESS FOR GOVERNMENT DEBT ISSUANCE IN GERMANY.....	10
FIGURE 6: ISSUER CRITERIA FOR MARKET SELECTION.....	11
FIGURE 7: ISSUANCE FROM THE PERSPECTIVE OF THE ISSUER	12
FIGURE 8: TOTAL VALUE ISSUED BY REGION, 2012 TO 2017.....	14
FIGURE 9: NUMBER OF ISSUANCES BY REGION, 2012 TO 2017	15
FIGURE 10: RESPONDENT VIEWS ON GEOGRAPHICAL ISSUANCE TRENDS	16
FIGURE 11: TOTAL GLOBAL ANNUAL VALUE OF ISSUANCE, 2012 TO 2017.....	17

FIGURE 12: SECTORS WITH ISSUANCE UPTICKS OVER THE LAST THREE YEARS	18
FIGURE 13: TOTAL GLOBAL VALUE ISSUED PER YEAR BY CURRENCY, 2012 TO 2017	19
FIGURE 14: NUMBER OF GLOBAL ANNUAL ISSUANCES BY CURRENCY, 2012 TO 2017	19
FIGURE 15: PERCENTAGE OF GLOBAL ISSUANCE IN FOREIGN AND DOMESTIC CURRENCIES, 2000 TO 2016	20
FIGURE 16: BOND TRADING VOLUME IN EUROPE PER YEAR, 2007 TO 2016	22
FIGURE 17: BOND TRADING VOLUME IN THE UNITED STATES BY YEAR, 2007 TO 2016	22
FIGURE 18: TIMELINE FOR T2S IMPLEMENTATION	24
FIGURE 19: RESPONDENT VIEWS ON T2S' OVERALL IMPACT ON ISSUANCE PROCESSES	26
FIGURE 20: IS A PAN-ASIAN CSD REALISTIC?	27
FIGURE 21: IS A PAN-ASIAN CSD DESIRABLE?	27
FIGURE 22: PROSPECTUS DIRECTIVE TIMELINE	29
FIGURE 23: MOST IMPACTING REGULATIONS IN THE PAST 12 MONTHS	30
FIGURE 24: MOST IMPACTING REGULATIONS IN THE NEXT 24 MONTHS	31
FIGURE 25: PERCEPTION ON THE FUTURE INTERNATIONAL CAPITAL MARKETS OPENNESS	32
FIGURE 26: VALUE OF DEBUT ISSUANCES BY REGION, 2012 TO 2017	34
FIGURE 27: EXPECTED CHANGE OF ISSUANCE VOLUME FOR CERTAIN BOND TYPES OVER NEXT THREE YEARS	35
FIGURE 28: GREEN BOND ISSUANCE, 2013 TO 2017	36
FIGURE 29: AREAS FOR EFFICIENCY IMPROVEMENT	37
FIGURE 30: DRIVERS OF ELECTRONIFICATION IN THE ISSUANCE PROCESS	38
FIGURE 31: FITTING AREAS FOR TECHNOLOGY INNOVATION	38
FIGURE 32: POTENTIAL USES OF DLT IN ISSUANCE	39
FIGURE 33: AREAS OF POTENTIAL STANDARDIZATION FOR ISSUANCE	41
FIGURE 34: DRIVERS FOR FUTURE INVESTOR BEHAVIOR	42
FIGURE 35: RESPONDENT PERSPECTIVES ON ISSUANCE IN 2025	43

EXECUTIVE SUMMARY

The Future of Global Debt Issuance: 2025 Outlook, commissioned by Clearstream and produced by Aite Group, examines the dynamics underlying the debt issuance process across the globe. It highlights current challenges and drivers for issuing debt instruments in different markets, as well as the main factors considered in the selection process. It considers how various trends in the current market could result in certain market outcomes in the next five to eight years.

Key takeaways from the study include the following:

- **The issuance landscape of 2025 and beyond is set to be as dynamic as ever. Industry participants can expect a much more global industry where cross-border issuance is the norm, coupled with a more diverse interest and uptick in new instruments** (e.g., green bonds and new Asian bonds). These industry trends will be driven both by investor demand and market infrastructure (policy) developments.
- **Asia and the U.S. will continue to increase in strategic importance for investors and issuers while Europe will unlock new opportunities for the issuance industry.** Though currently largely unknown among the primary issuance market, TARGET2-Securities (T2S)—the new European settlement platform—will alter the European landscape for issuance. Increased connectivity via T2S to a larger range of end-investors could result in higher demand for European bonds. Extension of the T2S platform to more non-euro currencies and the reduction in settlement risk expected to be inherent in the T2S model will make it easier and more cost-effective for firms to issue cross-border in the region.
- **T2S, coupled with the EU Central Securities Depositories Regulation (CSDR) will also help to make the issuance process in Europe more harmonized via the rise of cross-border issuance and a level playing field for central securities depositories (CSDs) and international CSDs (ICSDs) operating in Europe.** However, time is needed for these benefits to take form; the issuance industry still knows little about T2S (and CSDR), and the capital markets as a whole need time to become acquainted with the new EU settlement infrastructure and to transition into the new operating environment.
- **Wider benefits for issuance in the T2S environment that are expected to be exploited by market participants in the medium to long term include cost and efficiency savings due to the ability to consolidate issuance at single CSDs rather than deploying each national CSD for respective domestic issuance.** An auto-collateralization function offered via T2S is also likely to be considered by issuers to be a specific benefit because it can enable issuers and investors to reduce their needs for cash or credit lines. In particular, T2S auto-collateralization can be attractive for larger financial issuers looking to net their cash flows on redemption or interest payment days.
- **The notion of a multicurrency CSD is popular in accordance with the increase in (anticipated) global flows.** Eighty percent of participants either strongly agree

or agree with the idea that issuers in 2025 will require such multicurrency services.

- **The majority of respondents (70%) feel that infrastructure availability today is a factor of importance because of their desire to select a market with high availability and efficient processes.** ICSD and CSD track record, including any operational risk incidents, such as cyberbreaches or service downtime, is also important with most large issuers, considering that there is a minimum level of operational and legal risk they can accept when selecting either a CSD or an ICSD.
- **The Eurobond international market and ICSDs are likely to remain attractive to issuers** due to ICSDs' global reach and expertise in handling complexity, multiple currencies and different jurisdictions.
- **Financial regulation and tax legislation also have a strong influence on market selection today**—over half of respondents indicate that regulation is “very important,” and half cite tax legislation as important. A favorable regulatory and tax environment can, therefore, likely attract a greater number of issuers. Currency is also an important decision criterion—75% of respondents say this is an important factor.
- **Though Chinese renminbi was only 13% of the total value of global issuance in 2016, it has nearly doubled in value since 2012, and anecdotal feedback suggests that this trend will continue into the foreseeable future.** Over the five-year period, total issuance value in U.S. dollars has increased by 4.3%, value for euros has decreased by 0.1%, and value for Chinese renminbi has increased by 90.8%.
- **Many participants are active in the wider (emerging) Asian bond market** although half of respondents have limited knowledge or experience of either Panda bonds or Dragon bonds. This reflects the nascent nature of these financial instruments.
- **Technology development overall is considered by respondents to become less of a potential driver for industry change, with most citing a greater desire for flexibility than for automation.** Documentation production and “smart contracts” are cited as potential areas in which technology could offer industry development and efficient savings.

INTRODUCTION

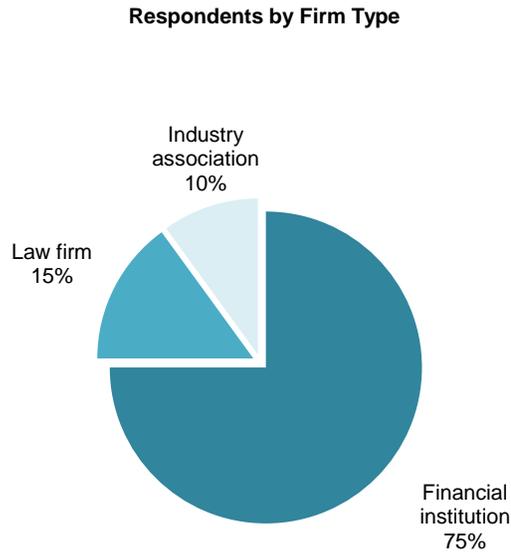
Corporate bonds reached record issuance volume in 2016. According to figures from data provider Dealogic, total debt issued by both banks and corporations reached around US\$6.8 trillion in value for 2016, which surpassed the previous annual record for debt issuance that was set in 2006. The corporate community accounted for over half of this volume, and these firms were compelled to issue debt by the near-zero or negative interest rate environment in key global economies, such as the U.S., Europe, and Japan. High-value mergers and acquisitions also helped to drive issuance activity to finance these deals.

Geopolitical forces are, however, changing, and recent market developments—such as the establishment of pan-European settlement system T2S, China opening its markets internationally, and investor behavioral shifts—are likely to impact the way debt will be issued in the future. Moreover, the industry and regulatory focus on improving transparency has directly impacted the issuance process. This white paper examines the evolving landscape for debt issuance across the globe, taking into account significant market structure changes, regulatory and geopolitical developments, technology adoption, and issuer behavior. It highlights the current trends and the potential direction of this space in the next five to eight years.

METHODOLOGY

This white paper is based on market intelligence captured by Aite Group during interviews with a range of firms engaged in the primary market space and supported by data provided by Dealogic. Both issuers and those engaged in supporting the issuance process that are active in the global financial markets participated in the research, which involved discussions with 20 such firms. Figure 1 shows the division of respondents by type of firm. The majority of the respondents are focused on deal supporting or initiating the issuance process. Three-quarters of respondents work for financial institutions, and the rest work for law firms and industry associations.

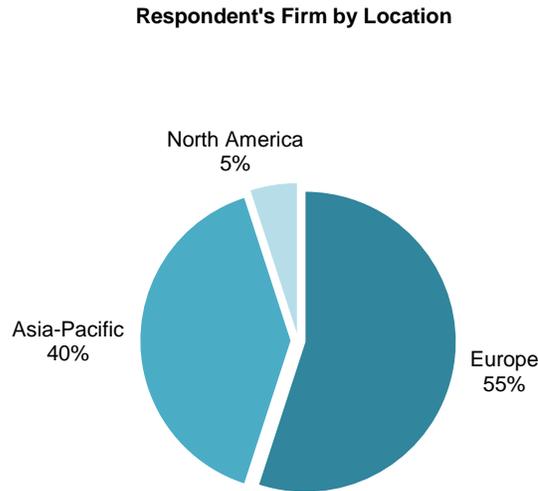
Figure 1: Respondent by Type of Firm



Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

In order to obtain a global picture, respondents work for internationally focused institutions with global operations. Over half of respondents are based in Europe, and 40% hail from the Asia-Pacific, with a minority based in North America. (Figure 2).

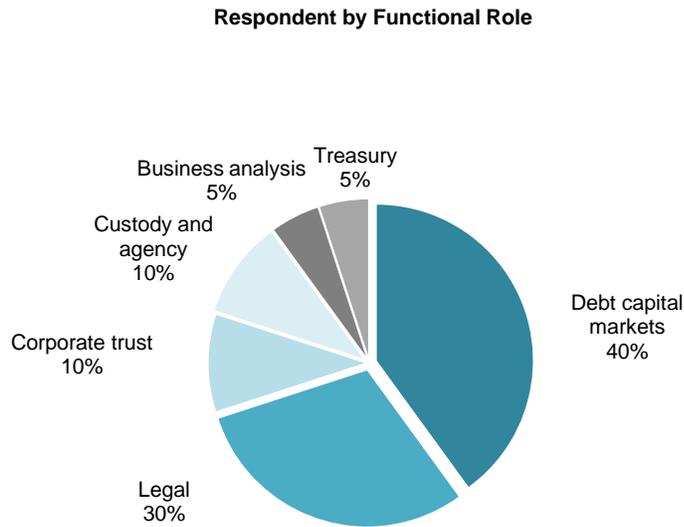
Figure 2: Respondent's Firm by Location



Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

Individual respondents are engaged in a number of different functional roles (Figure 3); therefore, the answers to certain interview questions may be influenced by those individuals' functional perspectives.

Figure 3: Individual Respondent by Function



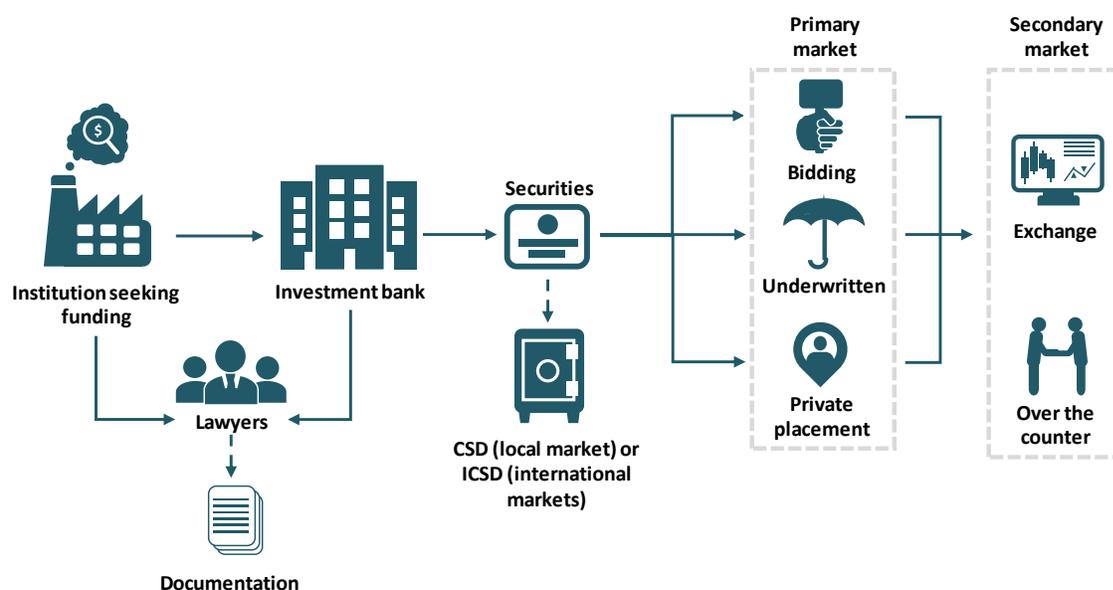
Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

Dealogic issuance data supplied to Aite Group as part of the market research covers a period of the last five years, including new issuances, the international market, the geographical spread, sectoral characteristics, and green and ethical bonds.

THE ISSUANCE PROCESS: AN OVERVIEW

The fundamentals of debt issuance are simple; issuance generally begins when a government body or corporation selects an investment bank intermediary to assist in the issuance process. Figure 4 illustrates a high-level view of the corporate debt issuance process. The intermediary advises on issuing price, issuing currency, and location for issuance, and acts as the underwriter or dealer (if underwriting is not provided) for the issued fixed income instruments. It also arranges the required regulatory paperwork for the issuer and locates appropriate investors for the debt instruments, either via private placement arrangements or through a bidding and negotiation process via the bank's network. The CSD, which is a market infrastructure entity set up to hold and administer the bookkeeping of securities belonging to other entities, acts as the deposit holder and (electronic) record keeper for issuance activities, though national market practices differ in operational arrangements. ICSDs are active in supporting the Eurobond (international) market in this manner.¹

Figure 4: The Fundamentals of the Corporate Debt Issuance Process



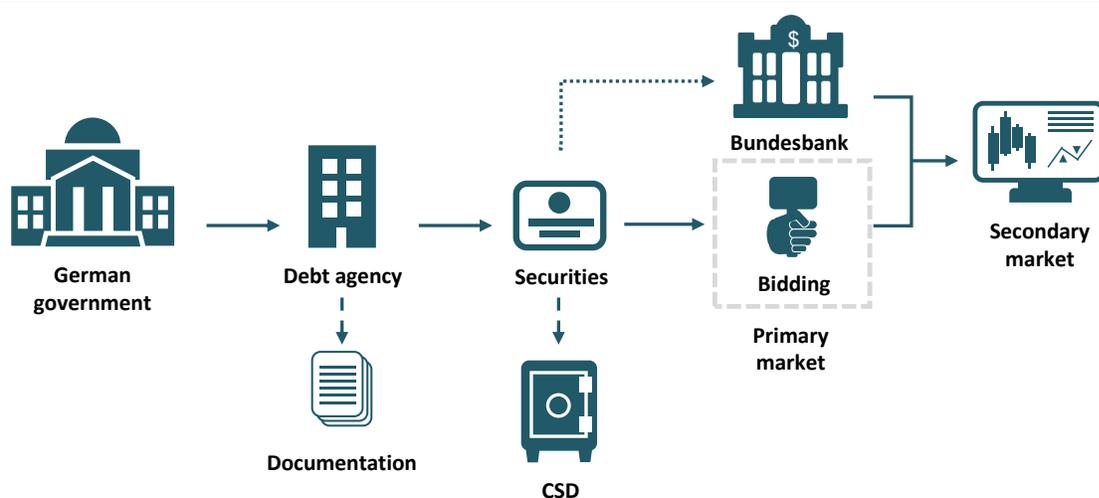
Source: Aite Group

The process for the issuance of government debt also varies from country to country, and Figure 5 shows the process for German government debt. The national government works with the German debt agency to craft the issuance documentation and publishes an official list of planned issuances in December for the upcoming calendar year. This list contains the basic details of the debt instruments, and the agency provides further information as the auction date

1. A CSD is a market infrastructure entity that issues (in the case of issuer CSDs), holds, and administers securities for other firms, financial institutions, etc. An ICSD does the same for the Eurobond market (referred to as the "international market").

approaches. There are 36 government-approved institutions that can participate in these auctions, and the German government retains a certain portion of the total issuance, which is later introduced into secondary markets.

Figure 5: The Process for Government Debt Issuance in Germany



Source: Bundesbank, Aite Group

Many of the differences between jurisdictions relate to tax and financial regulations, though there are varied national market practices. For example, though the U.K. government also publishes a list of planned debt issuances annually, it supports two different types of processes for primary market bidding on these instruments—a multiple-price auction or a uniform-price auction, which is exclusively used for index-linked gilts. In the United States, there are five types of securities issued by the government, and auction bids can be submitted as soon as they are publicly issued via a variety of different processes, depending on the type of investor.

Issuer CSDs provide a range of issuance and holding services to issuers and their agents, including providing post-trade settlement and custody services; acting as the registrar or as a national number agency for the instruments issued; providing support for income and corporate action events, general meetings, and proxy voting processes; providing various tax services; and performing other reporting-related services. Issuers submit data to their CSDs in a variety of manners, including via SWIFT, secure lines, internet-based portals, and email.

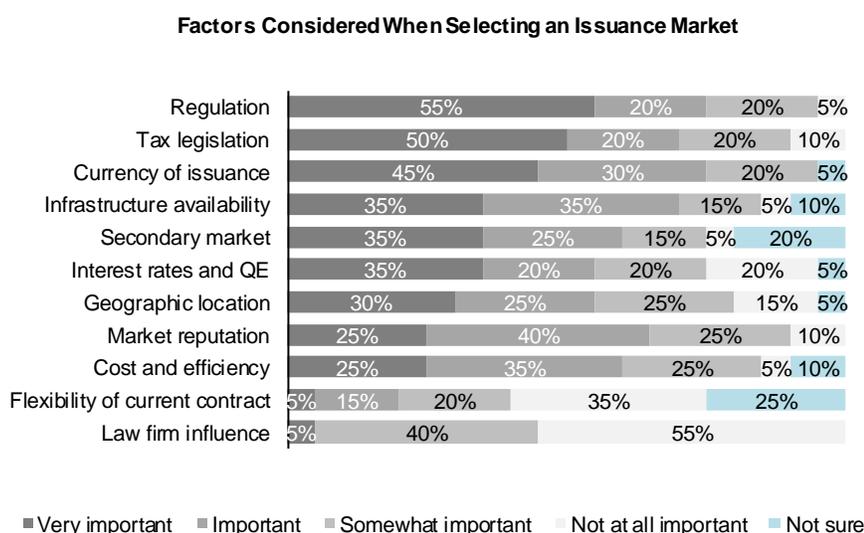
AN OVERVIEW OF MARKET SELECTION FACTORS

Market selection is an extremely important decision for the issuer, because the underlying market characteristics could have an impact on the processes involved throughout the lifetime of the debt instrument. Issuers access the market when they are raising capital through debt capital markets. In this white paper, the market is defined as the space limited by legal, regulatory, and geographical barriers where a set of investors is located. This includes individual national and regional markets that feature a common set of characteristics, including currency and market infrastructure.

Aite Group asked interview respondents to rate a series of factors that may influence the market selection process (Figure 6). Some key takeaways include the following:

- Financial regulation and tax legislation have a strong influence on market selection—over half of respondents indicate regulation is very important, and half cite tax legislation. A favorable regulatory and tax environment can, therefore, likely attract a greater number of issuers.
- Currency is also an important decision criterion—75% of respondents say this is a very important or important factor.
- The majority of respondents (70%) feel that infrastructure availability is a factor of importance because of their desire to select a market with high availability and efficient processes.
- Secondary market availability has an impact on asset pricing; hence, it is deemed important by over half of respondents.
- Interest rates can influence issuer selection because of their impact on the cost of funding, though recent global trends toward a low interest rate environment have reduced the current perceived impact of this factor.
- Geographic location is viewed by respondents as the indicator for many of these factors, and it is also tied to market reputation.
- Contractual details and the influence of law firms are stronger factors in markets in which issuers lack prior experience or expertise.

Figure 6: Issuer Criteria for Market Selection

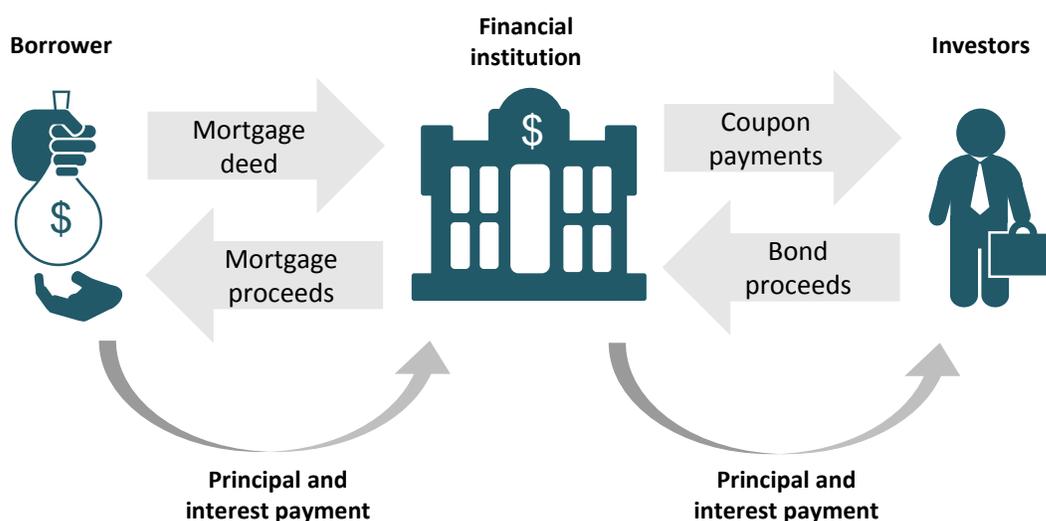


Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

A QUICK ISSUER BEHAVIOR EXAMPLE

An issuer respondent indicates that the firm focuses on daily bond issuance to fund loan activity and eliminate the potential for interest, currency, option, or liquidity risk. The firm also engages in daily bond buybacks to match redeemed mortgage loans and is, therefore, active as a bond market maker, seller, and buyer (Figure 7). It engages in a limited number (less than 5%) of non-domestic currency issuances per year to support its international lending accounts. The limited focus of the firm in terms of currency issuance means that it has a specific range of local CSDs and ICSDs to work with. It primarily works with its domestic CSD and a small range of others, which it selects primarily based on the cost of clearing and settlement services. The issuer uses secondary markets to price its bonds, which means covered bond transparency and liquidity on secondary markets is also a key factor when the firm selects a market to issue. For an issuer that engages in such large volume issuance, it is vital to engage in processes that are low-cost, both in terms of the process itself and the balance sheet.

Figure 7: Issuance From the Perspective of the Issuer



Source: Aite Group

Another important feature of the issuance process for ICSDs and some CSDs is the role of the lead manager. This is the term used for the bank that coordinates the activities of the underwriting syndicate (of which it is a member). The lead manager plays the primary role in the launch and sale of the issue of securities underwritten by the syndicate. The manager advises the issuer and take on the responsibility of gathering the information that is contained in the prospectus and other offer documents. The lead manager, also known as the book runner or originator, is the bank that wins the mandate; its responsibilities include the following:

- Advising the issuer on the best possible issue features—coupon, maturity, etc.—based on its view of changing investor preferences

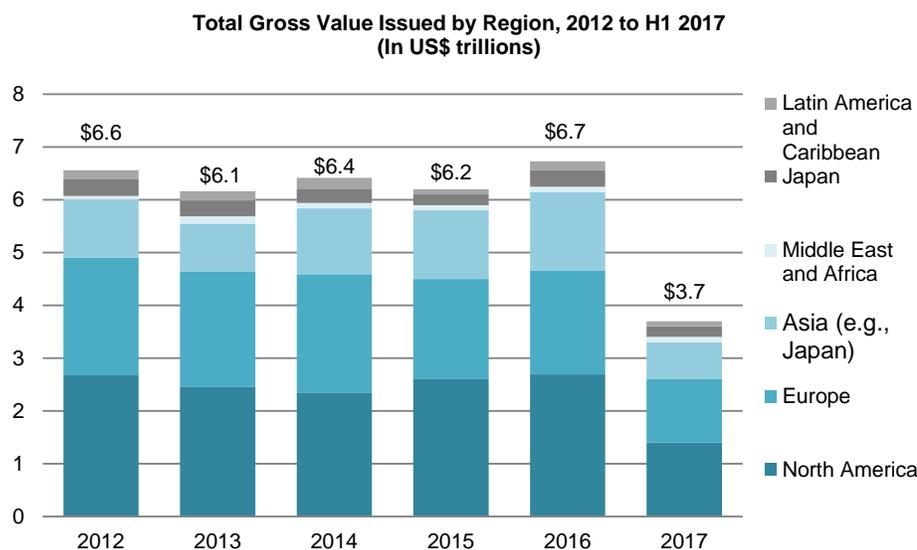
- Preparing the issue timetable and documentation, checking the accuracy of the information about the issuer, and, where applicable, registering the issue with the regulators and arranging for a listing on a stock exchange
- Arranging for the prospectus to be sent to the clearing systems for the ISIN to be set up, and arranging for the issuer to be paid upon settlement of the issue
- Inviting other banks into the syndicate—as co-managers or, in some cases, co-lead managers—who share in the underwriting of the issue and the distribution to their clients
- Sometimes organizing roadshows for investors in the financial centers, which raises market awareness of little-known issuers
- Managing a price stabilization account, if appropriate—which involves buying unwanted “loose” bonds for a sort period following the initial offering—or otherwise supporting the price of the bond for a period of syndication

THE CURRENT ISSUANCE LANDSCAPE

The largest regional markets in terms of the value of issuance over the last five years are North America and Europe (Figure 8). This is because of factors such as the maturity of the domestic and regional capital markets, the stability of the encompassed currencies, and the international reputation of these markets. This reputation has been built upon a long track record for debt issuance—the first official European government bond was issued by the Bank of England in 1693, and the first U.S. government bond was issued during the Revolutionary War (1775 to 1783). As time has passed, these markets have matured, and investor and issuer sophistication has increased, which has resulted in the issuance of a broader spectrum of instruments, the development of market practices and infrastructure, and the introduction of specific regulation.

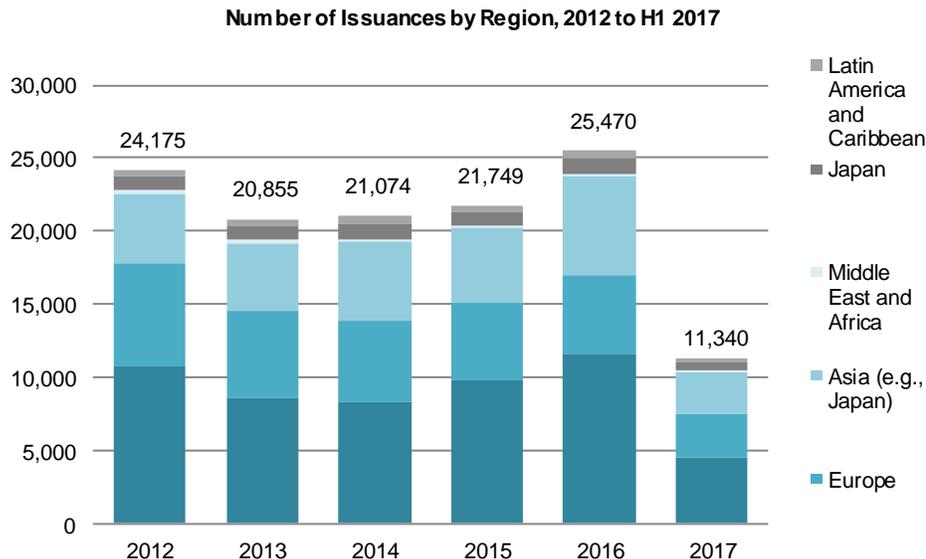
Though North America and Europe both offer access to a significant investor base and are considered by many issuers to be safe bets for funding access, other markets have gained market share over time. The Asia-Pacific region (excluding Japan) has increased its value of issuance by almost 50% since 2012. Within the region, the increase is largely from the increasing popularity of markets in North Asia (China, Taiwan, South Korea, Hong Kong, and Macau), which have almost doubled the value issued from 2012 to 2016.

Figure 8: Total Value Issued by Region, 2012 to 2017



Source: Dealogic, 2017 data until June 2017

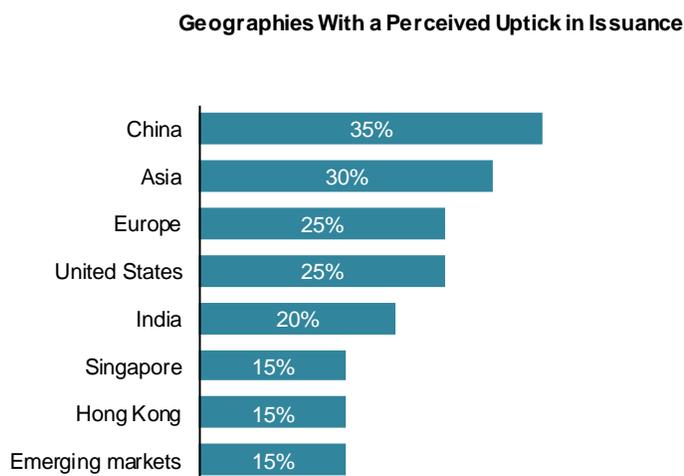
Much the same as the value of issuance (Figure 9), the largest regional market in terms of volume of issuance is North America, though instead of Europe, the Asia-Pacific region is the second-largest. This reflects the lower value deals in the Asia-Pacific markets compared to the European markets, as well as the comparatively high volume of lower-value deals in the region.

Figure 9: Number of Issuances by Region, 2012 to 2017

Source: Dealogic, 2017 data until June 2017

Low-volume issuers (i.e., those who occasionally issue debt to fund specific projects) traditionally have fewer complex requirements than do high-volume issuers and simply search for the easiest and most cost-effective markets in which to issue. These stand-alone issuers generally have a good relationship with certain originators and CSDs or ICSDs, and will select the U.S. or Europe as their issuance markets because of these relationships. Larger issuers (i.e., those who issue several times through the year) are more likely to consider geographic dimensions when selecting a market because of a desire to avoid concentration in one region. Regional (geographical) concentration is undesirable from this perspective because of currency and interest rate risk factors, and the limited pool of global investors overall. These issuers may be willing to incur higher transaction costs to diversify their funding sources. Issuers also may select a certain market because of the type of product they are issuing if they feel that market has a longer track record in supporting that instrument type.

Respondents highlight the same dynamics reflected by Dealogic data—China and Asia are more widely perceived to be markets in which issuance has upticked (Figure 10), though not all respondents have noted such an uptick. Increased access for Indian and Chinese investors to international capital markets through hubs such as Singapore and Hong Kong may have influenced this perception. A lack of maturity in domestic markets is pushing these investors to seek liquidity offshore. However, not all interview respondents are focused on these markets; hence, they may not note the Asia-Pacific region’s changing dynamics. Respondents cite the monetary policies and currency stability within certain European markets and the United States as drivers for an uptick in those markets.

Figure 10: Respondent Views on Geographical Issuance Trends

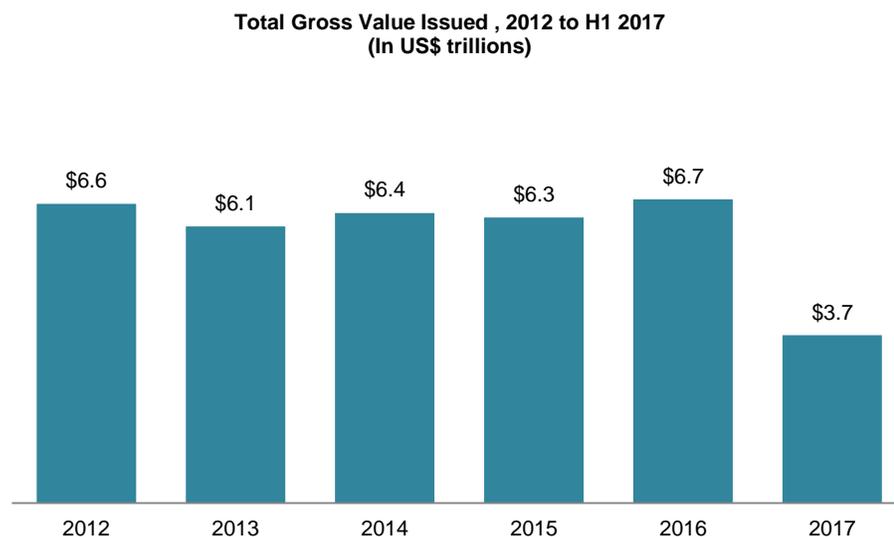
Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

COSTS AND INTEREST RATES

The fundamental purpose of issuing debt is to enable access to financing for various activities, including mergers and acquisitions, but issuers are cognizant that these activities will incur a series of costs either from the structuring, support, or interest paid during these financing deals. These costs need to be recouped over time to achieve the most efficient origination of funds. Several factors come into play when firms attempt to calculate the total cost of issuance, including currency factors and market processes.

A government bond issuer respondent indicates that though cost is very important, especially if engaging in a large issuance, the timeliness of the purchase and delivery processes can be even more important. Debt capital markets departments are, therefore, focused on ensuring the timing of the issuance is optimal for as low a cost of funding as possible. An Asian investment bank indicates that in markets such as China, costs are standardized from a services perspective; hence, variability of funding costs is lower.

In Europe, the U.S., and Japan, near-zero interest rates (or even negative or zero rates) have meant a more favorable environment for issuance because of the low cost of borrowing. Issuers aiming to issue and refinance debt in the most cost-effective way have entered a larger number of deals in the past few years to benefit from the low rates (while they last). An Asian-based financial institution respondent explains that his firm has seen a significant short-term uptick in issuance because of the low interest rates. The total value of global gross issuance increased 10.1% between 2015 and 2016, according to data from Dealogic (Figure 11).

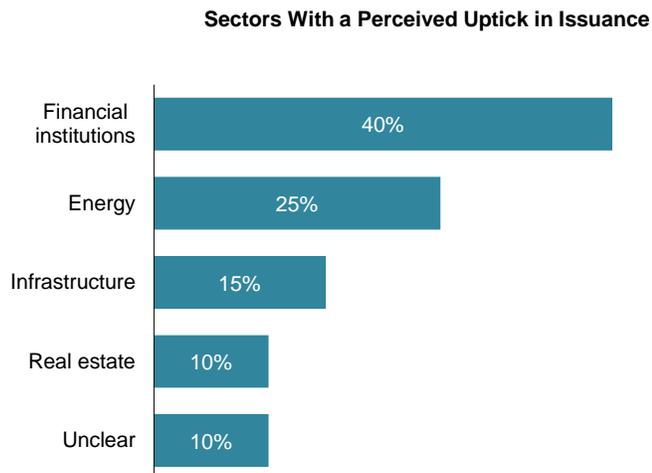
Figure 11: Total Global Annual Value of Issuance, 2012 to 2017

Source: Dealogic, 2017 data until June 2017

The low interest rate and low inflation environment has also altered the type of debt security that issuers choose to issue. This is partly driven by investor appetite for riskier debt securities that may provide a higher yield in the recent low returns market environment, such as non-investment grade bonds. It is also partly impacted by post-crisis government quantitative easing measures and capital framework changes that have increased market demand for highly rated debt instruments. The rate environment is, however, prone to change, and the recent political and economic policy changes in a number of key international financial centers have meant a return to more normative interest rates in an effort to hold inflation in check.

A European issuer respondent notes that the most significant recent factor that has promoted issuance over the last few years has been European Central Bank determinants such as quantitative easing and interest rates. The low interest rate environment has meant that the cost of financing via debt is much lower, which encourages the issuance of less expensive bonds to refinance older, more expensive, and outstanding bonds. Quantitative easing in Europe similarly started a third wave of covered bond purchases in October 2014. The issuer does not believe these measures had a direct impact on the number of bonds it issued, as the decision to issue is based on the availability of a pool of loans to back the bond. Interest rate changes might change the pattern of issuance, however, even if it does not affect demand.

Figure 12 shows the sectors that interview respondents believe have increased the most in issuance volume over the last three years—interviewees picked the one sector they feel has increased the most during this time. The most frequently cited sector is issuance by financial institutions, followed by energy, infrastructure, and real estate. Issuance has increased within the energy sector to fund significant projects related to renewable energy, which was particularly pronounced in the Asian region.

Figure 12: Sectors With Issuance Upticks Over the Last Three Years

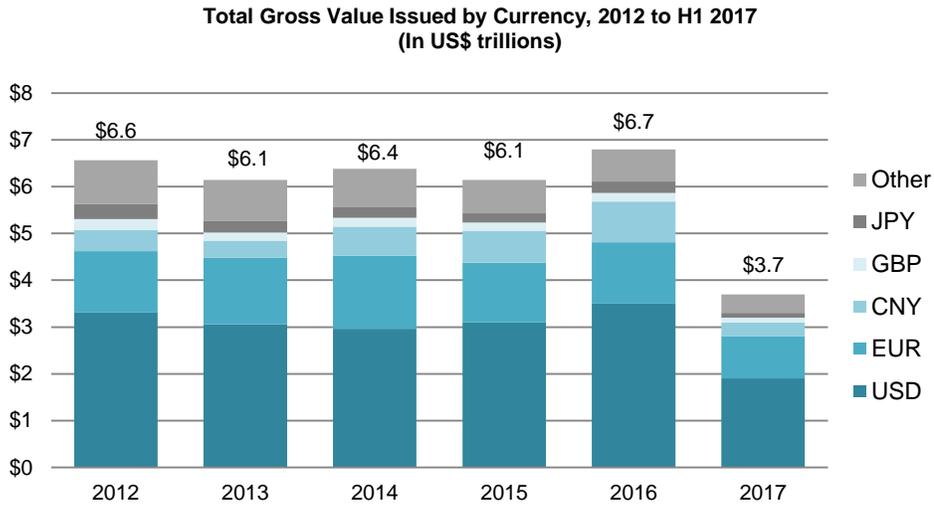
Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

CURRENCY TRENDS

Similar to geographic factors, the purpose of selecting a currency is to gain exposure to that currency and benefit from a low-cost or diversified debt base. In one-off issues, the selection of the issuance currency is based on the desire to find the most cost-effective and most stable currency available. For larger issuers, currency selection for issuance is generally strategically planned every year in terms of the timing, amounts, and hedging processes used (using swaps available). These issuers, of course, may have to adapt their plans during the year due to market activity and geopolitical events.

Figure 13 shows the total global gross issuance value per year by currency. In accordance with regional trends, U.S. dollars represented 51% of the total value issued, and euros represented just under 20% of the value in 2016. Though Chinese renminbi was only 13% of the total value in 2016, it has nearly doubled in value since 2012. Over the five-year period, total issuance value in U.S. dollars has increased by 4.3%, value for euros has decreased by 0.1%, and value for Chinese renminbi has increased by 90.8%, albeit these figures start at a low basis point, with relatively smaller numbers compared to the more mature markets and currencies. The significant growth in renminbi can be attributed to the gradual liberalization of the currency and the opening of the Chinese capital market over the last few years. It should also be noted that foreign exchange rate fluctuations account for some of the differences in variations between currencies.

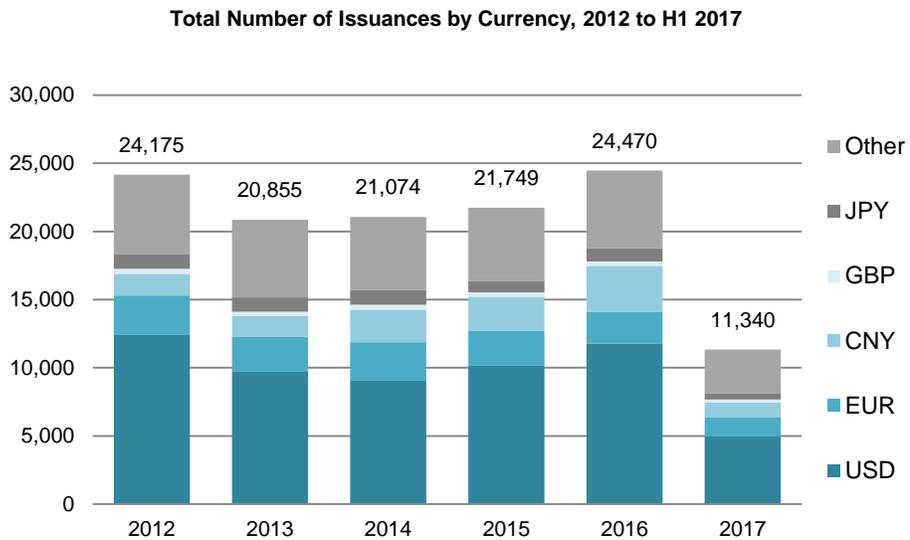
Figure 13: Total Global Value Issued per Year by Currency, 2012 to 2017



Source: Dealogic, 2017 data until June 2017

Figure 14 shows the annual total number of issuances by currency, which indicates that the U.S. dollar also represents the largest currency in terms of percentage of the total at 48% in 2016, though it has decreased in number between 2012 and 2016 by 2.3%. The euro has also decreased by 9.1% over the five-year period, but the number of issuances in renminbi has increased by 130%, which could be a reflection of the high volume of low-value issuances.

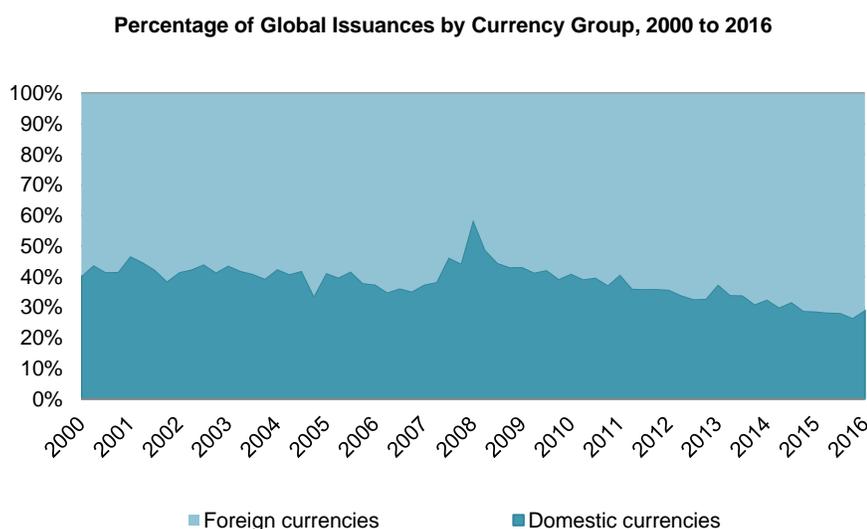
Figure 14: Number of Global Annual Issuances by Currency, 2012 to 2017



Source: Dealogic, 2017 data until June 2017

Figure 15 shows the percentage of global issuances in foreign currencies versus domestic currencies since the year 2000. Up until 2008, the percentage of issuance in foreign currencies remained around 60%, but there was a dip in foreign issuance volume in 2008 due to a lack of confidence in international capital markets during the financial crisis. Foreign currency issuance has since rebounded and has actually surpassed its previous share of the global market to 70% in December 2016. National government debt issuance can skew the balance between domestic and foreign currency issuance because these entities tend to issue in their own domestic currency.

Figure 15: Percentage of Global Issuance in Foreign and Domestic Currencies, 2000 to 2016



Source: Bank for International Settlements, Aite Group

Chinese issuers have a relatively high percentage of foreign-currency issuances because of the slow process of liberalization for the renminbi and the increasing importance of offshore hubs, especially for large corporations seeking funding opportunities. An Asian bank respondent notes that the larger, more sophisticated firms are also keen to issue in foreign currencies to market their international reach. These firms most often choose to issue in Hong Kong dollars, though some choose to issue in euros if they are dealing with offshore hubs, which have increased in number over the last few years.²

A Tier-1 global bank respondent indicates that multicurrency issuances, in which multiple currencies are chosen for one issuance, are extremely rare in most geographies. Occasions in which dual-currency issuance is selected tend to be for international mergers or acquisitions. Several respondents cite the many challenges involved in coordinating a dual-currency issuance as barriers to the increase in such issuances taking place, including the complexity of deal

2. See Aite Group's report [Internationalization of the Renminbi: Weaving a Web for the Redback](#), September 2014.

coordination or the possible existence of arbitrage opportunities arising from the different currencies.

EXISTING INFRASTRUCTURE, LEGAL CONSIDERATIONS

Market infrastructure availability is a key factor for issuers in deciding their issuance market, and Europe presents a wide choice of issuance infrastructure providers via a number of CSDs, plus the ICSDs operating in this region. Often, issuers have legacy relationships with their local CSD and will opt to use them for domestic issuances as a default. ICSDs, on the other hand, are often selected for large, cross-border issuances in which complexity of structure, market connectivity, and (international) reach are important considerations for the issuer.

There are numerous CSDs and two ICSDs operating across the globe. In Europe, there is a higher number of CSDs than the number of national markets within the region. Regulators, together with some market participants and market observers, believe this landscape is overly complex and fragmented. There is some demand to further simplify the issuance market in Europe, and the new T2S market infrastructure for harmonized settlement in Europe can deliver this more standardized issuance approach over time, but this will need time to fully take effect. The ICSD model perhaps can be considered as an example of harmonized and simplified issuance in the case of Eurobonds.

Market reputation plays a role in the selection of non-domestic markets. Respondents indicate that the provision of a wide range of services, a robust connectivity platform with wide market reach, and efficient and automated processes are all important in this regard. CSD or ICSD track record, including any operational risk incidents, such as cyberbreaches or service downtime, is equally important. Most large issuers, in particular, consider that there is a minimum level of operational and legal risk they can accept when selecting either a CSD or an ICSD.

Law firms act as external regulatory advisors in the structuring of deals and the responsible entities in charge of drafting required documentation, such as prospectuses. The influence of law firms in market selection processes can vary across jurisdictions and tends to be stronger in markets that are less familiar to the issuer. Law firm advice is especially important in determining reputational and regulatory factors in these markets.

INVESTOR DYNAMICS

Issuers are generally keen to select markets with a large investor base for primary and secondary trading opportunities. This access facilitates price formation, and the recent low interest rate environment and market conditions have both hindered and assisted issuers in selecting markets—costs of funding may be lower, but trading of fixed income instruments has been muted. Figure 16 shows annual bond trading volume in Europe over the last decade, which indicates that the sovereign debt crisis at the end of 2009 resulted in a volume decrease of 18% in 2010 from the previous year. Trading rebounded in 2011 and increased by 34% in the following year to a peak of US\$15.4 trillion but declined over the next five years by 44% to US\$8.7 trillion in 2016.

Figure 16: Bond Trading Volume in Europe per Year, 2007 to 2016



Source: Federation of European Securities Exchanges

The U.S. bond market is much more stable than the European market overall (Figure 17)—except for a 26% drop in volume in 2009, which can be attributed to the global financial crisis, trading volume has been relatively stable. The U.S. market is, however, a much larger market in terms of trading volume than the European market. In 2016, U.S. total bond trading volume was 26 times larger than in Europe. From 2010 until 2015, trading volume gradually decreased by 14% over the five-year period from US\$225.2 trillion in 2010 to US\$183.6 trillion. The market experienced an uptick in 2016 of 6% from the previous year.

Figure 17: Bond Trading Volume in the United States by Year, 2007 to 2016



Source: Securities Industry and Financial Markets Association

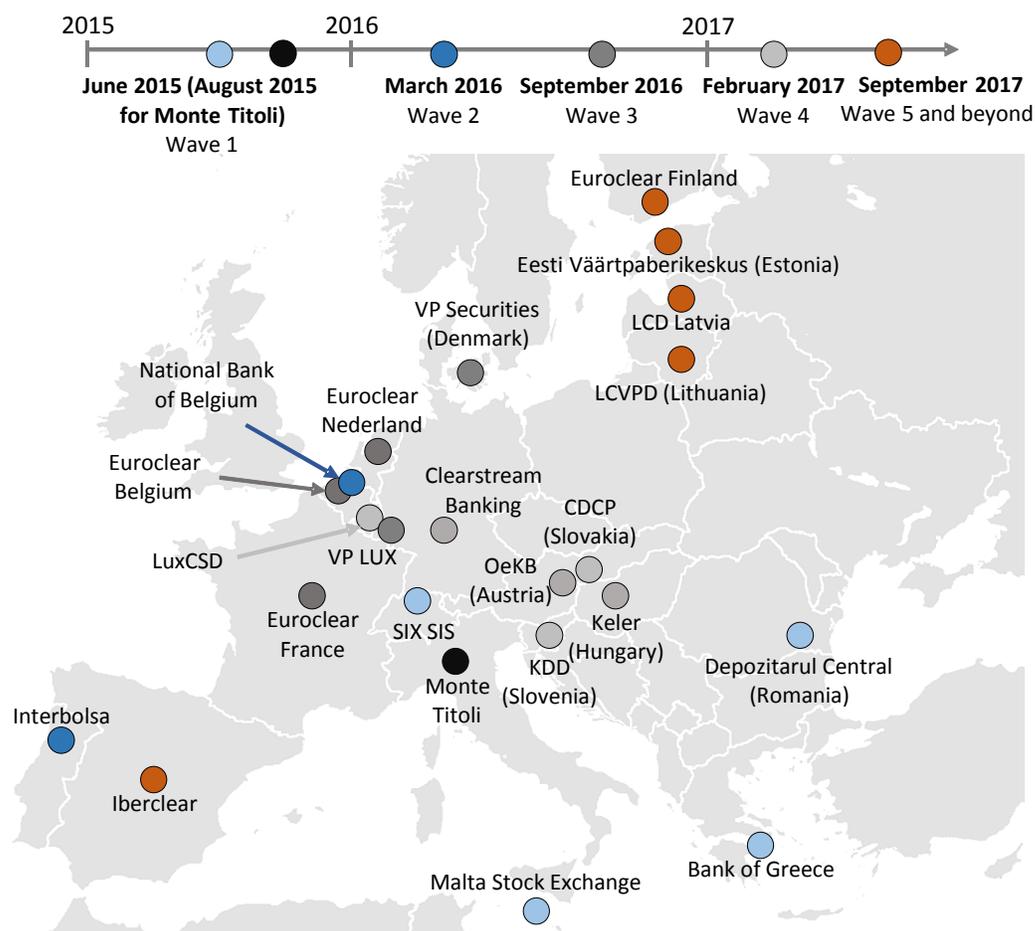
DRIVERS FOR CHANGE

The market volatility of the last nine years seems set to continue in the short term because of changing political and economic dynamics across the globe. Ongoing post-crisis regulatory changes and market infrastructure developments, including those related to the introduction of new technologies and processes, are also likely to persist and shape the evolution of the fixed income issuance landscape.

EUROPEAN MARKET STRUCTURE DEVELOPMENTS

A number of market structure changes that have impacted the debt issuance process have taken place (or are still in progress) over the last decade. One such development is the phased launch of the T2S settlement platform, which aims to provide a common pan-European platform for settlement and to bring down the historically high costs of cross-border settlement in the region. It is also designed to reduce settlement risk by reducing counterparty and settlement agent risk, and by providing a robust business continuity solution.

T2S's intent is to settle almost all heavily traded securities circulating in Europe against the euro and other European currencies from participating countries using standardized communication protocols and harmonized market practices on the T2S platform. The ECB has staggered the 23 CSDs that will migrate to the platform into five waves, which began with the first wave on June 22, 2015, and ended with the final major wave in September 2017 (Figure 18), though Euroclear Finland will be migrating at a slightly later date than the rest of the group.

Figure 18: Timeline for T2S Implementation

Source: ECB, Aite Group

As well as settlement services, T2S offers an auto-collateralization service—an automatic intraday credit operation triggered when a buyer lacks sufficient funds to settle a securities transaction. The system automatically enables settlement in central bank money by using, as collateral, either the very securities that are being purchased or other securities held in stock by the buyer. This function should be viewed alongside the CSDR mandatory requirement for buy-ins in the event of settlement failure as a means of reducing the overall number of failures across Europe.

The T2S auto-collateralization function enables issuers and investors to reduce their needs for cash or credit lines:

- Firstly, the T2S auto function can be used to reduce the cash needs on redemption days—namely when new issuance takes place on the same day as distributions, which is usually the case—and an issuer can use the credit line to pay the redemption, which will be covered by the distribution of the new issues. This could be particularly interesting for the larger financial issuers, who can then net their cash flows on redemption or interest payment days.

- Secondly, if a CSD chooses to offer links to issuers in T2S that are Eurosystem-assessed as links (by the ECB), securities issued via those links would be eligible for auto-collateralization, regardless of the central bank used.

In T2S, the auto-collateralization functionality applies to two types of credit:

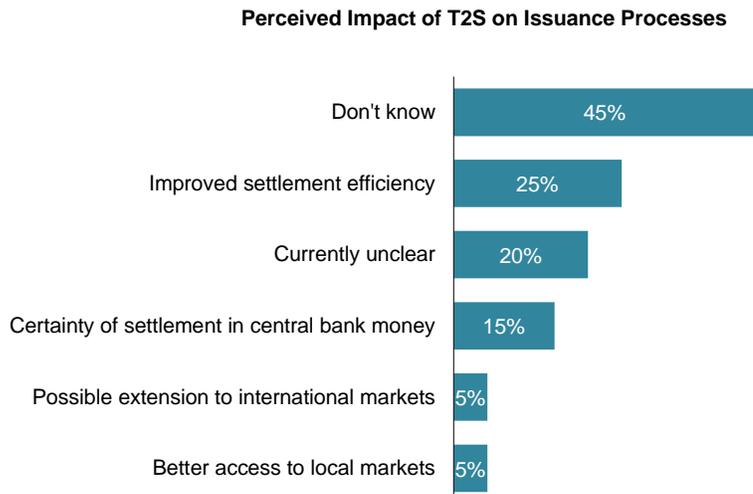
- Credit from a central bank to a payment bank, also called central bank auto-collateralization, in which the central bank is the credit provider and the payment bank is the credit consumer
- Credit from a payment bank to one of its clients (CSD participants), also called client auto-collateralization, in which case the payment bank is the credit provider and its client is the credit consumer

The industry and the European Central Bank (ECB) expect that the long-term impact of the introduction of T2S and the benefits of auto-collateralization will be an increase in cross-border issuance and investment, which will further drive post-trade activity across the region. To further this agenda, a European Commission working group was established in March 2016 to identify any continued barriers to achieving a frictionless cross-border post-trade process and come up with actionable steps to address them as part of the establishment of the European Capital Markets Union—the plan to establish an integrated capital market in the European Union by 2019.

Nearly half of respondents are unsure about the long-term impact of T2S on debt issuance processes, and nearly a quarter feel the impact is currently unclear (Figure 19), likely because the full rollout has not yet been completed and the wider benefits beyond settlement may take some time to come into effect. However, a small number of issuers have indicated anecdotally that they have identified the T2S environment as offering more attractive opportunities to issue cross-border than before, i.e., outside of their home CSD. They point to opportunities the new T2S issuance environment provides for greater levels of flexibility in primary market issuance, in particular an increase in the choice of issuance location, which until now has been mostly determined by national boundaries. The T2S environment means that it can be more cost-effective than before to issue anywhere in Europe as issuers can distribute to investors in other T2S-In countries, regardless of local presence in a given national market country. This, coupled with CSDR, can help to bring about more efficient and more standardized issuance across Europe.

Aite Group research indicates that the introduction of the pan-European settlement system has already altered the settlement failures landscape in the region via the adoption of ISO 20022 messaging standards and CSD-level connectivity and process changes.³ Moreover, markets that were operating on a net position basis for settlement, such as Italy and France, had to adapt to instruction-by-instruction-based settlement procedures. A quarter of respondents, therefore, expect T2S to deliver improved settlement efficiency across Europe. Cross-border issuance is expected to increase due to developments such as T2S, which will mean lower cross-border settlement costs and access to a wider range of infrastructures and services in domestic markets.

3. See Aite Group's report [Settlement Market Practices: A Legacy of Failures](#), May 2017.

Figure 19: Respondent Views on T2S' Overall Impact on Issuance Processes

Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

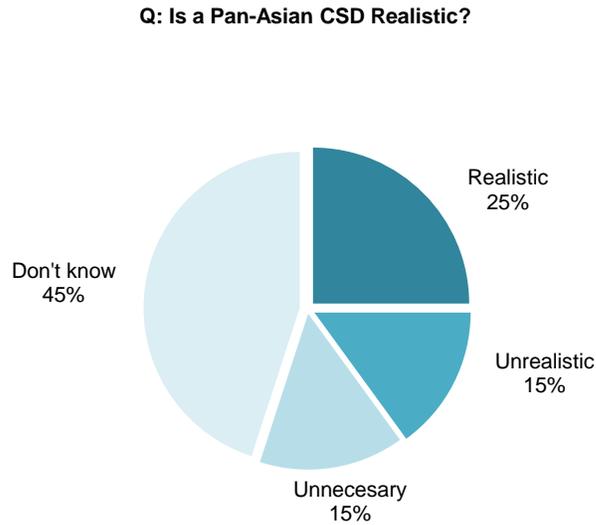
A PAN-ASIAN CSD?

There has also been industry debate about the potential establishment of a pan-Asian CSD in a similar vein to T2S, though these remain discussions rather than concrete plans at this point in time. Asian respondents indicate that the benefit of such a CSD would be the ability to coordinate issuance at the regional level and to facilitate greater cross-border activity. A current pain point for Asian issuers is the time zone difference with markets such as the U.S. and Europe, which means that settlement can be delayed until later in the day—often as late as 7 p.m. in the Asian country's time zone.

The Asian Development Bank has been a vocal proponent for the establishment of a pan-Asian CSD over recent years and, in 2013, the governments of the Association of Southeast Asian Nations and the People's Republic of China, Japan, and Korea established the Cross-Border Settlement Infrastructure Forum to discuss the practicalities of such a move. The group agreed in 2014 that a first step toward this goal would be to begin to connect local CSDs in the region, though there has been little in the way of progress in the succeeding years.

Interviewees are divided in their views on the feasibility of establishing a pan-Asian CSD (Figure 20), and 45% feel they do not know enough about the project to be able to make a sensible judgment. A quarter of respondents believe it is a realistic goal, but it will be extremely difficult to achieve because of the level of coordination required across different markets. The Asian Development Bank estimated in 2015 that integration would be completed by 2020. Nearly a third of respondents believe that such a CSD would be either unrealistic (15%) or unnecessary (15%) because of the complexity in connecting different markets that each have their own regulations, tax legislation, and operational processes.

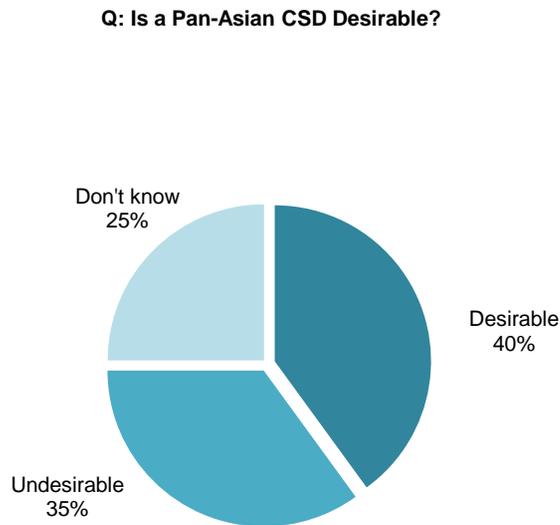
Figure 20: Is a Pan-Asian CSD Realistic?



Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

Given the complexity of the task, is the creation of a pan-Asian CSD worth the effort? Figure 21 shows that only 40% believe such a CSD is desirable, 25% do not know enough to make a judgment, and the rest believe the effort is not worth the end result because current infrastructure is sufficient. A respondent in favor of the plan indicates that the main benefit would be the further development of certain Asian markets rather than improved regional settlement efficiency overall.

Figure 21: Is a Pan-Asian CSD Desirable?



Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

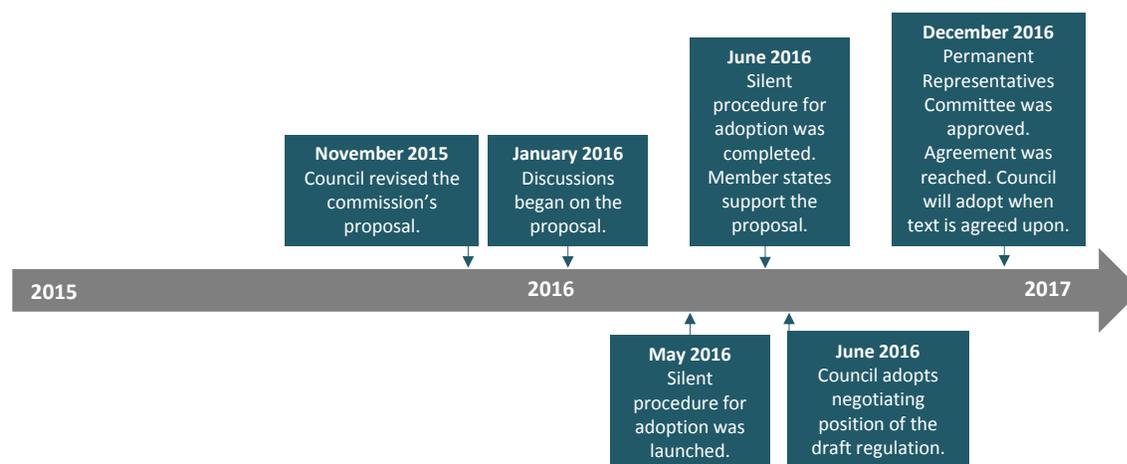
REGULATIONS AND INVESTOR TRANSPARENCY

One of the most impactful current regulatory trends on the issuance process is the post-2008 focus on improving transparency. Regulators across the globe have been compelled to mandate new standards for investor transparency to ensure the end investor is fully informed and educated about its investment opportunities. European regulators have driven this agenda, and it has been tied into the goal of establishing the foundations of a European Capital Markets Union (CMU) by 2019. Issuance documentation is to be simplified and shortened to make it easier for firms to enter and raise capital on public markets as part of the update to the 2012 European Prospectus Directive, which is currently being discussed at the European Parliament.

The push to increase transparency is not solely being led by regulators. The International Securities Market Advisory Group (ISMAG) has been focused on establishing market practices and standards since it was established in 2007. Moreover, in November 2016, an industry group formed of 38 European investment banks, asset managers, exchanges, infrastructure providers, corporations, and custodians proposed a new standard for the fixed income issuance process in Europe. The Fixed Income, Currencies and Commodities Markets Standards Board (FMSB), which was established in 2015, has proposed several measures to improve the efficiency, standardization, and transparency of the process from the granting of a mandate to the reporting processes at the end of the instrument life cycle. The FMSB standards, in turn, build on the standards developed by the International Capital Market Association (ICMA) for the fixed income bonds in the wholesale markets.

The requirements of CSDR, meanwhile, will alter the cost of settlement services and place greater emphasis on settlement efficiency. The CSDR regulation is the main regulation aimed at CSDs in line with the EU approach to make the financial markets more efficient, secure, standardized, and transparent while bringing CSDs onto a level playing field. Under the implementing requirements of the regulation, which were finalized in March 2017, CSDs will need to apply to their local regulators for a license to operate in Europe, complying with new increased operational efficiency and transparency requirements. A European issuer respondent believes that this will increase competition in terms of both pricing and services offered, which will benefit issuers.

The European-level update to the 2012 Prospectus Directive has been in the works since 2015, and the European Commission is currently drafting the technical requirements (Figure 22). The intent of the directive is to make it easier and less costly for smaller companies to access capital by simplifying the prospectus drafting process for regular issuers and by introducing a retail investor-friendly summary of key information. The new EU prospectus rules do not apply to issues of securities with a value below €1 million (increased from previous limit of €100,000). Moreover, European member states would be able to exempt issuers they consider to be small from the obligation to publish a prospectus by setting a higher threshold of up to 8 million euros for their domestic markets (from the current level of 5 million euros).

Figure 22: Prospectus Directive Timeline

Source: Aite Group

The Market Abuse Regulation (MAR), which came into force in July 2016, is aimed at facilitating regulatory tracking of potential market abuse incidents and has resulted in an increase in overall market transparency. It builds on the previous Market Abuse Directive and extends its scope to new markets, platforms, and behaviors. Issuers must prove that they maintain adequate systems and controls to prevent market abuse or disclosures of inside information. Given the inclusion of requirements for firms based in “third country” jurisdictions, a North American investment bank respondent indicates that U.S. issuers have displayed concern about issuing in the European region because it encompasses issuers that have applied to have their securities admitted to trading only on a European trading venue.

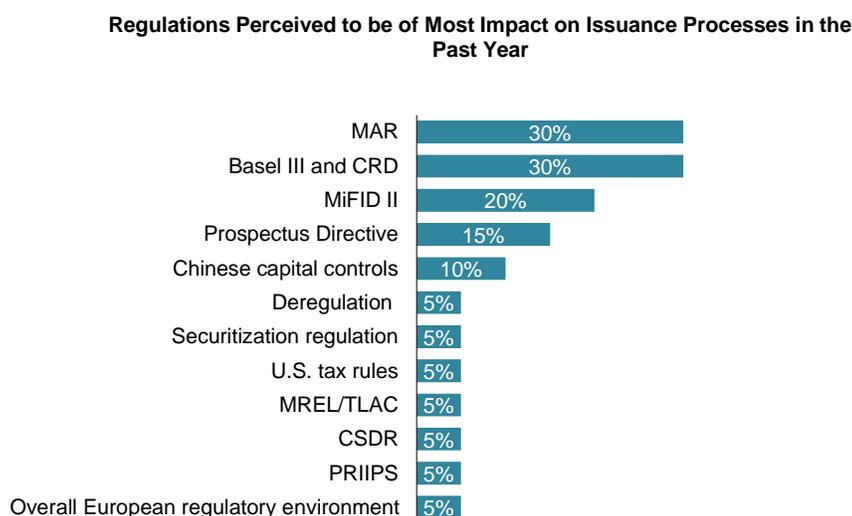
MAR and the introduction of the Basel III framework, which has been translated into the Capital Requirements Directive IV (CRD IV) in Europe, are the most frequently cited regulations that will have an impact on issuance processes by respondents (Figure 23). Basel III is also top of the list because it alters the risk weighting of assets and capital ratios for global securities issuance. Related requirements, such as those stemming from regulators’ systemic risk concerns—the revision of banks’ liability structures to provide sufficient total loss absorbing capacity (TLAC) or the (European) minimum own funds and eligible liabilities (MREL) to absorb losses and facilitate the recapitalization of banks in resolution—are also of concern to respondents because of their capital and liquidity impacts.

The Markets in Financial Instruments Directive II (MiFID II) and its regulatory counterpart (MiFIR) are expected to impact cross-border dynamics in Europe by increasing competition across the region’s markets but will also have a profound impact on fixed income market structure due to pre- and post-trade transparency requirements. The directive requires market operators and investment firms to make public the price, volume, and time of the fixed income transactions executed that are determined to be liquid (as per the directive’s specific parameters) within 15 minutes of execution. Asset managers anticipate that this may significantly decrease market liquidity by exposing pricing for the tens of thousands of fixed income instruments in scope, which may lead to a decrease in bond issuance over time.

For European respondents, the Packaged Retail and Insurance-based Investment Products (PRIIPs) regulation is aimed at increasing transparency for retail investment products and is due to come into force in January 2018. Like some aspects of the Prospectus Directive, PRIIPs will compel issuers to produce simplified documentation for investors.

Asian respondents are concerned about global regulatory developments, but, nearer to home, the recent change in Chinese government capital controls has proven troubling for these firms. Over the last year, the government has imposed limits on Chinese individuals putting money into hard currencies abroad, and it is difficult to send onshore funding offshore. These controls have compelled firms to convert their accounts into dollars, and the domestic financial institutions holding these accounts are turning those dollars into bonds. This chain of events has resulted in a high degree of domestic currency risk, and this means the Chinese bond market is in a potentially fragile state. This is happening at the same time as some progress is made in enabling international access to certain parts of the Chinese market—centers in Shanghai and Shenzhen, for example—that include increased trading connectivity.

Figure 23: Most Impacting Regulations in the Past 12 Months

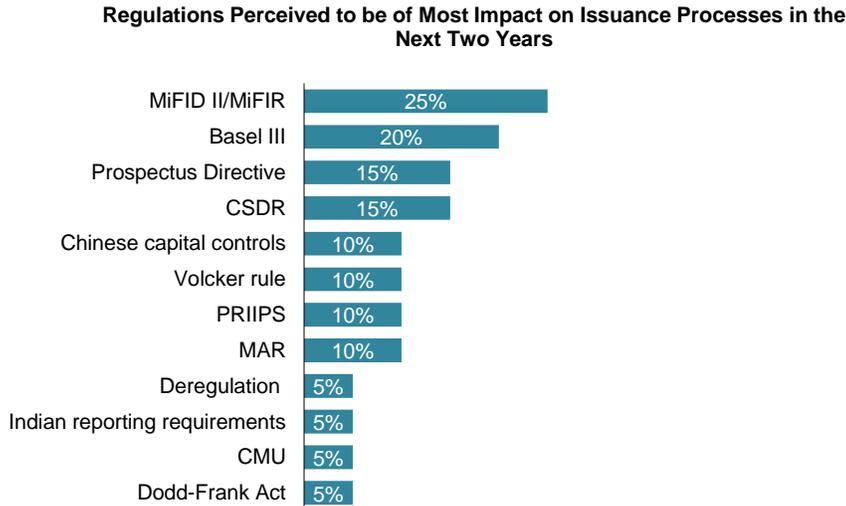


Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

Figure 24 shows the regulations perceived by respondents to be of greatest impact in the next 24 months. MiFID II is top of the list, overtaking both MAR and Basel III as the most frequently cited regulation, likely because it comes into force in January 2018, but its effects will be felt for years to come. Basel III's impact will be significant and long-term rather than being a short-term compliance project for respondent firms. The Prospectus Directive is anticipated to have a long-term positive impact, if the prospectus drafting process is simplified and standardized. The U.S. Volcker rule, which prohibits proprietary trading by investment banks, has already impacted bond market volumes and, if it is not repealed by the U.S. government, is expected to continue to do so.

An issuer respondent indicates that the Basel III reclassification of bonds for capital weightings could positively impact the firm's balance sheet and reduce the impact of liquidity coverage ratios in the long term. The firm anticipates that this may drive issuance rather than restrict it, and its bonds may be more attractive to investors because of the reduced capital weighting.

Figure 24: Most Impacting Regulations in the Next 24 Months



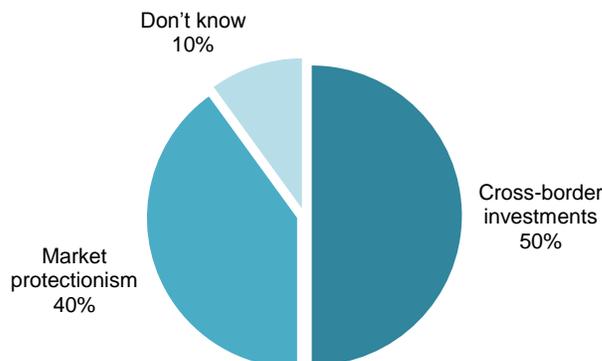
Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

THE CERTAIN UNCERTAINTY OF GEOPOLITICS

Geopolitical uncertainty has been a theme over the past few years, and given the high number of European government elections in 2017, this is set to be a concern for issuers active in the region and their service providers over the next 12 months and onward. Half of respondents (Figure 25) feel that the current geopolitical environment will encourage cross-border investment in the long term rather than deter it. However, events such as the outcome of the 2016 U.S. presidential election and the British exit from the European Union (Brexit) have increased industry concern about market protectionism. Regional developments such as the CMU indicate that protectionism in Europe may die down as issuers and investors focus on cross-border funding or investment opportunities in the long term.

Figure 25: Perception on the Future International Capital Markets Openness

Q. Is improved cross-border investment or a future increase of market protectionism more likely?



Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

The U.K. government triggered Article 50 of the Treaty of Lisbon, which is a formal notification of the intention to withdraw from the EU, on March 29, 2017. Article 50, therefore, kick-started the negotiation process for agreeing to a divorce from the EU. The process was initially expected to take between 16 and 24 months in total and involve key decisions around the determination of financial obligations between the U.K. and the EU, and, hopefully, an agreement on transitional arrangements. Per the timeline, the U.K. should officially leave the EU no later than April 2019, but the recent British election has increased uncertainty about this timeline. If no agreement is concluded within two years, the U.K.'s EU membership will end automatically, unless an extension is granted.

Respondents believe Brexit's long-term impact will depend on the negotiated deal between the two parties, which could reshape the way issuance takes place in the U.K. and how cross-border deals are structured. To put the impact into context, British pound sterling only currently accounts for around 3% of the value of global debt instrument issuance; hence, the overall global impact is unlikely to be as significant as a change in the Eurozone.

In terms of agreeing to enhance mutual recognition of regulation between the U.K. and the EU, one option could be to make the European-level regulatory authorities intergovernmental agencies. The European Supervisory Authorities (the European Banking Authority, the European Insurance and Occupational Pensions Authority, and the European Securities and Markets Authority) are currently heavily funded and supported by the U.K.; therefore, extending the membership of these bodies to non-EU authorities might be a suitable compromise.

Though there is some industry speculation that the enactment of Article 50 will result in the immediate unwinding of financial regulation, the U.K. regulators—the Financial Conduct Authority and the Bank of England's Prudential Regulation Authority—have committed to implement every piece of regulation that is currently in flight. Respondents do not believe that

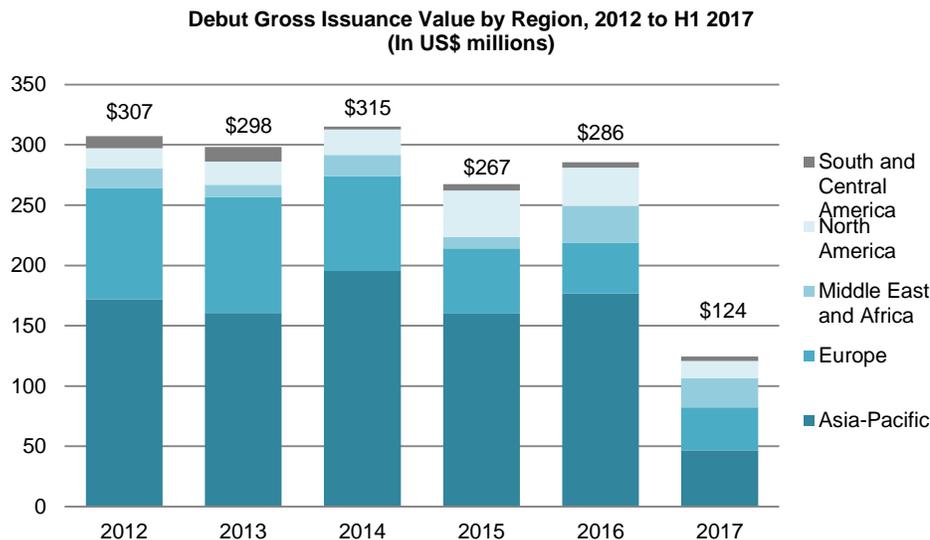
wide-scale deregulation will be introduced, even in the U.S. market, because of the lack of a financial market precedent for this move globally.

THE RISE OF THE RENMINBI (AND ASIA)

U.S. dollars and euros may remain the main global issuance currencies for some time to come, but the Chinese renminbi is gradually increasing its prominence in the debt securities realm. European and American issuer interest in access to the Chinese market and its investor base of approximately 1.4 billion inhabitants will help to drive an increase in renminbi-denominated issuance over the next few years. This is complemented by several market initiatives—both international and internal reforms in China—designed to help open the Chinese markets to international investors. One such international development is the inclusion of the Chinese renminbi in the International Monetary Fund’s Special Drawing Rights currency basket on October 1, 2016, onward (with a weighting of 10.92%—the third highest after USD and EUR). China’s internal reforms include the liberalization of China’s fixed income market, in particular, with simplifications recently brought in by Chinese regulators for international access to the Chinese interbank bond market.

Additionally, the country’s numerous infrastructure and energy projects will require funding via securitization; hence, domestic issuance by Chinese corporations is likely to continue to increase. This will be supported by China’s ambitious One Belt, One Road initiative, which calls for massive investment in and development of trade routes in the Asian region and has already resulted in the establishment of funds and entities, such as the Silk Road Fund and the New Development Bank. The Asian Development Bank estimates that regional infrastructure projects will require US\$8 trillion of investment between 2010 and 2020, and bonds are expected to be a source of long-term local currency financing.

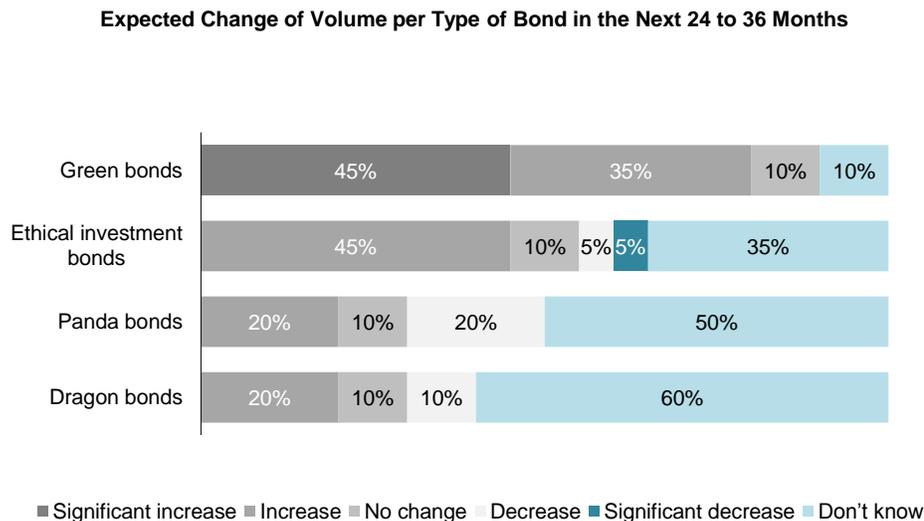
Figure 26 shows the annual value of debut issuances, when issuers access debt capital markets for the first time, by region. Unsurprisingly, given the region’s increasing prominence in the global markets, Asia-Pacific has accounted for more than half of global debut issuances over the last five years. The North Asian countries are the most prominent contributors to debut issuance in the region. Comparatively, European issuance has declined over the last five years from 30% of the total in 2012 to 15% in 2016, and North America represented a mere 10% in 2016. The lower percentage of debut issuances in both regions reflects their comparative maturity—issuers tend to have been active for a longer period. Chinese market volatility at the start of 2016 also suppressed overall issuance in the Asian region in the first half of the year.

Figure 26: Value of Debut Issuances by Region, 2012 to 2017

Source: Dealogic, 2017 data until June 2017

Another development related to the increased importance of the Asian region in debt capital markets has been the launch of certain interestingly named bonds: dragon bonds, which are issued by Asian (excluding Japanese) issuers in non-Asian currencies (often U.S. dollars), and panda bonds, which are issued by non-Chinese issuers in renminbi. Panda bonds provide onshore and offshore investor access to the slowly liberalizing Chinese interbank bond market, which accounted for 91% of the bonds in China in 2016. These bonds are not without their challenges, however, including the fact that the bonds' rating system and regulatory framework is still developing.

Figure 27 shows that half of the respondents are not familiar with panda bonds or dragon bonds. This reflects the nascent nature of these financial instruments and a lack of awareness of their benefits for firms outside of the Asian region. Even Asian respondents demonstrate a muted optimism about these bonds' popularity over the next three years, with no respondents convinced that they will witness a significant increase in issuance in this period. This is likely because of the tight controls imposed by the Chinese government, in particular for panda bonds.

Figure 27: Expected Change of Issuance Volume for Certain Bond Types Over Next Three Years

Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

GOING GREEN

Alongside these Asian-flavored bonds, several types of bonds related to socially responsible investments and clean energy are on the radar for respondent firms. Respondents have less awareness of ethical investment bonds than green bonds, which have been more widely publicized over a longer period due to their connection to the 2015 Paris Agreement on climate change. Green bonds are issued to fund sustainable infrastructure or clean energy projects.

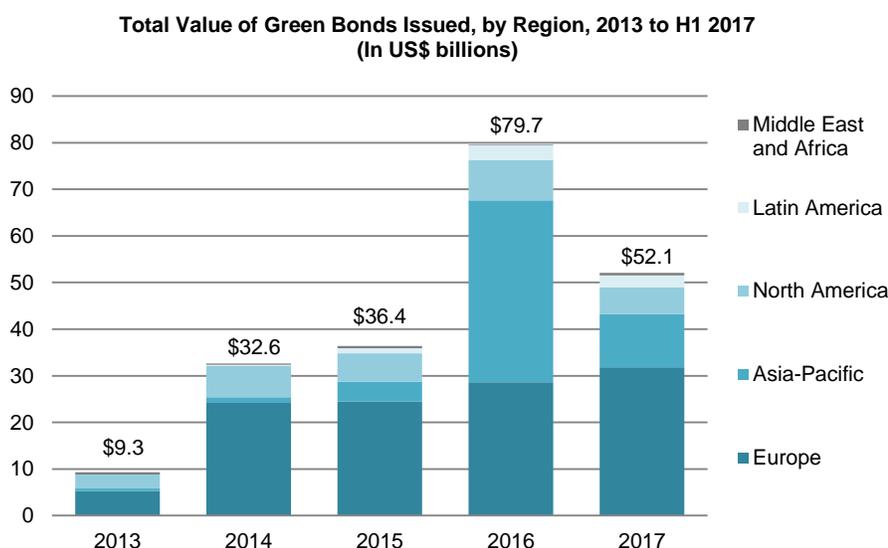
Green bonds sit in the realm of environmental, social, and corporate governance (ESG) investments, which first gained popularity in 2006, and measure the impact of investments on staff, suppliers, customers, and the wider community. The United Nations-supported Principles for Responsible Investment, which were published in 2006, provide a framework that investors can use to incorporate ESG into their decision-making and ownership practices. In June 2017, industry association ICMA also updated its green bond principles, which provide industry guidelines that aim to enhance bond transparency and disclosure with the goal of creating a robust green bond market.

Environmental sustainability may be a rather contentious political topic at the global level, but green bonds have garnered a significant amount of investor attention for their tax-exempt and socially responsible status. Figure 28 shows the significant growth in issuance that green bonds have experienced since 2013—an increase of 750% from US\$9.3 billion to US\$79.3 billion in 2016. The Asia-Pacific region was a significant contributor to issuance growth in 2016—bond issuance in the region increased 119% on the previous year.

China is a leading issuer of green bonds due to domestic government targets and the People's Bank of China guidelines contained within the Green Bonds Endorsed Project Catalogue, which was published in December 2015. European issuance has been flat over the last few years, but

the region represented around 36% of the green bond issuances in 2016. The Asian Development Bank has also promoted certification for green bonds and climate bonds in the region, and it backed the issuance of the first climate bond in the region in February 2016. This is part of the bank's 2015 commitment to double its financing for climate change adaptation and mitigation by 2020.

Figure 28: Green Bond Issuance, 2013 to 2017



Source: Dealogic, 2017 data until June 2017

Given that tech giant Apple issued US\$1 billion of green bonds in June 13, 2017, the market can expect an increase in North American issuance by the end of the year. The recent global political focus on climate change has resulted in increased investor appetite for vehicles that provide full transparency into the impact of their investments. The industry anticipates that millennial investors will drive forward investment in ESG vehicles, especially green bonds, over the long term.

One of the challenges to this growth is the U.S. president's announcement in June 2017 that the country would be exiting the Paris Agreement on Climate Change by 2020. The U.S. will be obliged to formally remain in the agreement for another three and a half years, but President Trump has indicated that it will not be applying any of the agreement's non-binding requirements during that period. These requirements include making contributions to the United Nations' Green Climate Fund and reporting on carbon data, though firms will still be required to report this information to the U.S. regulators.

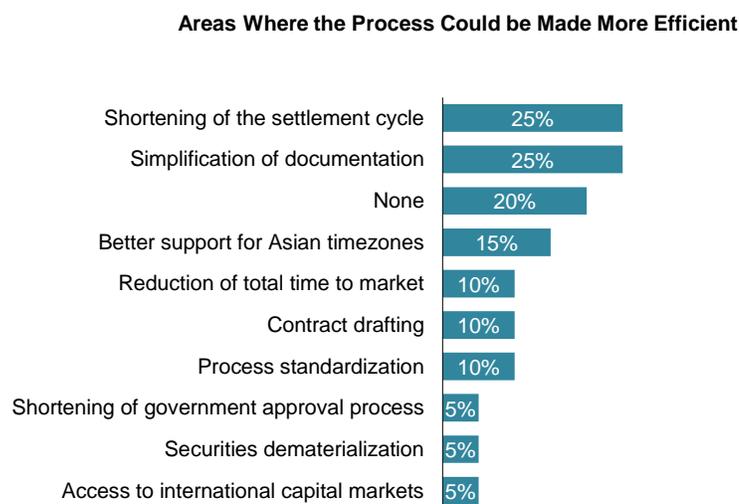
TECHNOLOGY EVOLUTION

Alongside market structure alterations that have been compelled by regulation, the continued evolution of technology means financial markets must adapt and change to meet client demand. The increase in visibility of so-called next-generation technologies, such as distributed ledger or

data analytics tools, have compelled many financial institutions and market infrastructures to launch pilot programs to trial their potential applications. There are certainly a few areas that some respondents feel could be made more efficient via the introduction of greater automation (Figure 29). A quarter of respondents feel that settlement, though relatively efficient now depending on market, could be an area that would benefit from technology evolution. Just under a quarter of respondents, however, feel that the process overall is already efficient and there are no areas that need to be addressed in the near term.

Efficiency improvements are not all about technology; standardization also plays a significant role. An Asian issuer indicates that the documentation creation process in some regional emerging markets can take at least three months, and the establishment of standards would be of benefit in shortening time to market.

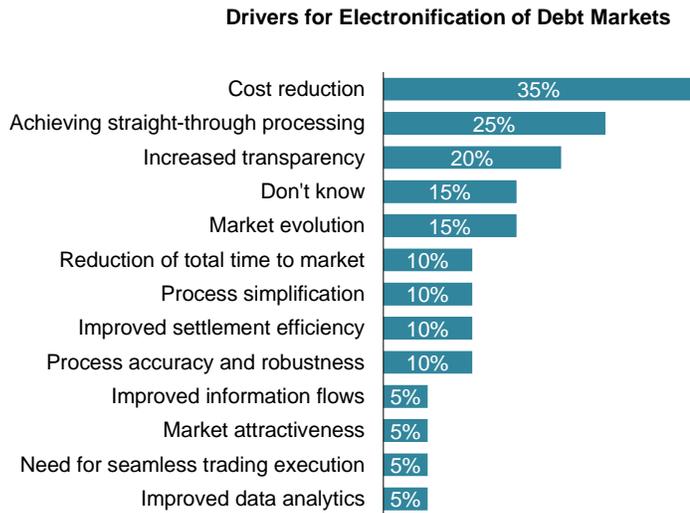
Figure 29: Areas for Efficiency Improvement



Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

Respondents feel there are a number of different drivers for the electrification of issuance and debt capital markets overall, but top of the list is cost reduction (Figure 30). The removal of labor-intensive manual processes would reduce costs and improve straight-through processing rates, thus increasing overall process efficiency. Another benefit of electrification that is often appreciated by both investors and regulators is improved transparency—greater automation often means an electronic audit trail for data and processes.

Figure 30: Drivers of Electronification in the Issuance Process



Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

Though respondents can generally point out areas of inefficiency, identifying areas that could benefit from innovation is a little harder (Figure 31); hence, a quarter doesn't yet know where it could be introduced. A quarter point to the documentation production process as a potential area, though most could not hazard a guess as to the correct type of technology application for the task. Trading has long been an area of innovation in equity capital markets, so it is unsurprising that it is an area in which some respondents feel bond markets could be improved. Other respondents note that technology can be viewed as an enabler for greater connectivity.

Figure 31: Fitting Areas for Technology Innovation



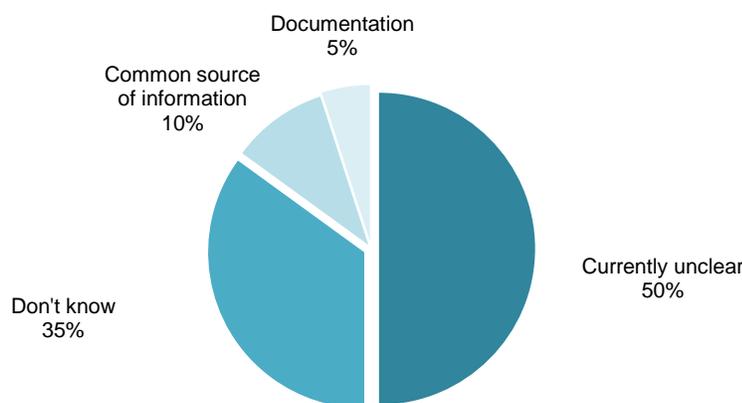
Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

Innovation in capital markets over the last few years has been tied to a certain number of hyped technologies. In the realm of debt securities, the impact of distributed ledger technology (DLT) is likely to be felt across the full life cycle of the issuance process, if significant progress is made in addressing its underlying challenges. In theory, DLT sounds perfect for innovation in the issuance space—the underlying characteristics of the technology related to cryptography, ledger decentralization, transaction recording, and automation would theoretically improve the ownership recording, transaction complexity, and safe keeping of the securities. Self-executable smart contracts could potentially replace the physical certificates involved in the traditional issuance process and would facilitate the automatic execution of the associated terms and conditions.

Respondents, however, are not so sure (Figure 32)—half believe it is currently unclear where DLT could be applied, and 35% feel it is not a technology that can be applied in the issuance space. This likely reflects the nascent nature of DLT adoption in capital markets, in which many ideas are being trialed, but the industry is still stuck in “pilotville.” The securities markets are traditionally very conservative when it comes to technology change; hence, it is likely to take some time before this technology makes a significant impact.

Figure 32: Potential Uses of DLT in Issuance

Potential Areas of Use for Distributed Ledger Technology in Issuance



Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

Aite Group believes the success of DLT in capital markets will be determined by several factors that must be adequately addressed by pilots and implementations:⁴

4. See Aite Group's report *Building Business Cases With Distributed Ledger Technology: Things to Know*, August 2016.

- **Throughput:** This is defined as the number of transactions the system can process per second. Some significant progress has been achieved, and some DLTs can now handle several thousand transactions.
- **Latency:** This is the time to confirm and commit transactions. Depending on the context, these may need to achieve almost real-time speeds to succeed.
- **Node scalability:** This represents the number of nodes supported without compromising performance.
- **Security:** Resilience to attacks is defined as security. This comprises various elements regarding cyberattacks or system access but also expands to other issues. For instance, immutability of the data makes it unmodifiable, so it is a reliable source of the “truth” for past transactions. It is also one of the main features of DLTs, and reducing it will potentially be ineffective.
- **Governance:** Network governance is also key, as it will preferably avoid conflicts of interest while defining a leading party, which will grant permissions and oversee maintenance and protection. There are identification issues, as a participant is not certain of the counterparty’s true identity. Estonia has tackled this issue effectively by creating digital identities. Confidentiality applies directly here, as DLTs are good for transparency, but there is information, such as financial transactions, that firms may not want to make available to third parties in the ledger.
- **Costs:** This consists of per-transaction costs of building and running the network as well as investments in hardware and equipment, development, licensing, and staffing.
- **Industry agreement on standards:** If a cross-industry DLT is to be established, there will need to be industry consensus on the fundamental tenets of the platform, including data standards.

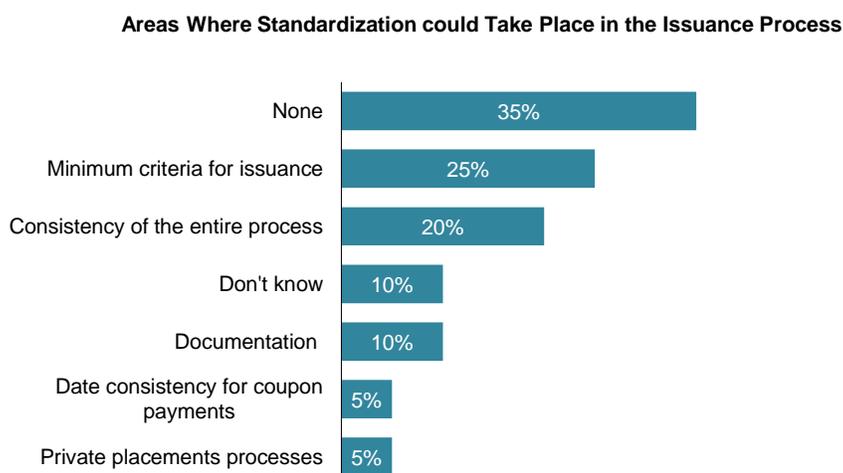
There are, however, several interesting pilot programs in the market that should be monitored, including the Singapore Exchange’s DLT program for bond trading and the partnership between startup BlockEx and legal firm Winston & Strawn to create smart contract templates for legal documentation for bond issuance. Interestingly, an industry consortium led by the distributed database company R3 also recently helped to reach industry consensus on the need for industry standards to simplify the implementations of smart contracts and DLT. The Deutsche Boerse Group, in addition, has launched a few DLT pilots, including a joint initiative with the Deutsche Bundesbank for a prototype for the DLT-based settlement of securities.

STANDARDIZATION TRIALS AND TRIBULATIONS

The progress toward achieving industry standardization depends on the market or region that is examined. Respondents from different regions indicated that while Europe is viewed as relatively evolved in terms of standards adoption, many of the emerging Asian markets have a long way to go. Figure 33 indicates that some respondents do not believe there are any areas that should be

prioritized in their local markets for standardization, which reflects the European demographic. Some respondents are keen to see less of a push toward standardization because they are keen for the industry to remain flexible for issuers. A large global bank respondent explains that by standardizing dates for coupon payments, for example, the industry could concentrate these processes during certain periods of the year, which could reduce overall efficiency. Though some degree of standardization is beneficial in supporting market growth, it should also be balanced with flexibility.

Figure 33: Areas of Potential Standardization for Issuance



Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

Even without global standardization, the industry has recognized the importance of data for decision making and analysis for all participants in the market. The increased popularity of data analytics tools and firm-level discussions about how to turn data into a potential commodity indicate that this will be an area of focus for some time to come. Market infrastructures and industry networks, such as SWIFT, have developed indices and products based on data that they gather as part of their day-to-day operations. SWIFT's renminbi tracker is one such example, and it provides the market with an indicator of how much the currency is being used for various transactions across the globe.

THE FUTURE OF ISSUANCE

The global markets are all at different points in terms of evolution, which makes it challenging to predict any worldwide trends that are likely to shape the markets over the next five to eight years. Some respondents are wary of hazarding guesses as to what will drive future investor behavior, but just under a quarter recognize that risk-return assessments and tradeoffs will always play a significant role in market preference (Figure 34). The importance of the Chinese market is currently high for Asian issuers, but other markets are likely to also be impacted in the long term by the increasing liberalization and growth of the Chinese capital markets.

Figure 34: Drivers for Future Investor Behavior

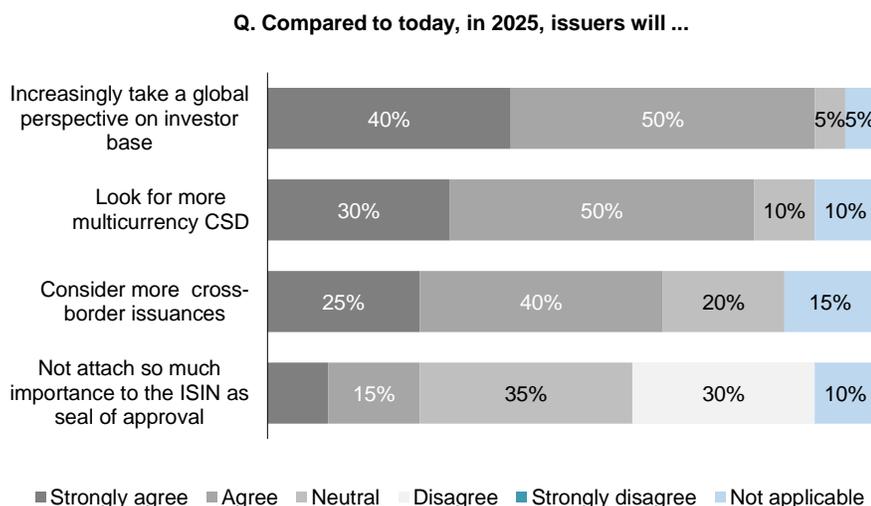


Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

The majority of respondents (90%) recognize that the issuance space will become increasingly global as emerging markets mature and cross-border flows increase because of developments such as the European CMU. In accordance with the increase in global flows, the notion of a multicurrency CSD is popular with 80% of respondents, who either strongly agree or agree with the idea that issuers in 2025 will require such services. The inefficiency of connecting to multiple local CSDs will be highlighted by increased globalization, say respondents, who also note that issuers will be increasingly keen to reach a wider range of investors across the globe. These issuers will also likely be more open to cross-border issuance by 2025 and will consider increasing their volume in non-domestic markets, according to 65% of respondents. These trends complement the anecdotal feedback from a small number of issuers who are beginning to see benefits for more cross-border issuance in the new European T2S environment. There will likely be a future trend of increased cross-border issuance, perhaps combined with consolidation of issuance in a reduced number of CSDs, whereby issuers choose to consolidate their issuance in a single CSD to gain cost and efficiency savings.

In the short term, the focus for multicurrency support will remain in primary issuance currencies such as euro, U.S. dollar, and pound sterling, though this will gradually increase alongside the rise in popularity of currencies such as renminbi in Asia. In an increasingly cross-border world, the stamp of approval that an ISIN provides might also become more important—65% of respondents believe it will continue to play a role in indicating quality of assets. An international bank respondent notes that the identifier is the only way to determine standardization in foreign markets, and regulators in Europe are also extending its use under the MiFID II reporting requirements. Those respondents that feel it will lessen in importance indicate that other identification standards may evolve from technology developments such as DLT implementation.

Figure 35: Respondent Perspectives on Issuance in 2025



Source: Aite Group interviews with 20 firms engaged in debt issuance processes, 2017

CONCLUSION: THE OUTLOOK FOR 2025 AND BEYOND

It is almost impossible to predict global issuance volume over the next five to eight years due to the number of factors that can influence each market. What is clear, however, is that certain developments will shape the industry over that period:

- **The future will be more global.** Changing wealth dynamics across the globe will drive issuers to look across borders to access foreign investors. For their part, investors will increasingly seek sources of investment outside of their domestic markets as barriers between those markets—legal, operational, regulatory—come down. The Eurobond international market and ICSDs are likely to remain particularly attractive to issuers due to ICSDs’ global reach combined with their capabilities and expertise in handling complexity and multiple currencies across different jurisdictions.
- **T2S will alter the European landscape and offers new opportunities for primary issuance.** Increased connectivity via T2S to a larger range of end-investors could result in higher demand for European bonds. Though issuer awareness of T2S is currently limited, wider issuer T2S-related benefits likely to be tapped into over the coming years include reduced costs for issuing cross-border, as well as cost and efficiency savings due to subsequent consolidation of issuance at single CSDs rather than issuance at each national CSD for respective domestic issuance. Auto-collateralization will also probably become a material benefit to issuers in the T2S environment, including issuance of securities via Eurosystem-assessed links and the use of auto-collateralization to help reduce their need of cash and credit lines. Coupled with CSDR, T2S will also help to drive a more standardized issuance culture and infrastructure across Europe, but this will need time to take full effect.
- **Market infrastructure competition will increase.** Connectivity and diversity of services will become a defining characteristic of CSDs or ICSDs that succeed in the new global landscape. Ensuring that issuers and their service providers can easily and efficiently connect to whichever market in which they wish to issue and support the currency (or currencies) for that issuance will be key.
- **Technology could become an enabler for change.** The industry as a whole is currently in a state of flux when it comes to technology adoption, and the next decade will indicate whether the current pilots have legs enough to make an impact on issuance processes overall. If DLT and smart contracts succeed in gaining the buy-in of all parties, then the industry will have a long road ahead in establishing the requisite standards for implementation and support. The more cross-border the effort, the tougher the process of negotiation; hence, single domestic markets are likely to move more quickly than regions.
- **CSD and ICSD infrastructure resilience and track record, including operational risk capabilities, are likely to continue to be important factors.** Most large

issuers today already consider that there is a minimum level of operational and legal risk they can accept when selecting an ICSD or a CSD; this includes consideration of capabilities for dealing with cyberbreaches or service downtime.

- **Data and market transparency will be important.** The current regulatory landscape places emphasis on transparency of data and of process; hence, the long-term impact of this will be greater standardization and commodification of data.
- **Overall, the outlook for 2025 and beyond looks positive and dynamic for the issuance industry.** The industry can anticipate growth in the international (Eurobond) market, in U.S., Asian, and European markets, and in cross-border issuance globally. It can also expect upticks in new instruments, such as green bonds and specific Asian bonds. Trends will likely be driven not only by global investor interests but also by developments in market infrastructure (policy) projects such as T2S in Europe.

ABOUT AITE GROUP

Aite Group is a global research and advisory firm delivering comprehensive, actionable advice on business, technology, and regulatory issues and their impact on the financial services industry. With expertise in banking, payments, insurance, wealth management, and the capital markets, we guide financial institutions, technology providers, and consulting firms worldwide. We partner with our clients, revealing their blind spots and delivering insights to make their businesses smarter and stronger. Visit us on the [web](#) and connect with us on [Twitter](#) and [LinkedIn](#).

AUTHOR INFORMATION

Virginie O'Shea

voshea@aitegroup.com

Pablo Valderrabano

pvalderrabano@aitegroup.com

CONTACT

For more information on research and consulting services, please contact:

Aite Group Sales

+1.617.338.6050

sales@aitegroup.com

For all press and conference inquiries, please contact:

Aite Group PR

+1.617.398.5048

pr@aitegroup.com

For all other inquiries, please contact:

info@aitegroup.com