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Korea Treasury Bonds 2019

MINISTRY OF ECONOMY AND FINANCE

Ministry of Economy and Finance

Korea Treasury Bonds

2019

MINISTRY OF ECONOMY AND FINANCE

Preface

2019 was a meaningful year for Korea as the Treasury bond market went through many developments and changes. Over the last twenty years, the bond market grew both qualitatively and quantitatively, since the introduction of the Primary Dealer system and the KRX KTB, the secondary market exclusive for government bonds, in 1999. Between 1999 and 2019, outstanding bonds increased over tenfold from KRW 66 trillion to KRW 700 trillion, while transaction also rose from KRW 200 trillion to near KRW 3,300 trillion. This demonstrates that the bond market has developed to a key pillar of Korea's capital market.

In 2019, risks at home and abroad were ever-present. External risks came from global growth and trade, which hit a record low since the global financial crisis in 2008, increasing downward risk. Internal risks from demographic changes, such as a smaller working-age population and a rapidly aging population, and low investment in the private sector placed additional economic burdens. In addition, the financial market faced greater uncertainties and volatility arising from political and economic issues, such as the US-China trade war, Hong Kong protests and Brexit, as well as a global economic downturn.

To overcome these external and internal risks, the Korean government employed bold and aggressive fiscal policies to respond to the downward pressures, and made concerted efforts to lay the ground for innovation-driven and inclusive growth. As a result, Korea made great achievements. Employment data showed remarkable signs of recovery in both qualitative and quantitative ways, and the infrastructure in pursuit of innovation-driven growth was built. However, challenges were rising. Deteriorating external situation undermined exports and investments made by the private sector and growth potential continued to fall.

In this process, the treasury bond market, where fiscal policies and the financial sector meet, played a pillar role in supporting the economy. In particular, the achievements that the bond market made in 2019 can be summarized as follows:

First, Korea successfully issued Korea Treasury Bonds (KTBs) as scheduled to support aggressive fiscal policy. The government pursued to issue KTBs in amounts that were spread out throughout the year but, due to an early fiscal execution to boost the economy, 60% of annual issuance volume were issued in the first half of the year. And, long-term KTBs were increasingly issued, such as bi-monthly issuance of 50-year bonds, to meet the growing demand from the market. Performance assessment for Primary Dealers was improved to expand the base of underwriting KTBs.

Second, Korea responded aggressively and rapidly responding to uncertainty and volatility. We developed an effective early warning system that forecasts and identifies yield moves and capital flows across borders. The system detected warning signals, allowing policy makers to respond in a timely manner.

And last, we strengthened the communication with the market. As a part of this, the Ministry of Economy and Finance hosted the first Debt Management Strategy Committee which consisted of major institutional investors. The committee provided market participants with the opportunity to participate in policy-making.

Korea Treasury Bonds 2019 contains developments and changes of the bond market in 2019. In particular, along with the government's efforts made to further develop and stably manage the market, Korea Treasury Bonds 2019 covers essential information to understand the market. I hope this seventh edition will serve as a guideline to facilitate a deeper understanding of the KTB market.

March 2020

Deputy Prime Minister / Minister of Economy and Finance

Hong Namki

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Introduction

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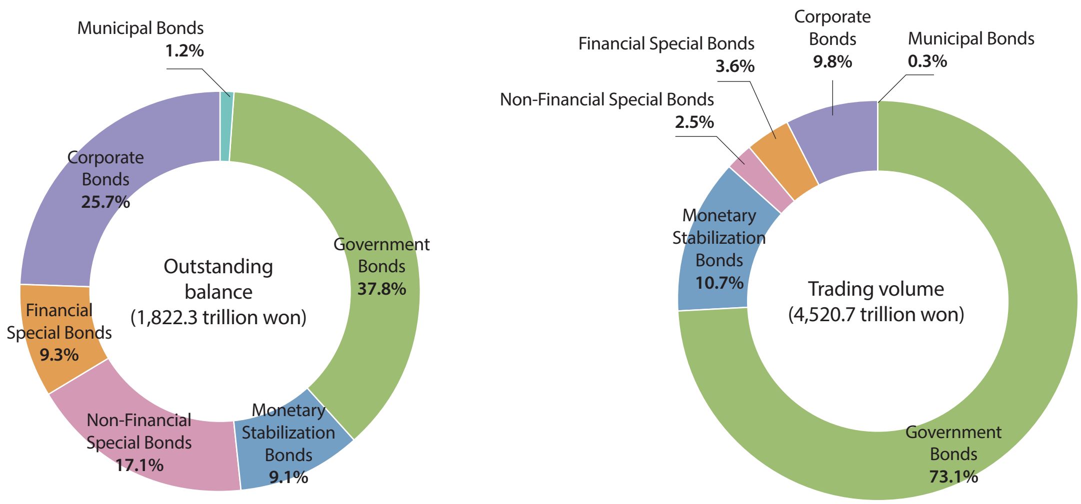
01 Overview

The Korean government issued its first sovereign bond in 1950, and the country's public debt market continued to develop significantly. In particular, from 2000 and afterwards, various policies and systems have been put into place for successful issuance of sovereign bonds and development of the secondary market. The public debt market now plays a vital role in the domestic bond market.

As of December of 2019, four types of government bonds are issued: Korea Treasury Bonds (KTBs), Treasury Bills, National Housing Bonds (Type 1), and Foreign Exchange Stabilization Bonds. Among them, KTBs are the key means to financing public expenditures, and are used as benchmark bonds in the Korean debt market.

[Figure 1-1] Outstanding Amount and Trading Volume of Domestic Bonds



* Source : KRX (Listed bonds outstanding as of late December 2019, Trading volume as of 2019)
** The share of KTBs to the total outstanding amount of gov't bond : 33.6%, The share of KTBs to the total trading volume of gov't bond : 60.3%

KTBs are currently issued as fixed-rate bonds with 3, 5, 10, 20, 30 and 50-year maturities and as inflation-linked bonds (KTBis) - designed to eliminate inflation risks – with a 10-year maturity. Most KTB issues are sold to primary dealers (PDs) through competitive auction, and some are issued through other methods such as non-competitive bid options and conversion offers. In efforts to issue KTBs in an efficient and stable manner, the government announces issuance plans in advance and communicate with market participants to incorporate their opinions in related policies.

KTBs account for approximately 60% of the total bond trading in the secondary market and serve well as a pricing benchmark. Trading of KTB-related products including KTB futures, Repo (Repurchase agreements), and ETF (Exchange-Traded Funds) have also recently become active, having a positive impact on the market supply and demand as well as the efficiency of the market.

02 Legal Basis

To maintain the country's fiscal soundness, the Korean government issues government bonds under clear legal guidelines such as the Constitution, National Finance Act, and State Bond Act. Article 58 of the Constitution of the Republic of Korea declares the basic principle concerning the issuance of sovereign bonds: "when the Executive plans to issue sovereign bonds or to conclude contracts which may incur financial obligations on the State outside the budget, it shall have the prior concurrence of the National Assembly." In addition, Article 18 of the National Finance Act states that "the financial resources for State expenditure shall be the revenues other than the State bonds or loan funds borrowed; provided that funds raised through State bonds and loan funds borrowed may, if unavoidable, be appropriated to expenditure within the limit of the amount approved by a resolution of the National Assembly." In the same Act, Article 20 stipulates that "where necessary to substitute existing State Bonds with new State bonds, the government may issue State bonds in excess of the ceilings; in such cases, the government shall report the fact to the National Assembly in advance."

The State Bond Act[1)], the general law on the issuance and redemption of government bonds, sets forth basic matters concerning state bonds. Public debt issuance is strictly required a legal basis as Article 3 of the State Bond Act that they can only be issued by the Minister of Economy and Finance at the expense of the public capital management fund, except as otherwise expressed in any other acts.

Details on the auction method, primary dealers, buy-backs, conversion offers, and the other components are specified in "Regulations for KTB Issuance and PD system Management" (under the Ministry of Economy and Finance, MOEF). And, the Bank of Korea (BOK) also has in place "Guidelines for Government Bond-related Tasks" regarding the issuance and redemption of government bonds.

1) The Korean government pushed forward the extensive revisions of the State Bond Act in 1979, 1993 and 2014 after its enactment in 1949.

03 Market Development

(1) Before the 1997 Asian Financial Crisis

A. Early Stage of the Korean Government Bond Market

To meet the nation's fiscal needs, the Korean government issued its first sovereign bond, the Nation-Founding government bond, in February 1950. The Korea Stock Exchange (KSE) was established in March 1956 to ensure fair price formation and smooth trading of securities, leading the public debt market to take a proper form of an institutionalized market.

In 1976, the Securities Exchange Act was revised to allow OTC trading of government bond. From the 1980s, the greater number of bond products and market participants shifted bond trade from Securities Exchange to the OTC market. Further measures by the government paved the way for the development of the secondary market, such as allowing OTC trading of all bonds since 1984 and setting forth "Regulations on OTC trading of bonds" to institutionalize the respective market.

B. Early Challenges in the Korean Government Bond Market

By 1994, Korea's public debt market had both the Exchange and OTC market in place along with necessary policies. However, their functions were limited due to the lack of issuance volume.

The Korean government issued bonds at yields lower than the rate in the secondary market, and required financial institutions such as banks and insurance companies to underwrite them with given quotas. Since the syndicate has committed to underwrite the full issue, the syndicate participants sometimes had to hold the bonds to maturity or sell a huge amount of securities in the secondary market at higher yields. This practice of mandatory underwriting hindered fair price formation and led to the decline of bond trading volume. Also, a myriad of separate accounts and funds issued too many different types of bonds, which led to the dispersion of demand for government bonds and low market liquidity. As a result, 3-year bank-guaranteed corporate bonds, which were more liquid than government bonds, served as the benchmark in the bond market.

C. Efforts to Develop the Government Bond Market

In efforts to resolve the aforementioned issues, the Korean government wholly revised the State Bond Act in late 1993 so that the myriad of bonds were consolidated into one. All clauses that provided the basis for issuing public debt in separate acts were deleted and the Public Debt Management Fund was established

to consolidate government bond issuance. As a result, the Farm Land bond, Agricultural Development Fund bond, and Railroad bond, and so forth were consolidated into the Public Debt Management Fund bond in 1994.
To improve the practice of mandatory underwriting, a syndicate of about 100 financial institutions including banks, securities companies, and investment firms was formed in 1994, and bonds were issued through competitive bidding within the syndicate. However, genuine competition was still impeded as the range of rates were predetermined by the government and dealers were required to underwrite the full amount in case of failed bids. In addition, the registration issuance system in which the rights of bondholders were electronically registered without having to issue physical securities was put into practice.

As such, the Korean government bond market gradually took on the shape of an institutionalized market before the 1997 Asian financial crisis, but sovereign bonds were yet to play a significant role in the financial market. As of late 1996, government bonds accounted for only 14.5% of all bonds outstanding and 4.7% of the total trading volume. As the result, the country's bond market was dominated by corporate bonds which accounted for about 42% of the total bonds outstanding.

(2) After the 1997 Asian Financial Crisis (1998 to 2008)

A. Fostering Government Bond Market to Overcome the Crisis

It was during the onset of the Asian Financial Crisis in 1997 when the bond market arrived at a critical juncture. The number of bankruptcies increased during the financial crisis, which subsequently increased non-performing loans of financial institutions. As financial institutions could no longer provide a financial guarantee of their corporate bonds, the volume of the bonds gradually dropped in the bond market.

In overcoming the crisis, the government expanded the KTB issuance volume from KRW 2.1 trillion in 1997 to KRW 12.5 trillion in 1997 and put great efforts in nurturing the public debt market, which implemented the PD system in 1999 for reduced burden on the market amid the rapid increase in the volume of the issuance.

In September 1998, Public Debt Management Fund bonds officially began to be called KTBs, and various government bonds like Grain Management Fund bond and Foreign Exchange Stabilization bond were consolidated into KTBs in a phased-in manner. In January 1999, KTBs were issued on a regular basis, and in March 1999, KRX KTB (KRX trading system for government securities), the secondary market exclusive for government bonds, was established at the Korean Exchange (KRX). And, in July 1999, the PD system for KTBs was introduced. Since then, KTBs were efficiently absorbed through competitive bidding, with substantially improved liquidity and efficiency.

In addition, Korea announced the government's plans to advance its bond market structure and improve the systems of the public debt market. To increase liquidity, a fungible issuance system was introduced in May 2000. And, 10-year KTBs began to be issued in October of the same year to lengthen maturities. To meet the various kinds of demands for KTBs and lay the groundwork for development of the financial market, policies regarding sovereign bonds were introduced in a consecutive manner. In January 2006, 20-year KTBs began to be issued and in March 2006, STRIPS was introduced. In addition, inflation-linked KTBs (KTBis) began to be issued in March 2007 to provide a hedge tool against inflation.

B. Attracting Foreign Investment

Measures to open Korea's capital market to global investors were also put into practice. Most significant ones were the elimination of the ceilings for foreign investment in listed bonds and the allowance of foreign investment in all bonds since May 1998; which came after the past currency crisis takeaway: the need to ensure a sufficient amount of foreign reserve.

As foreigners were previously obliged to report to the Bank of Korea (BOK) whenever they obtained loans exceeding KRW 10 billion, the amount was adjusted to KRW 30 billion in December 2007, mitigating the burden of reporting for foreigners wishing to invest in KTBs. The policy in which foreigners were allowed to purchase Korean won only after their purpose of purchase had been determined was relaxed as well in December 2007 so that they could convert to Korean won anytime, which enabled them to respond to foreign exchange risks in a more flexible manner.

C. Evaluation of the KTB Market

After the Asian financial crisis, the share of KTBs in all bonds outstanding increased from 5.6% in 1998 to 27.7% in 2008 and their share in the trading volume also jumped from 3.9% in 1997 to 51.8% in 2008, making KTBs lead the domestic bond market. Accordingly, a benchmark role of 3-year corporate bonds guaranteed by banks was replaced by 3-year KTBs. And in 2004, 5-year KTBs took over the benchmark role. It was clear that the Asian financial crisis served a significant part in bringing the KTBs to the centre of Korea's bond market.

(3) After the Global Financial Crisis (2009-Presnet)

A. Improvements in the Government Bond Market to Overcome the Financial Crisis

In overcoming the global financial crisis in late 2008, Korea's public debt issuance also swelled to KRW 85 trillion in 2009, up 63% from KRW 52.1 trillion in 2008[2]. And, the Korean government devised "Measures for Efficient KTB Issuance" in March 2009 and focused on efficiently raising funds from the capital market.

In June 2009, the government adopted the Differential Pricing Auction to ensure efficient sales of KTBs, and, in May of the same year, implemented conversion policy to enhance liquidity. It also expanded the incentives for primary dealers to support stable absorption of the supply volumes and promote the secondary market.

In 2013 and 2015, the government implemented market stabilization measures to preemptively respond to the need to increase issuance following the supplementary budget, and the potential supply-demand mismatch due to changes in global economic conditions.

<Table 1-1> Major Market Stabilization Measures from 2009~2015

	March 2009	April 2013	July 2015
Background	• Supplementary budget (April 2009: KRW 28.4 trillion) • Continuation of low bid-to-cover ratio	• Supplementary budget (May 2013: KRW 17.3 trillion) • Concerns over QE tapering (June 2013)	• MERS outbreak (May 2015) Supplementary budget (July 2015: KRW 12 trillion)
Easing of burden on market-making performance	• introduction of conversion offer • Adjustment of non-competitive bid ceiling and execution interest rate • Adoption of differential price auction method	• Extension of interval for rates in differential price auction of long-term KTBs (+10 years) • Extension of non-competitive bid ceiling • Extension of bid-ask spread	• Extension of interval for rates in differential price auction for pre-issued KTBs • Extension of non-competitive bid ceiling and easing in underwriting performance assessment • Adjustment of market-making hours

2) Sovereign debt issuance increased sharply around the world–major countries' markets including the U.S., Europe, and Japan issued roughly 3.9 trillion dollars combined in 2009, an 86% surge from the previous year. In response to this, central banks in the U.S., UK, Japan, and others directly purchased their country's government securities as part of their QE measures.

Through the successful implementation of these measures, all KTB issues were completely absorbed by the capital market without a single auction failure. Furthermore, KTBs played a pivotal role in financing the state funds when needed.

B. Introduction of Korean-Style Auction Method

To ensure stable KTB sales, the Differential Pricing Auction was introduced in September 2009, which combined a Dutch auction[3)] and a conventional auction[4)]. In the Differential Pricing Auction, bid rates were aligned in ascending order and divided into groups[5)] at an interval of 3 or 4 basis points, and all successful bidders were awarded the highest winning rate within that group. Since the introduction, the bid-to-cover ratio has hit over 300% which was barely over 100% at the beginning of 2009.

C. Increase in Average-Time to-Maturity

Bonds with longer maturities are needed to minimize refinancing risks and spread out repayment burdens. The Korean government introduced 20-year KTBs in January 2006, and 30-year KTBs in September 2012. A 50-year KTB was also successfully launched in October 2016. In addition, the Korean government has steadily increased the share[6)] of long-term bonds to meet the growing demand for the bonds and to finance mid- and long-term state funds in a stable manner, while the fungible issue period was set for 1 year for 20-year and 30-year KTBs to increase the liquidity of long-term KTBs.

<Table 1-2> Avereage Time-to-Maturity of KTBS (as of the end of year)

	2010	2011	2013	2013	2014	2015	2016	2017	2018	2019
Average Time-to- Maturity (year)	5.33	5.56	5.96	6.50	7.11	7.62	8.30	9.06	10.03	10.64

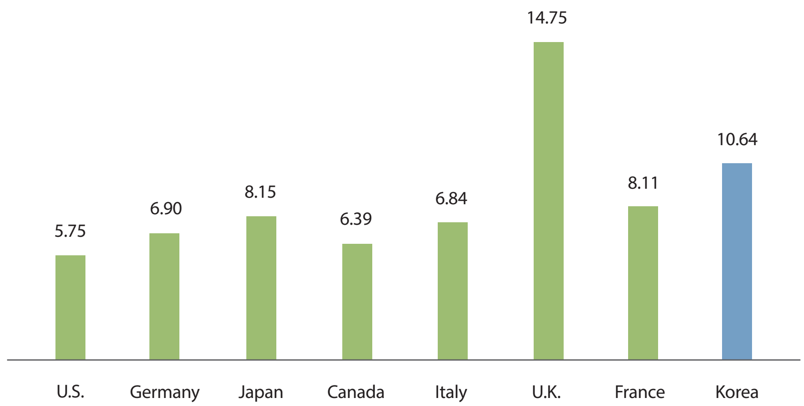
3) The highest (or lowest) yield (or price) suggested by bid winners uniformly applies to all of the winners. The method used to be operated from August 2000 until August 2009.

4) The bidder with the lowest yield was to win first, followed by the bidder with the second highest yield and so on. The total amount of the winning bids became the issue amount, and each successful bidder received the yield they offered through their bids. The method used to be operated at the early stage of PD system(July 1999~July 2000).

5) 3bp(3Y to 5Y), 4bp(10Y to 30Y)

6) Yearly issuance share of super-long KTBs (+20Y) (%): 15.0('11)→15.7('12)→20.1('13)→21.6('14)→21.1('15)→25.3('16)→30.1('17)→35.9('19)

[Figure 1-2] Average Time-to-Maturity of Government Bonds in Major Countries



* Sources : (Korea) KRX, (Others) Bloomberg, as of the end of 2019

E. Qualitative and Quantitative Growth of Foreign Investment

Foreign holdings of KTBs, which were only 4.2 trillion won (the share of foreign holding: 2.0%) in 2006, substantially increased, reaching 56.9 trillion won (15.7%) in 2012. Government securities became more marketable following the development of the bond market infrastructure, and investors expanded their investments to profit from rate differences in and abroad. Since 2010, KTB's status as a safe-haven asset continued to strengthen due to factors such as rich global liquidity, Korea's sound fiscal position, high national credit rating, and relatively higher interest rates compared to other developed markets. Accordingly, foreign investment remained stable, and the composition of the foreign investors diversified with the number of investing countries up from 19 in 2006 to 47 in 2019. In addition, global asset managers, central banks, and international organizations – long-term investors have accounted for more than 70%, which is indicative of the improvement in the quality side of the KTB investments.
In particular, foreign demand for KTBs remained well anchored despite uncertainties in the global financial market, such as accommodative monetary policies of major countries, lingering US-China trade war and concerns over global economic downturn. As of the end of 2019, KTBs held by foreign investors reached KRW 98.3 trillion (16.1%).

For timely response to the possibility of heightened market volatility due to frequent foreign capital movements, the Korean government established Foreign Investment Management System (FIMS) to more efficiently monitor and manage trends in foreign ownership.

<Table 1-3> History of Bond Market Since the 1997 Asian Financial Crisis

Date	Events
Sept. 1998	First electronic auction for government bonds through BOK-Wire
Jan. 1999	Regularized KTB issuance
Mar. 1999	Established KRX Trading System for government securities (KRX KTB)
Apr. 1999	Established CD-rate futures market
Jul. 1999	Introduced primary dealers (PDs) system
Sept. 1999	Established 3-year KTB futures market
Jan. 2000	Consolidated Grain Management Fund bond into KTB
May. 2000	Introduced fungible issuance system for KTBs
Jul. 2000	Implemented mark-to-market evaluation method
Aug. 2000	Changed auction method for KTBs from Conventional auction to Dutch auction
Oct. 2000	Issued 10-year KTB
Dec. 2000	Introduced buy-back system
Feb. 2002	Established Repo market at Korea Exchange(KRX)
May 2002	Established market for KTB futures options
Oct. 2002	Implemented mandatory trading of benchmark government bonds at KRX and allowed consignment trading
Dec. 2002	Established MSB (Monetary Stabilization Bonds) futures market
Mar. 2003	Lengthened fungible issue period of KTBs from three to six months
Aug. 2003	Established 5-year KTB futures market
May. 2004	Announced measures to promote long-term KTBs (Benchmark bond: 3 year→5 year)
Jun. 2004	Established the Regulations on KTB issuance and PD operation
Jan. 2006	Issued 20-year KTB
Mar. 2006	Introduced STRIPS
Mar. 2006	Lowered bid unit (KRW 10 billion→KRW 1 billion)
May 2006	Announced KRX bond index and KTB prime index
Sept. 2006	Introduced non-competitive bid option II
Nov. 2006	Lowered trading unit of KTBs (KRW 10 billion→KRW 1 billion)
Mar. 2007	Issued KTBi
Aug. 2007	Established a retail bond market
Dec. 2007	Delisted KTB futures options (3-year) and CD-rate futures
Feb. 2008	Established 10-year KTB futures market
May. 2009	Introduced tax-free for earnings from interest income and capital gains for foreign investors

Date	Events
May. 2009	Implemented conversion offers
Jul. 2009	Listed KTB ETF
Jan. 2010	Revised bid-ask price system
Jun. 2010	Reissued KTBi with a new issue method
Jan. 2011	Established a website for government bond market (http://ktb.moef.go.kr/eng/main.do)
Mar. 2011	Improved PD system (and introduced preliminary PDs)
Mar. 2012	Implemented PD/PPD promotion & demotion system
Apr. 2012	Lowered bid unit for retail investors (KRW 1 million→KRW 100,000)
Apr. 2012	Included retail investors in KTBi auction
Sept. 2012	Introduced 30-year KTB
Jan. 2013	Announced measures to extend a maturity of the benchmark bond (5 year→10 year)
Jun. 2013	Revised interest rate system (two decimal places→three decimal places, coupon rates in unit of 12.5bp)
Dec. 2014	Revised State Bond Act (including electronic and fungible issuance and buy-backs, took effect in July 2015)
Jan. 2015	Shortened fungible issuance period of 20 and 30-year KTB (2 year→1 year)
Jul. 2015	Implemented the revised State Bond Act (revised on December 30, 2014)
Oct. 2015	Launched "KTB Information System" and held a forum for experts
Dec. 2015	Established When-issued market and introduced PDs for STRIPS
Mar. 2016	Implemented policies for PDs specializing in STRIPS
Oct. 2016	Issued 50-year KTB
May. 2018	Implemented KTBi pre-issuance
Dec. 2018	Announced the plan for regular issuance of 50Y KTB (bi-monthly issuance from February 2019)
Dec. 2019	Hosted the 1st Debt Management Strategy Committee

04 Types of Government Bonds

(1) Types of Government Bonds

The Korean government issued its first debt security-the National Foundation Bond-in 1950 to cover shortfalls in revenue and finance state budget. While 21 different types of government bonds have been issued since then, the government currently issues four types: Korea Treasury Bond, Treasury Bill, Korea International Bond, and National Housing Bond (Type 1).

Korea Treasury Bonds (KTBs), which were originally called "Public Debt Management Fund Bonds," changed to their current name in September 1998 and have been issued regularly since. Currently playing a representative role in the domestic bond market, they provide benchmark rates for the Korean capital market.

Treasury bills, which are used to cover temporary shortfalls in budget, are currently issued as discount bonds with maturities of less than one year.

Foreign Exchange Stabilization Fund Bonds are foreign currency denominated state bonds issued to provide base rates for Korean bonds in the international financial market and promote the Korean economy abroad. As of present, all KIBs have been issued in overseas bond markets.

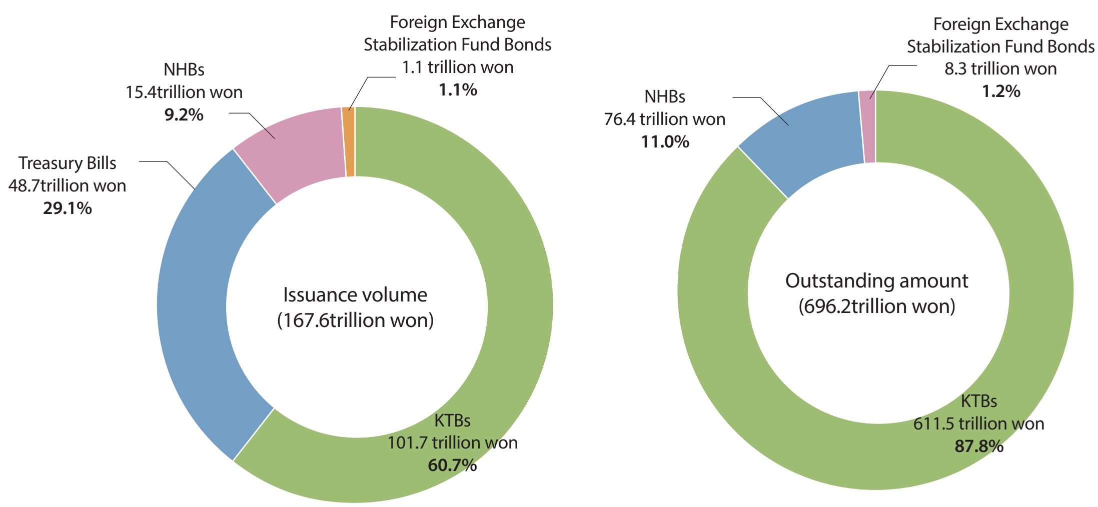
National Housing Bonds (NHBs) are bonds issued to raise funds for the construction of residential houses pursuant to the National Housing Act. Unlike other government bonds, NHBs are issued on the basis of mandatory placement. Although they were issued as either Type 1, 2, or 3 depending on the obligations or grounds for acquisitions, only Type 1 is currently being issued.

<Table 1-4> Types of Government Bonds

	Purpose of Issuance	Issuance Method	Maturity	Coupon rate
KTB	To finance the government	Competitive auction	3,5,10,20,30 and 50Y	Set at auction
Treasury Bill	To cover temporary shortfalls in budget	Competitive auction	Within one year	0%
Foreign Exchange Stabilization Fund Bonds	To create a favorable environment for the private sector to issue foreign currency bonds	Competitive auction	Set at issue	Set at issue
NHB-Type 1	To raise funds for housing projects	Mandatory placement	5Y	1.75%

* 50Y KTBs were launched using a syndication in October 2016, and then, in 2018, successfullly issued on a quarterly basis.

[Figure 1-3] Issuance Volume and Outstanding Amount by Bond



* As of 2019

* As of 2019, outstanding amount of treasury bills : 0

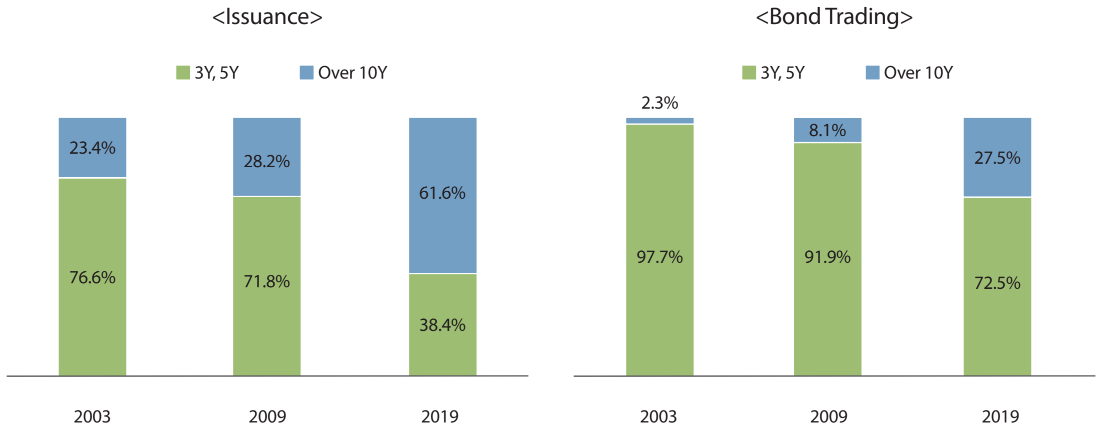
(2) Types of KTBs

KTBs are classified into conventional KTBs, which pay a fixed coupon rate based on a fixed principal amount, and inflation-linked KTBs or KTBis that pays the principal and coupons based on the changes in inflation over time. Conventional KTBs are regularly issued with six different maturities: 3, 5, 10, 20, 30 and 50 years. Among them, 3- and 5-year KTBs and 10-year benchmark KTBs[7)] are newly issued every six months. 20 and 30-year KTBs are newly issued every one year. Also, the pilot issuance of a 50-year KTB was launched in October 2016, and additional 50-year KTB was issued through a competitive auction in March 2017. 2018 saw four successful issuances of 50-year KTBs. From February 2019, 50-year KTBs will be regularly issued every other month (if necessary, additional issuance could be done in March or September, total eight auctions for 50-year KTBs.)

The proportion of bond issuance with maturities 10-years or longer increased from 28.2% in 2009 to 61.6% in 2019. In the secondary market, their share in the total trade rose from 8.1% in 2009 to 27.5% in 2019.

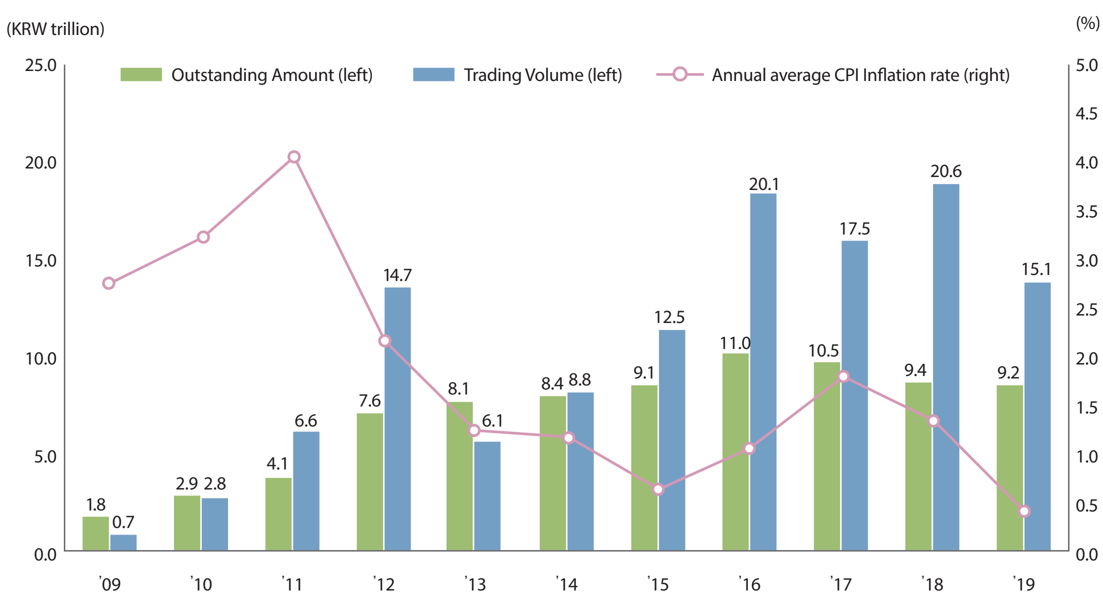
7) Extended a maturity of the benchmark bond: 3Y→5Y KTB(May 2004)→10Y KTB(January 2013)

[Figure 1-4] Issuance & Trading Share of Short- and Long-Term KTBs



Inflation-linked KTBs (KTBis) are securities that guarantee the purchasing power of investments, as KTBis pay the principal and coupons based on the changes in inflation, which hedges against inflation risk. KTBis began to be issued in March 2007 using an underwriting syndicate to expand the government bond investment base and set the stage for further development of the pubic debt market. However, KTBis were temporarily suspended in August 2008 due to lower investment demand, and then the bonds were reissued through a non-competitive bid in June 2010. And, the government is continuously working on promoting the KTBi market.

[Figure 1-5] KTBi Outstanding Amount and Trading Volume



Issuance of 50-year KTB

Amid low rates and greater interest in ultra-long bonds[8] globally in 2016, Korea also launched a pilot issuance of 50-year KTB to preemptively respond to the needs for long-term financing and manage fiscal funds in a stable manner.

After the announcement in August 2016 that the government is considering the issuance of a new ultra-long bond, it collected opinions from market participants through consultation papers. A total of 36 institutions including PDs, insurance companies and research centers submitted consultation papers and took part in process of issuing the 50-year KTB. Most of the participants came to common understanding that the issuance of the bond is timely, considering the low rates trend and strong demand coming from long-term domestic investors.

In September 2016, the underwriting syndicate was formed, and the 50-year KTB worth KRW 1.1 trillion was successfully issued on October 11, 2016, at a rate of 1.574% (+0.04% of 10-year KTB). In four years after the government begun to issue 30-year KTBs in September 2012, KTBs were regularly issued with six different maturities : 3, 5, 10, 20, 30 and 50 years. In March 2017, additional 50-year KTBs worth KRW 219 billion (2.225%) were issued through a competitive auction. In 2018, the government successfully issued 50-year KTBs four times (March, June, September and December), worth of 2.1 trillion won, and in 2019, eight times worth of 3.2 trillion won. From February 2020, the issuance of 50-year KTB will be done every other month.

8) Australia, U.K., U.S., Japan, France, Italy and Spain have issued 30Y to 70Y government securities. And, Mexico, Belgium, Ireland and Austria has issued century bonds (100Y).

First issuance of the Green and Sustainability Bond (Dollar-denominated Foreign Exchange Stabilization Fund Bonds)

In line with globally glowing interest in Socially Responsible Investment (SRI)[9] to add environmental and social value, there is a growing trend in issuing Socially Responsible Investment bonds. Issuing SRI bonds aims to fund environmentally-friendly and socially sustainable projects. SRI bond investing first started from Green Bond to Social Bond, and recently expanded to Sustainability Bond.

To increase the government contribution to SRI and to provide benchmark rates favorable to private sector borrowers, Korea sold its first dollar-denominated Foreign Exchange Stabilization Fund Bonds for 'Green and Sustainability Bond.' Korea's Green and Sustainbility bond has a different structure from other countries' SRI bonds. SRI bonds are generally used to fund related-projects carried out in the government (issuer), while overseas issue in sovereign debt for foreign exchange stabilization shall not be used for funding the domestic projects. In this regard, Korea entrusted Korea Investment Corporation (KIC) and designed different investment structure which enabled the KIC to invest in overseas qualified projects for environmentally-friendly and socially sustainability.

Credit Agricole CIB, Hong Kong and Shanghai Banking Corporation (HSBC), Citigroup, and J.P. Morgan were joint underwriters. From the beginning of May 2019, with the global investment banks, Korea started to prepare for issuing the bond, such as issuance framework design and second party opinion review. And, in June 2019, the Ministry of Economy and Finance held investor road shows (in London on June 8, and in New York on June 10).

Following the bond issuance roadshows, Korea successfully sold dollar-denominated Foreign Exchange Stabilization Fund Bonds in New York on June 12: US $0.5 billion worth of Green and Sustainability Bonds with a 5 year maturity sold at an interest rate of 2.177 percent (5-year US Treasury+30bp) and US $1.0 billion worth of straight bonds with a 10 year maturity sold at an interest rate of 2.677 percent (10-year US Treasury+55bp), yields setting at the lowest level. The low yield of the bonds shows global investors' confidence in the fundamentals of the Korean economy. The successful issuance not only helped broaden the investor base, but also globally showed the Korean government's will to contribute to environmental and social value.

9) SRI is a starting point for Green Bond issuance, and the SRI market has developed into Social Bond and Sustainability Bond.

05 Government Bond Investors

(1) Overview

Investors in the government bond market are classified into domestic or foreign investors by nationality, and financial institutions (ie. banks, insurance companies, and pension funds) or non-financial institutions (ex. non-financial companies and retail investors) by investment institution type.

Among the main investors, banks traditionally take up the largest share in KTB holdings. Institutional investors are key investors, meaning the proportion of retail investors is fairly small.

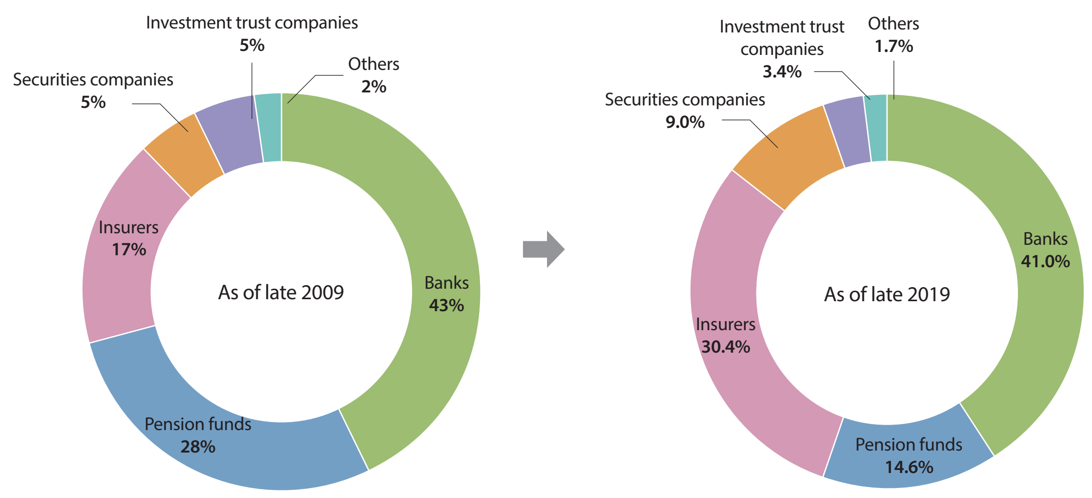
<Table 1-5> Main Investors in KTBs

(Unit : KRW trillion)

Classification	Banks	Pension funds	Insurers	Securities companies	Investment trust companies	Others	Total
Holdings	264.1	94.1	195.8	57.8	21.6	11.2	644.7

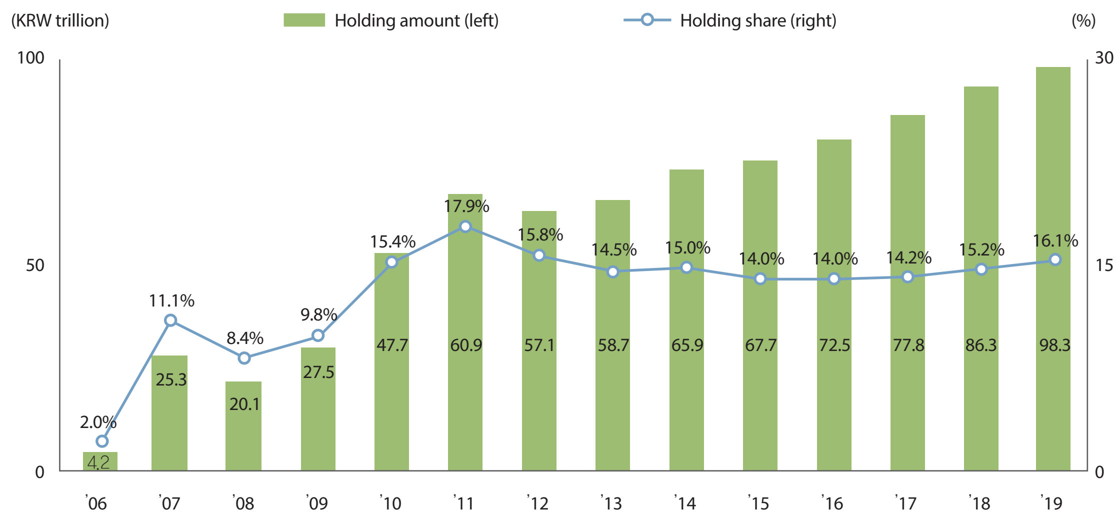
* As of December 2019 (Stripped KTBs included)

[Figure 1-6] KTB holdings



Meanwhile, foreign investment has been steadily increasing since the full opening of the bond market at the time of the 1997 Asian financial crisis. KTB holdings by foreign investors recorded KRW 98.3 trillion as of the end of 2019, equivalent to 16.1% of the total KTBs outstanding.

[Figure 1-7] KTB holdings by Foreign Investors



(2) Diversification of Investors

The Korean government bond market traditionally depended on domestic investors and banks, but other investors—namely foreign investors and non-bank financial institutions—are gaining importance as well. Investors with different time horizons, risk preferences, and trading objectives can disperse systemic risks and mitigate market volatility.

Following the expansion of the retirement pension scheme and introduction of risk-based capital (RBC) requirements, non-bank financial institutions including pension funds and insurance companies are also increasingly investing in KTBs. To keep up with the demand from these long-term investors, efforts are being made continuously to promote the long-term sovereign debt market. As part of these efforts, the government has strengthened the market-making role of PDs for 10-year or longer KTBs, and regularly issues 30-year and 50-year KTBs.

Relation between Bond Price and Yield

A bond price equals the present value of its expected future cash flows. The rate of interest used to discount the bond's cash flow is known as the Yield to Maturity (YTM).

The yield is usually expressed as a cost yield, current market value, or running yield.

A coupon-bearing bond may be priced with the following formula:

$$P = \frac{a}{(1+r/2)^1} + \frac{a}{(1+r/2)^2} + \cdots\cdots + \frac{a}{(1+r/2)^6} + \frac{A}{(1+r/2)^6}$$

where:
a = the periodic (6 months) coupon payment (3-year maturity)
r = YTM (1 year)
A = the bond's par or face value

Bond prices and yields act like a seesaw. The formula show the following relationship:
if r > coupon rate, P < face value
r = coupon rate, P = face value
r < coupon rate, P > face value

YTM and Bond Price[10)]

		YTM and Bond price(P)		
		9%	← 10% →	11%
Maturity	1Y	9,906(0.94%)	← 9,841 →	9,723(-0.93%)
	2Y	9,821(1.82%)	← 9,645 →	9,474(-1.77%)
	3Y	9,742(2.63%)	← 9,492 →	9,251(-2.54%)

10) Coupon rate: 8%, par value: KRW 10,000, periodic interest payment every six months, (change)

part 02

2019 KTB Market

Ministry of Economy and Finance

Korea Treasury Bonds 2019

01 Overview

In 2019, KTB yields considerably dropped from the previous year due to growing concerns that US-China trade war could accelerate global downturn, and major countries' accommodative monetary policies. Amid the dropping yields, the government issued KTBs of KRW 101.7 trillion in total, which was KRW 4.3 trillion more than the previous year. Of the total amount, KRW 44.5 trillion was spent to cover general account fiscal fund, and KRW 57.2 trillion was used for redemption at maturity and buy-backs.

In the first half of 2019, KTB yields declined. This drop was motivated by lingering US-China trade war, concerns over global economic downturn, accommodative monetary policy of major central banks and Korea's negative growth (△0.3%) in the first quarter. The declines of KTB yields continued in the second half of 2019. In particular, KTB yields hit a record low in August[11] amid Japan's export curbs on semiconductor materials to Korea and escalating US-China trade conflicts. Along with the dropping yields drop, the second half of 2019 saw three interest rate cuts in U.S. (July, September and October) and two cuts in Korea (July and October). The yield for the 10-year KTB recorded 1.683% at the end of 2019 which was less than 26.5bp of the end of 2018.

<Table 2-1> KTB Yield Movement

(unit : %)

	late 2018	late 2019	Y-O-Y(bp)	Highest of the year	Lowest of the year
3Y KTB	1.817	1.360	△45.7	1.836	1.093
5Y KTB	1.884	1.480	△40.4	1.914	1.127
10Y KTB	1.948	1.683	△26.5	2.051	1.172
20Y KTB	1.954	1.691	△26.4	2.101	1.150
30Y KTB	1.927	1.682	△24.5	2.088	1.142
50Y KTB	1.922	1.682	△24.0	2.071	1.141

11) On August 16: 1.127% (5Y), 1.172% (10Y), 1.142% (20Y), 1.141% (30Y) / On August 19: 1.093% (3Y)

Despite the uncertainties in home and abroad, KTBs were successfully issued as scheduled; in volumes balanced out throughout the year. Much efforts were also put in to prevent yield fluctuations that may be caused by the supply and demand imbalances at certain point in time. While the issuance volume of the long-term bonds was adjusted in a flexible manner, taking into account market conditions such as the increased demand from insurance companies and other long-term investors, optimal issuance of KTBs by maturity – short-, medium-, and long-term – was maintained as scheduled early in the year. To manage refinancing risks that may arise due to maturity dates falling heavily on a certain period of time, the government strengthened bond market stability by actively refinancing KTBs whose maturities were heavily concentrated on the year of 2020.

The average daily trading volume was KRW 11.1 trillion[12)] which slightly fell compared to 2018 (KRW 11.3 trillion) in spite of an overall increase in trading in the bond market. But, KTBs have maintained active daily trading volume since 2012, exceeding KRW 10 trillion.

Despite concerns like the Fed's rate hikes, a net foreign investment in KTBs continued to increase. Foreign holdings in KTBs is KRW 98.3 trillion as of the end of 2019, equivalent to 16.1% of total KTBs outstanding. Even though external and internal uncertainties including US-China trade dispute and Brexit continued in 2019, we saw stable investments that holdings by foreigners hit a record high (KRW 123.7 trillion as of the end of 2019).

US-China Trade Conflicts

There is little doubt that the most consequential event of 2019 as well as 2018 was the trade war between the United States and China which had a significant impact on financial markets and the real economy. In 2018, the US-China trade war which had been growing since the second half of 2017, heated up as tariffs took effect. Their ongoing trade war in 2019 escalated uncertainty on the trade outlook. And, in August, it added the possibility of even greater disruption from a potential currency war as the US officially named China as a "currency manipulator." In addition, the trade war impacted not only US and China, but also threatened the global economy including the EU and EMs. The trade tensions hobbled global growth, international organizations such as IMF warned, cutting their forecast for the year. In response to the slowing global economy, U.S. cut interest rates and so did the BOK to support the Korean economy. On December 13, 2019, the US and China reached an historic and enforceable agreement on a Phase One trade deal, and they signed the deal on January 15, 2020. They ended its twenty one-month trade war. There is still concerns that they did not reach a deal on fundamental conflicts, but the official truce in the US-China trade war would ease uncertainties over global economy.

12) Average daily volume (KRW trillion): 19.6 (2018)→18.4 (2019)

<US-China Trade War: A Recent Timeline>

Date	Country	Content
1-Aug-17	US	USTR initiated investigation under sec 301
10-Oct-17	US	Public hearing on China's acts, policies, and practices
1-Mar-18	US	Announced a 25% tariff on steel imports and 10% on aluminum imports
22-Mar-18	US	USTR released report Trump signed Memorandum to impose tariffs on China filed WTO complaint on China's protection of intellectual property rights
23-Mar-18	China	Unveiled tariffs on $3bn of US imports in response to steel and aluminum tariffs
2-Apr-18	China	Imposed a 15% tariff on 120 US products, such as fruits, and steel pipes, and a 25% tariff on 8 other US products including pork
3-Apr-18	US	USTR released Proposed Tariffs List on China
4-Apr-18	China	Announced plans for a 25% tariff on $50bn of US products, including aircraft, cars and soy beans
5-Apr-18	US	Threatened new tariffs worth $100bn
3-May-18	US-China	1st trade talks in Beijing
15-May-18	US	Public hearing on Proposed Tariffs
17-May-18	US-China	2nd trade talks in Wahington DC
14-Jun-18	US	Trump's statement: 25% tariff on $50bn of goods
19-Jun-18	US	Trump's statement: $200bn more worth of goods
6-Jul-18	US	USTR: tariffs effective on 6 July 2018 (~$34bn products)
2-Jul-18	US-China	3rd trade talks in Beijing
7-Aug-18	US	USTR: tariffs effective on 7 August 2018 (~16bn products)
3-Aug-18	China	Proposed additional tariffs on 5,207 US products worth $60bn
22~23-Aug-18	US-China	4th trade talks in Washington DC: Discussions ended with no major breakthroughs (US) tariffs on $16bn of Chinese imports began (China) retaliation of tariffs on $16bn of US exports began
17-Sep-18	US	USTR, the finalized list of tariffs on $20bn worth of Chinese goods
1-Dec-18	US-China	Agreed to temporary truce for 90 days

02 Major Policies

(1) 2019 KTB Issuance

The Korean government issued KTBs worth KRW 101.7 trillion (including supplementary budget) in 2019, which was KRW 1.2 trillion lower than the planned issuance (KRW 102.9 trillion). While the amount of net increase (KRW 44.5 trillion) used to cover budget deficit and support expansionary fiscal policy increased by KRW 24.2 trillion from the previous year, the redemption amount (KRW 57.2 trillion) on including refinancing and buy-backs decreased by 19.9 KRW trillion from the previous year. As a result, the total issuance amount increased by KRW 4.3 trillion from the previous year of 97.4 trillion.

<Table 2-2> KTB Issuance

(unit : KRW trillion)

	2014	2015	2016	2017	2018	2019	
						Planned	Actual
Gross Issuance	97.5	109.3	101.1	100.8	97.4	102.9	101.7
Net Increase	37.6	46.8	31.8	29.8	20.3	45.8	44.5
Redemption	59.9	62.4	69.3	71.0	77.1	57.1	57.2

(2) Issuance Spread out Throughout the Year

In order to prevent market volatility that may be triggered by the mismatch of supply and demand for KTBs and to provide predictability of the issuance volume, the government has been issuing KTBs in amounts that were spread out throughout the year.

While focusing on issuing KTBs in amounts spread out throughout the year, the government adjusted the issuance volume for the first and second half of the year taking into account market conditions, tax incomes, and demand and supply of capital. Due to early fiscal execution to boost the economy and uncertainties for the second half, the issue volume[13)] in the first half surpassed that of which was expected for the second half.

13) Average monthly issue(KRW trillion): 8.5 (Total in 2019), 9.7 (1H 2019), 7.2 (2H 2019)

The Korean government has established a monthly issuance plan, depending on the market supply and demand for bonds, and fiscal funds.

(3) Policy to Maintain Optimal Issuance by Term and Increase Long-term Bonds

The Korean government maintained optimal proportion of KTB issues by term (short-, medium- and long-term) not by maturity (3-year, 5-year, 10-year, 20-year, 30-year and 50-year), the same as 2018, to effectively respond to market conditions, and supply and demand. While the issuance volume of KTBs was adjusted in a flexible manner taking into account monthly market conditions, optimal issuance of KTBs by term was maintained as scheduled early in the year. Also, the government increased the share of long-term KTBs (over 20-year) in response to growing demand for bonds with longer maturities: 25.3% (2016) → 30.1% (2017) → 35.4% (2018) → 35.9% (2019). And, in response to strong demand from the market, 2019 saw successful bi-monthly issuances of 50-year KTBs (months with even number and March and September, total eight issuances) which was launched in 2016. As a result, the average time-to-maturity of KTBs increased to 10.64 years in 2019 from 7.62 years in 2015.

<Table 2-3> Issuance of KTBs by Maturity

(unit : KRW trillion)

KTB by Maturity		3Y	5Y	10Y	20Y	30Y	50Y	Total
2018	Guideline(%)	40±5		25±5	35±5			100
	Actual (%)	40.4		24.2	35.4			100
	Issuance amount	19.5	19.9	23.5	9.8	22.6	2.1	97.4
2019	Guideline(%)[14]	40±5		25±5	35±5			100
	Actual(%)	38.4		25.7	35.9			100
	Issuance amount	20.6	18.5	26.1	7.7	25.6	3.2	101.7

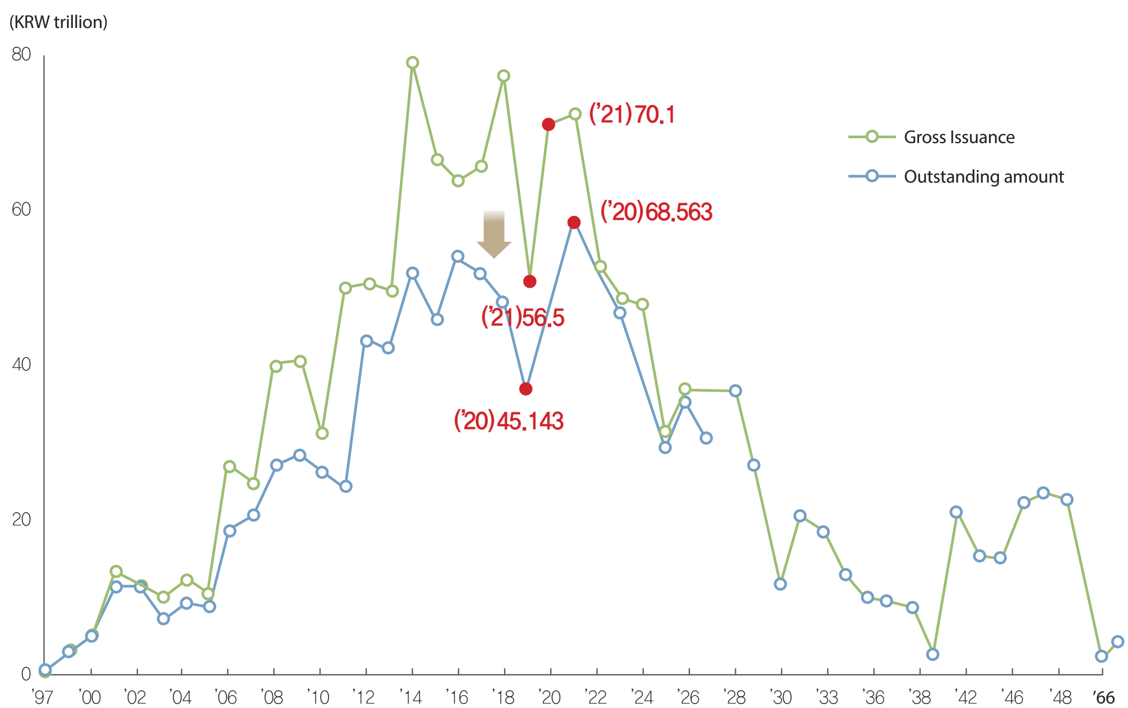
14) Guideline for 2020 is the same as 2019, but over 20Y KTB issuance targets for the middle limit (35%).

(4) Dispersion of Maturities

The government has continued to actively conduct buy-backs and conversion offers to minimize refinancing risks that may occur in the case existing debt maturities heavily concentrated on certain years.

In 2019, especially, the government made an active effort to refinance KTBs that are due to mature in 2020 and 2021 to preemptively eliminate risks from extreme increase in issuance volume and interest rates. As the result, redemption amounts on maturity by 2020 and 2021 decreased by approximately KRW 20.3 trillion.

[Figure 2-1] Effects of Maturity Dispersion through Buy-backs and Conversion Offers



(5) Promotions to enhance the underwriting base

To issue KTBs in a stable manner in response to growing market volatility, Korea has improved measures to enhance the KTB underwriting role of PDs. As part of it, the MOEF revised the Regulations on KTB Issuance and PD Operation in a way of leading PDs to actually underwrite KTBs. The revised regulation lowers scores for trading but adds scores for underwriting[15]. Also, the MOEF lengthens the hours for bidding options which enables qualified PDs to additionally purchase KTBis[16]. These efforts have contributed to promoting the KTBi market with plentiful liquidity.

(6) Revision for rational evaluation

The MOEF incorporated monthly and quarterly evaluation programs which were different from unified evaluation. Monthly evaluation only recognized the amount that the PDs actually underwrite
only actual underwrite

<Table 2-4> Major Policies in 2019

Date	Details
2019. 2.1	Announced outstanding PDs* for the second half of 2018 * Meritz Securities(1st overall), Shinhan Investment Corp(1st among securities companies), NH Investment&Securities(2nd among securities companies), Kookmin Bank(1st among banks), Industrial Bank of Korea(2nd among banks)
4.1	Executed the revised PD regulations* * Increased underwriting scores, extend the period of bids for additional purchase of KTBis, and incorporated monthly and quarterly evaluation standards on underwrites
6.4, 7.23, 8.8	Decreased interest rate of National Housing Bond-Type 1 (1.75% →1.50% →1.25% →1.00%)
7.31	Announced outstanding PDs* for the first half of 2019 * Kookmin Securities(1st overall), NH Investment&Securities(1st among securities companies), Meritz Securities(2nd among securities companies), Credit Agricole Bank(1st among banks), Kookmin Bank(2nd among banks)
9. 4	Held the award ceremony for outstanding PDs of the first half of 2019 and the KTB market development forum
10.8	Hosted the 6th international conference on Korea Treasury Bonds
12.19	Hosted the 1st Debt Management Strategy Committee * Session 1: Issuance Plan for 2020 and revised regulations Session 2: Medium and long-term development for the KTB market
12.23	Released the issuance plan for 2020 and announced the revised regulations

15) Quarterly PD assessment scores: KTB underwriting 34 points, Offering of bid-ask prices 32 points, Trading volume for 10Y KTB futures 2points → KTB underwriting 36 points, Offering of bid-ask prices 31 points, Trading volume for 10Y KTB futures 1 points
Monthly PD assessment scores: KTB underwriting 34 points, Offering of bid-ask prices 32 points → KTB underwriting 36 points, Offering of bid-ask prices 31 points

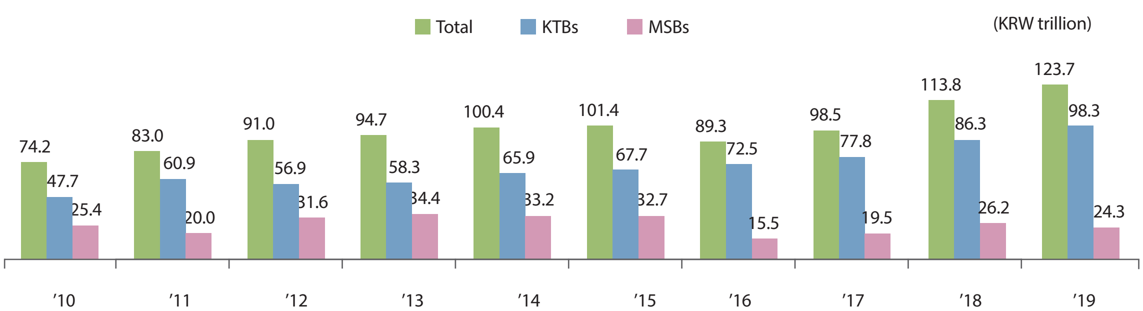
16) KTBi underwriting (was allowed to be exercised from 14:30 to 15:30 on the auction date of 10Y KTBs,) can be exercised from 14:30 to 15:30 on the auction date of 10Y KTBs and from 09:00 to 15:30 on the next date of the auction.

03 Foreign Investment Trend

Despite mounting external uncertainties including US-China trade war and Brexit, foreign investment into South Korean bonds in 2018 remained stable with foreign holdings of more than KRW 110 trillion.

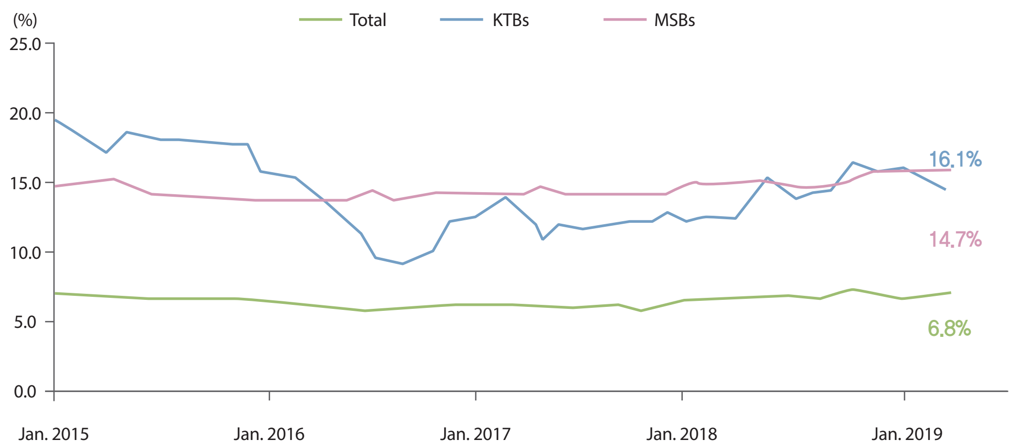
Although the outstanding bonds held by foreign investors continued the KRW 100 trillion line in mid-2013, it slightly decreased as the foreign institutional funds that sold their holdings in 2016 due to portfolio adjustments. But, in 2017, the holdings rebounded the KRW 100 trillion line. In addition to 2018, 2019 saw capital inflows into Korea's bond market peaking, which showed a stronger preference for Korean government's bonds.

[Figure 2-2] Outstanding Amount Held by Foreign Investors



In 2014, foreign ownership of the total Korean bonds remained at 6.8~7.0%. The foreign holdings were on the decrease from the second half of 2015 to 2016, but it rebounded to 6.8% in the end of 2019. As for the treasury bonds, foreign ownership increased up to 15.2% in late 2019 from 16.1% in late 2014. But as for the MSBs, foreign ownership dropped to 14.7% in late 2019 from 18.7% in late 2014.

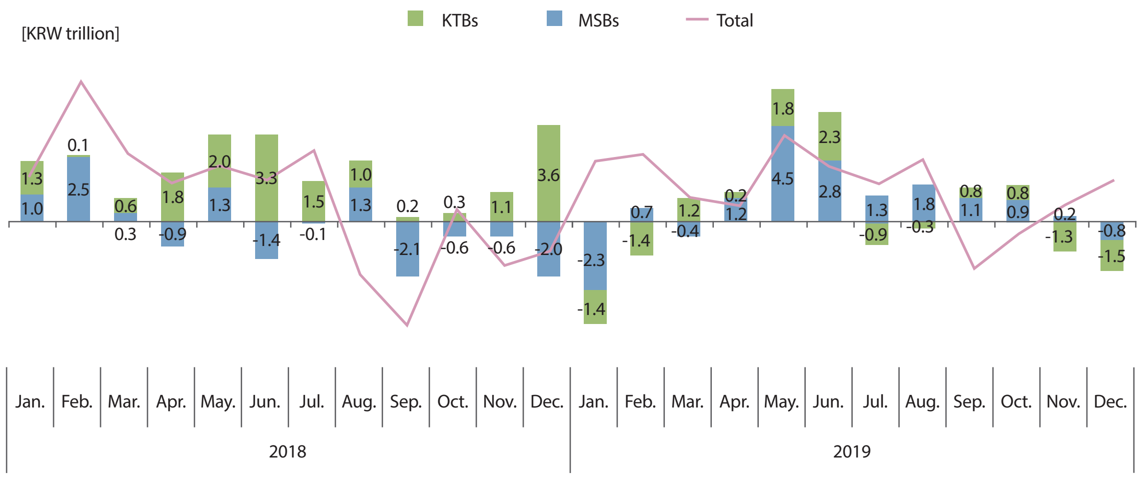
[Figure 2-3] Foreign Ownership by Year



In 2018, as net foreign flows into Korean bonds continued to increase from May to August, outstanding KTBs by foreign investors hit record highs for four months in a row. In September and October, redemptions slightly decreased their outstanding but, from November, the inflows rebounded.

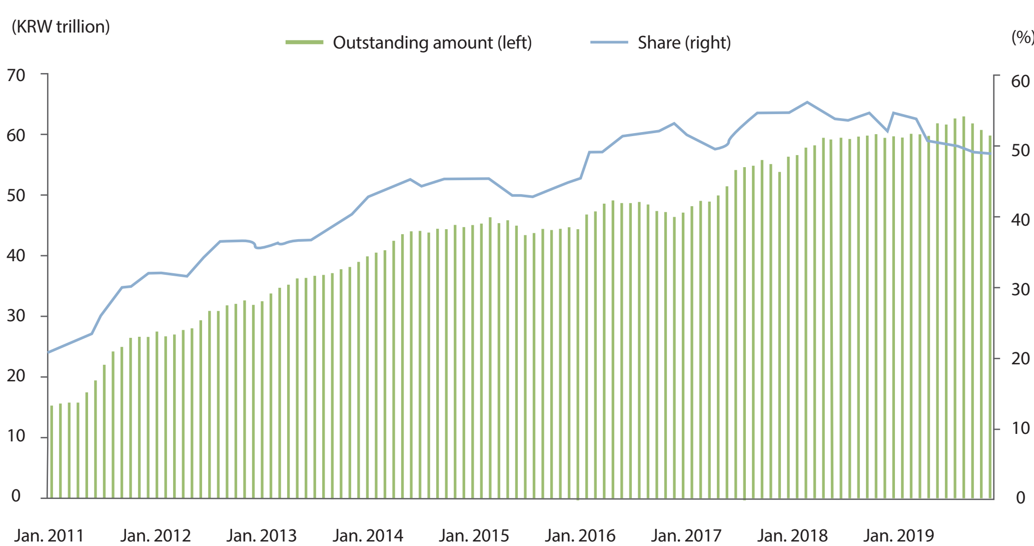
In 2019, foreign inflows into Korean bonds continued and was primarily motivated by high national credit rating and profit opportunities. Net foreign inflows into treasury bonds and MSBs recorded KRW 11 trillion and KRW –1.4 trillion respectively, a total KRW 9.2 trillion. Due to investors' preference to taking risks in line with easing trade tensions between the U.S. and China, the outstanding held by foreign investors decreased in January and February. But it continued to rise and reached KRW 120 trillion in June, and then in September hit a record high reaching KRW 127.2 trillion. From October to the end of the year, however, the outstanding dropped due to maturity redemption, book closing and the like. Despite the outflows in the forth quarter, the net inflows of December hit a record high, reaching KRW 123.7 trillion.

[Figure 2-4] Net Foreign Inflows in 2018 and 2019



Taking a closer look at the investors, outstanding KTBs held by central banks (long-term investors) has been steadily and significantly rising: In 2019, the holdings share of central banks slightly decreased as the outstanding KTBs by short-term investors increased. But, their holdings share in the entire bond investment by foreign investors increased from 20% in late 2010 to 40% in November 2013. As of the end of 2019, their outstanding reached 48.8%, placing them as one of the main investors in Korea's government bond market.

[Figure 2-5] Outstanding Bonds Held by Foreign Central Banks



The time-to-maturity of bonds held by foreign investors has been longer due to growing share of long-term investors and issuance of long-term KTBs. In 2018, more investments in MBSs which had higher yields than KTBs lead the time-to-maturity of KTBs to be shortened, but it rebounded to 4.46 years due to growing investments in KTBs in 2019. As for KTBs and MSBs, the weighted average remaining term was 5.37 years and 0.88 years respectively.

<Table 2-5> Weighted Average Time-to-Maturity of Bonds Held by Foreign Investors

(Unit : Year)

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	2.43	2.59	2.88	2.90	3.21	4.21	4.07	3.69	4.46
KTB	3.03	3.59	4.02	4.04	4.45	4.99	4.96	4.65	5.37
MSB	0.61	0.82	0.85	0.68	0.67	0.72	0.57	0.61	0.88

Ministry of Economy and Finance

Korea Treasury Bonds 2019

part 03

Primary Market

1. Overview
2. Issuance Method
3. Fungible Issue
4. Redemption

Ministry of Economy and Finance

Korea Treasury Bonds 2019

01 Overview

Korea Treasury Bonds (also called KTBs) are issued in terms of 3, 5, 10, 20, 30, 50 years and pay fixed principal and interest in general. KTB is also issued in forms of Inflation Linked, which principal is adjusted by changes in the consumer price index. The Inflation Linked KTB is issued in terms of 10 year.

KTB auctions are held every Monday to maximize investor's predictability. 3-year KTB auction is held on the first Monday of every month; 30-year KTB on the first Tuesday; 5-year KTB on the second Monday; 10-year KTB on the third Monday; and 20-year KTB on the fourth Monday. If Monday is a public holiday, the auction is held on the next business day. Inflation linked KTBs are issued during the next date of the 10-year KTBs auction through non-competitive bids.

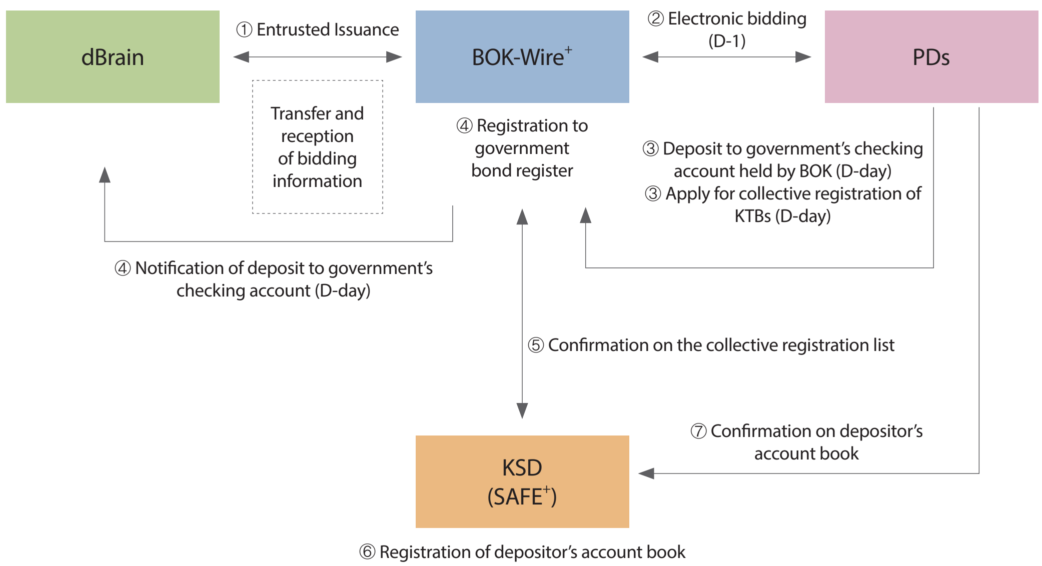
All KTBs are issued as coupon bonds and pay interest every six months. Since the KTBs are fungible, their issue dates are fixed regardless of their auction dates. For example, the issue date of 3-year KTBs issued from June to November in 2019, will all be June 10, 2019. In other words, the issue date of 3-year KTB auctioned, for instance, on the first Monday of July 2019 will be June 10, 2019. As with any other bonds auctioned within the above period, their first interest payment will be made after six months of the issue date, which is December 10, 2019.

The Korean government announces annual and monthly KTB issuance plans to enhance market predictability. The annual issuance plan is released at the end of the year. The plan includes total annual issuance volume, share of KTBs by maturity, policies newly introduced or revised, and etc. The monthly issuance plan on the other hand is released by the last day (usually by the last Thursday) of every month. It includes new issuance, buy-backs and/or conversion offers, auction dates, issuance volume, and etc.

The Bank of Korea manages securities business, such as issuance and redemption of Treasury bonds, for the government in accordance with the National Government Bond Act. Also, the BOK handles securities services including bidding, bond registration, listing application for the central government. The securities business is conducted through BOK's financial wire network system, BOK-Wire+. Bidders including PDs and PPDs use the system to access information on auctions, submit bids, receive auction results, make payment for successful bids, apply for registration, and others.

KTB auctions (exclude inflation-linked KTBs) in the primary market are competitive bidding participated by only PDs and PPDs. With the minimum bid amount being KRW 1 billion, PDs can only bid in amounts multiples of KRW 1 billion. Unlike US and Japan, retail investors can underwrite KTBs only through PDs, at the highest winning rate determined in competitive auctions participated by PDs. The minimum bid unit for them is KRW 100,000.

[Figure 3-1] Bidding and Issuance Process



02 Issuance Method

(1) Competitive Auction

In the past, when the government bond market was underdeveloped, the authorities required financial institutions to underwrite KTBs. As the market developed more in the aftermath of the 1997 Asian financial crisis, the government began to issue bonds through competitive auctions in July 1999[17]. The conventional (multi-price) auction method was used until July 2000. In a conventional auction, an issuer orders bids by price (yield) in descending (ascending) order and accepts the higher (lower) bids until the issue is exhausted. Each successful bidder pays the price they bid.

To minimize the possibility of the winner's curse and encourage active participation in auctions, the government introduced Dutch auction method in August 2000. In the Dutch auction, an issuer orders bids in descending order and accepts those that allow full absorption of the amount up for issue.

In Dutch auction, however, there is no penalty to bidding much higher than the secondary market price going into the auction. This means the average price is likely to be distorted higher due to overheated competition.

17) (Article 6 of the Regulations on KTB issuance and PD operation) Competitive auctions are held between 10:40 am to 11:00 am on the auction day.

The winners often incurred losses, eventually pushing down bid-to-cover ratio. As a result, the differential price auction method was introduced in September 2009, which was a mixture of the two main methods.

In a differential-price auction[18)], the accepted bid yield is determined by categorizing all bid yields into groups at intervals of 3~4 basis points in descending order, and by selecting the highest bid yield in each group. Such method helps PDs to bid reasonable yields and reduce their underwriting burden.

Method of Determining Successful Bidding Yield

(Issue amount : KRW 80 billion)

PD	Bidding conditions	Cut-off yield		
		Dutch	Conventional (Ex.3bp)	Differential-Price
A	1.990%, 20 billion won	All 2.050%	1.990%	1.990%
B	2.000%, 20 billion won		2.000%	1.020%
C	2.010%, 20 billion won		2.010%	
D	2.030%, 10 billion won		2.030%	1.050%
E	2.050%, 10 billion won		2.050%	
F	2.070%, 20 billion won	Failed bid	Failed bid	Failed bid

Under a differential price auction, for example, the highest cut-off yield is 5.050% (of PD E), the bid yields are divided into groups of "5.0505~5.025%," "5.020~4.995%," and "4.990~4.965%." Each group's highest bid yield – 5.050%, 5.020% and 4.990% - becomes the successful bidding yield.

With the improvement of the auction method, weak bid-to-cover ratio has increased much higher to the level of developed countries. KTB bit-to-cover ratio was barely above 100% during the early 2009, but after using the differential price auction, it became much higher.

<Table 3-1> Bid-to-Cover Ratio in the KTB market

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Bid-to-cover ratio(%)	156.7	304.7	386.0	464.9	412.1	409.1	372.7	383.3	333.6	295.2	297.6

18) To encourage PDs to participate in biddings, the Korean government expanded the interval by 1 basis point (3Y to 5Y KTBs: 2→3bp, 10Y to 30Y KTBs: 3→4bp) in April 2017.

Merits and Demerits of Auction Methods

	Convention Auction	Dutch Auction
Merits	A gap between successful bid and secondary market price is small.	
	• Effective for a case where the price discovery process is highly transparent.	• Effective for a case where the market is less liquid with the price discovery process left uncertain. • Suitable for a high volatility market • Mitigating the fear of the winner's curse to encourage positive bidding
Demerits	• The winner's curse is feared to affect positive bidding.	• Including excessive bidding
Country	• Sweden, New Zealand, Germany, France, Australia	• U.S., Norway, Swiss, Ireland, Denmark

(2) Retail Investors

Retail investors can purchase KTBs through PDs after opening an account at the financial institution (PD). Upon an auction announcement, they should submit the amount they wish to purchase to the PD by the day before a competitive auction. The minimum bid amount is KRW 100,000 and the maximum is KRW 1 billion.

For retail investors participating in a competitive auction, not more than 20% of the offering amount in the auction is allocated first. Unlike PDs, retail investors are not eligible to bid yields but purchase at the highest winning rate set at a competitive auction.

(3) Post Auction Option: Non-competitive Bids

To enhance the PD's role in making a market, three business days are provided for PDs to make an additional underwrite after a competitive auction[19)]. Unlike in a competitive auction where PDs bid low yields to purchase treasury bonds, PDs may underwrite KTBs as at yield already determined.

Only PDs that underwrote KTBs through competitive auctions are eligible to participate in non-

19) (Article 11 of the Regulations on KTB issuance and PD operation) Requests for non-competitive bidding option are to be made between 12:00 to 15:30 on the day of a competitive auction, between 09:00 to 15:30 during the first two business days following the auction date, or between 09:00 to 12:00 on the third business day.

competitive bidding options. They are allowed to underwrite up to a certain percentage of what they underwrote at competitive auctions. The option is granted up to 20% for the top five PDs, 15% for 6th to 10th best-performing PDs, 10% for the 11th to 15th best-performing PDs, and 5% for the rest, based on their market-making performances of the semi-annual PD evaluation. The Ministry of Economy and Finance grants additional 10%p to the top five PDs and 5%p to 6th to 10th best-performing PDs[20] in the their monthly evaluation.

(4) Post Auction Option: Non-competitive bids option Ⅲ

The policy for PDs specializing in a STRIPS program was adopted to promote STRIPS in the KTB market. KTB STRIPS are regularly supplied for up to KRW 160 billion for 3Y, 5Y and 20Y KTBs, and up to KRW 210 billion for 10Y and 30Y KTBs. PDs that have obtained the right to purchase thses KTB STRIPS can make purchases up to KRW 20 billion on the third business day. The option is granted according to the outcomes of monthly evaluation conducted in the previous month.

03 Fungible Issue

The fungible issue system, in which new KTBs issued within a specified period are regarded as the same KTB issue, was introduced in 2000.

Currently, 3-year KTBs and 10-year KTBs are newly issued in June and December each year. For example, after being issued on June 10, 2019 through an auction held on June 3, 2019, they are issued again on July 1, July 29, August 26, September 30, October 28, 2019 with the same terms. Despite different auction dates, their issue terms are identical, and they are traded as the same bond in the secondary market.

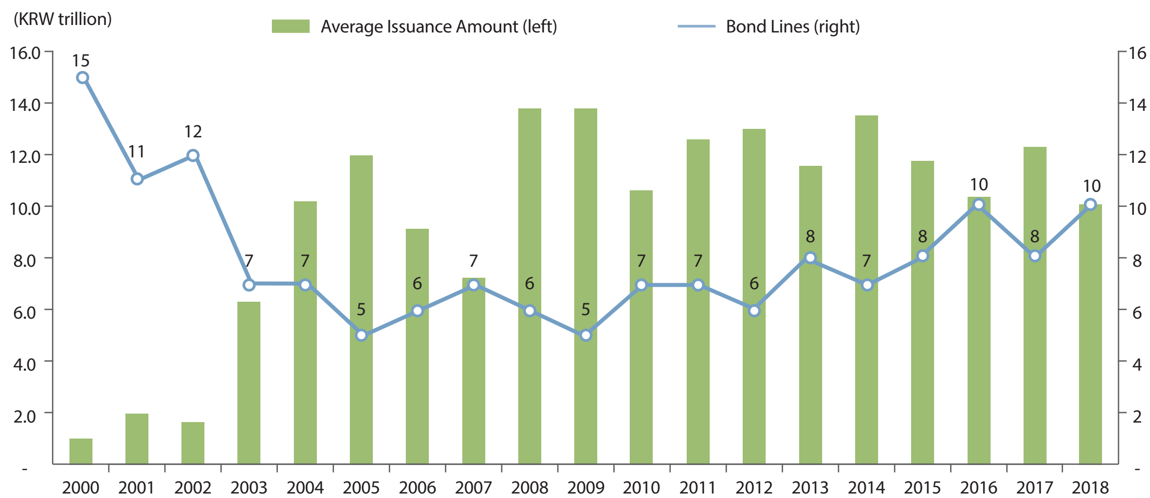
The fungible issue system is designed to enhance the liquidity, so that the government's funding expenses can be reduced and credible benchmark rates can be formed. In general, the increase in issuance volume of a single bond type leads to growing liquidity, which in turn, leads to lower rates.

Before the introduction of fungible issue, there were too many bonds in the market but less trading volume, which drove liquidity shortage. As all KTBs were newly issued as different bond types, bonds issued could not serve their role as benchmarks (on-the-run) long enough, causing discontinuation of yields.

20) The option has been granted since April in 2018.

As a result, the Korean government launched the fungible issue with KTBs that were to be issued beginning May 2000 (fungible issue period of 3 months). The average issuance volume of each bond type continuously increased to KRW 11.6 trillion (average of recent five years) from KRW 1 trillion in 2000.

[Figure 3-2] Number and Average Amount of KTBs Issued

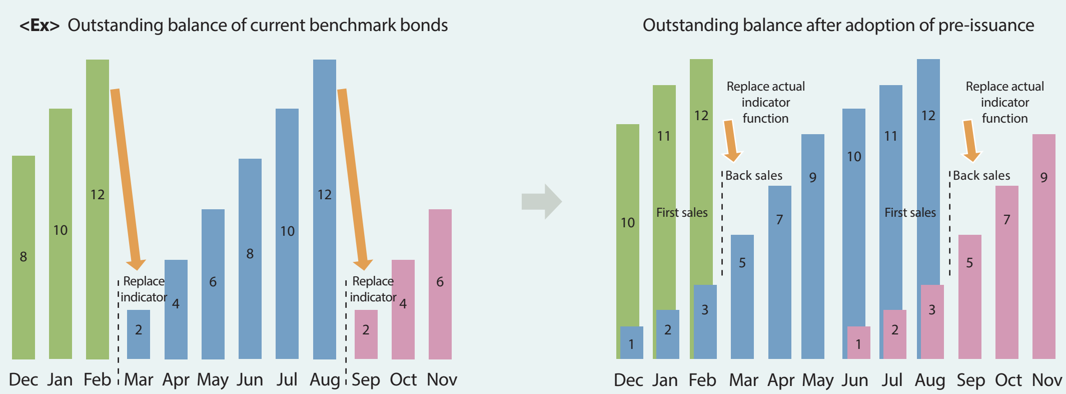


<Table 3-2> Fungible issue of KTBs

Maturity	No. of annual new issues	Month of new issue	Fungible issue term
3Y	Twice a year	June, December	6 months (Jun to Nov, Dec to May of the next year)
5Y	Twice a year	March, September	6 months (Mar to Aug, Sep to Feb of the next year)
10Y	Twice a year	June, December	6 months (Jun to Nov, Dec to May of the next year)
20Y	Once a year	September	1 year (Sep to Aug of the next year)
30Y	Once a year	March	1 year (Mar to Feb of the next year)
KTBi	Biennial	June	2 year (Jun to May in two years)

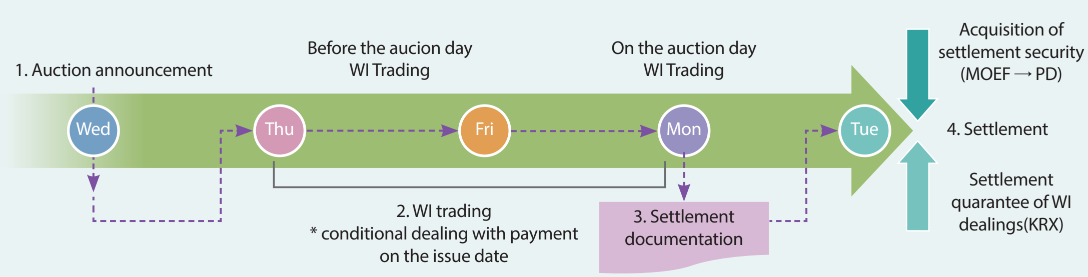
Pre-issuance and When Issued Transaction

In order to address the liquidity problem that occurs from replacing the benchmark bond, pre-issuance was put in place in January 2015. The existing benchmark bonds and to-be benchmark bonds are issued at the same time one to two months prior to new issuance. In 2016, ultra-long bonds (20-year and 30-year) became subject to pre-issuance as well. The pre-issuance period for 3-year to 10-year is two months but the period for ultra-long bonds is one month, considering the level of liquidity for those bonds. In 2018, Inflation linked bond was also issued one month prior to provide liquidity to the market.



And, in December 2015, in order to create a new demand for trading and allow investors to search for yields to auctions, the government established a when-issued (WI) market where trade can take place between two days before an auction and the issue date. The WI market allows PDs to hedge against interest rate fluctuations and risks from holding securities. In addition, through the WI market, the government is able to respond flexibly to the market supply and demand conditions such as by reducing the issuance volume in time of expected demand shrinkage due to market instability.

When Issued Transaction Procedures

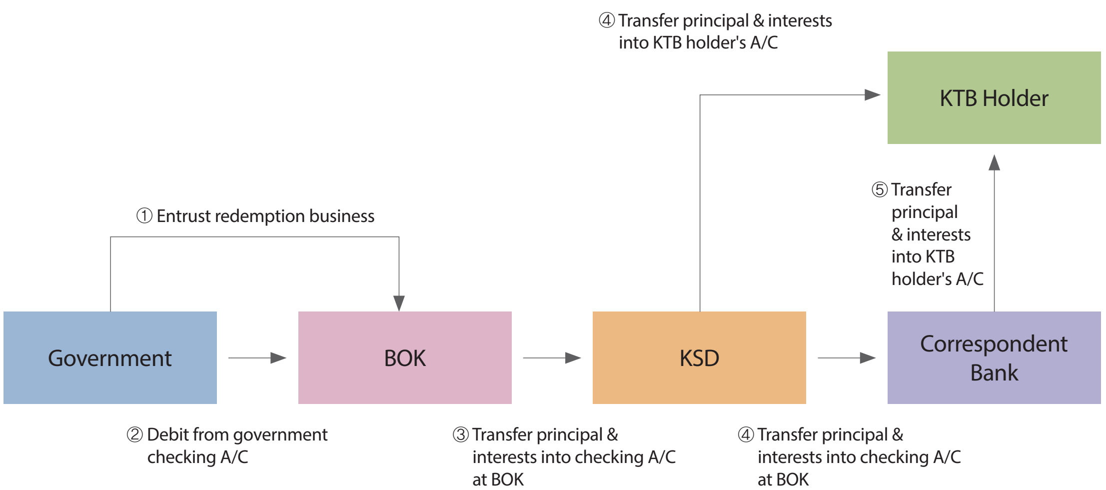


04 Redemption

(1) KTB Redemption

Through the redemption at maturity, the principal is redeemed in a lump sum upon maturity of the bond. The BOK makes deposits to KSD's current deposit account, and KSD transfers principal and interest to the deposit account of the institution that holds the KTBs.

[Figure 3-3] KTB Redemption Procedures



While most KTBs are redeemed at maturity, buy-backs and conversion offers are conducted when the MOEF deems it necessary to prevent heavy loads of KTBs maturing at a certain time and control market liquidity.

(2) Buy-back

The MOEF buys back unmatured marketable securities from KTB holders, which was initiated in December 2000. Buy-backs enables decreasing refinancing risks. The refinancing risks is the risk that debt will have to be rolled over at an unusually high cost or, in extreme cases, cannot be rolled over at all. The interest rate risk aspect applies in this case to reduced repricing risk by reducing heavy concentration of certain maturities and consequently decreasing interest rate pressures stemming from large volumes of maturities at a specific point in time.

The redemption before maturity may be carried out via KTB reverse biddings held for PDs and are underwrote directly from KTB holders when the MOEF deems it necessary.

There is no bidding limit for PDs, and the minimum amount for each issue is KRW 1 billion (par value), with incremental increases in multiples of KRW 1 billion. The purchased amount is derived by applying the lowest rates from each of the interest rate groups, which are grouped in intervals of 3 basis points from the lowest bid upward.

<Table 3-3> Buy-back Volume by Year

(Unit : KRW trillion)

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Amount	10.0	19.4	22.3	12.0	5.6	5.2	12.1	11.3	17.6	27.1	20.2

(3) Conversion Offer

The Korean government has a standing program for exchanging off-the-run bonds against on-the-run bonds, which was introduced in May 2009.

Conversion offers support the issuance of benchmark bonds by retiring illiquid off-the-run bonds. The differences in value are settled in the exchanging process.

Retiring illiquid off-the-run bonds from the market stimulates the build-up of benchmark bond issues. Thus, an issuer can build benchmarks of a larger size. As a result, conversion offers contribute to market liquidity.

At the competitive auctions for conversion offers, the minimum amount for each issue is KRW 1 billion (par value), with incremental increases in multiples of KRW 1 billion. The yield is determined through differential price auction method, which is the same as the competitive auction or the buyback. The yield for new bonds being issued had been the arithmetic mean of on-the-run yields that PDs bid but, as of January 2018, it is the yield determined on the auction day by the KRX KTB market[21).

<Table 3-4> Conversion Offer Volume by Year

(Unit : KRW trillion)

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Amount	5.6	2.9	4.8	2.0	2.9	3.1	4.6	4.2	1.7	2.2	1.6

21) Article 24 of the Regulations on KTB issuance and PD operation) The yield is the arithmetic mean of market prices in the KRX KTB market at 9:30 am, 10:00 am and 10:20 am and on the auction day

part 04

Secondary Market

Ministry of Economy and Finance

Korea Treasury Bonds 2019

Part 04

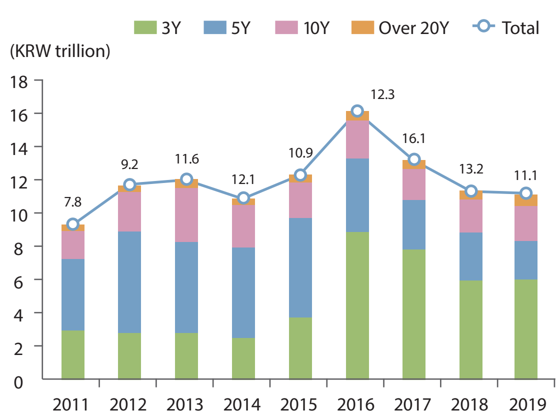
01 Overview

After purchasing KTBs in the primary market, investors cannot claim their principal and interest before maturity. Those wishing to cash bonds can do so on the secondary market, where previously issued bonds are traded between investors.

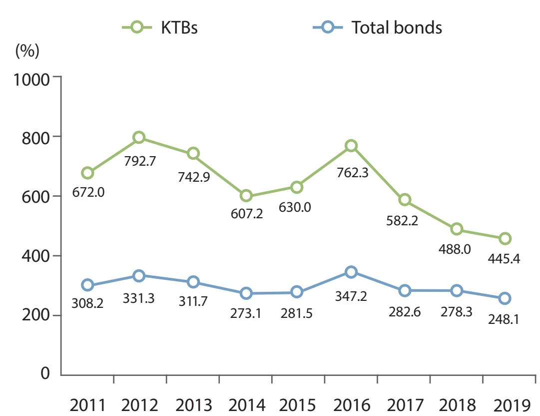
The secondary market provides opportunities for bondholders to profit from selling bonds. It also promotes fair price formation of bonds, increase their value as collateral, affects the price of bonds in the primary market, and the like. Hence, development of the secondary market is crucial for the efficient issuance of KTBs.

In the secondary market, bonds with higher liquidity, 3-year to 10-year KTBs, have been actively traded. As of 2019, KTBs account for approximately 60.3% (KRW 2,723.8 trillion) of the overall trading volume in the secondary market and are serving as the pricing benchmark.

[Figure 4-1] Average Daily Trading Volume of KTB by maturity



[Figure 4-2] Turnover ratio* of KTBs



* Turnover ratio : KTB trading volume of the year / Outstanding amount at the end of the year

02 Types of Secondary Market

Under the secondary market, there are several types of markets, including direct search market, broker market, dealer market and auction market.

The direct search market is where investors directly search for trading counterparts and bear the expenses that occur from the process of searching and bargaining. As bonds are not traded continuously in this market, third parties like brokers and dealers are not motivated to play in this market.

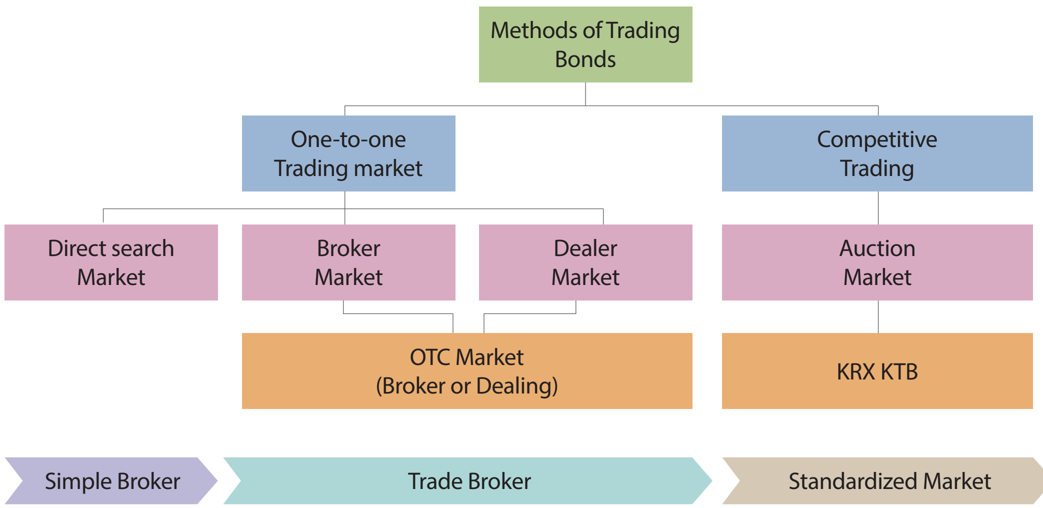
The broker market is where investors indirectly participate by entrusting brokers (proxies) with finding their trading counterparts. Unlike dealers, brokers do not use their own accounts for bond trade. They simply look for trading counterparts, negotiate prices for their investors, and receive commissions in return. Bond brokers can be divided into inter-dealer brokers who act as intermediaries among dealers, or general securities brokers who serve as proxies for retail investors.

The dealer market is where dealers, or mainly financial institutions, trade their own accounts and bear risks by serving as the investor's trading counterparts themselves. In this market, dealers have the advantage of instantly trading bonds according to bid or ask prices they offer, where profits occur from bid-ask spreads.

The auction market is an order-driven market in which buyers and sellers enter competitive auctions at the same time. All market participants gather together offline or online, communicate their trading intentions, and swiftly complete trades. Pros of this market include fast deal execution, sparing of expenses in searching for trading counterparts, narrowed bid-ask spread, and other.

Bonds issued in the Korean bond market may be traded on the exchange (KTX KTB) or OTC. The KRX KTB is an auction market, and OTC is a network of brokers and dealers who negotiate the sales of securities among them.

[Figure 4-3] KTB Secondary Market



03 Trading on KRX KTB

(1) Overview

The KRX KTB is an electronic trading system for KTBs, established by the KRX in March 1999, with the support from the Korean government to vitalize the KTB market and increase transparency. KRX KTB is completely a competitive bidding market where dealers trade in a large size.

As PDs designated by the government serve as market-makers on KRX KTB, continuously offering bid-ask prices for KTBs, market participants who wish to trade can buy and sell bonds.

(2) KRX KTB policy

Bond trading is carried out through the electronic trading system in the KRX KTB. The electronic trading system collects all quotations and displays them on trading screens in real time where trades are executed electronically. Main participants of the trading markets are banks and securities firms who gained permission as a Member of the Fixed Income Securities from KRX.

Dealers can participate by installing a trading program offered by KRX on their computers. Tradable bonds are KTBs, MSBs and Korea Deposit Insurance Fund Bonds. As of 2019, KTBs are mainly traded, accounting for about 99.4%, of KRX KTB market trading. The trading unit is in multiples of a par value of KRW 1 billion.

<Table 4-1> KRX KTB system

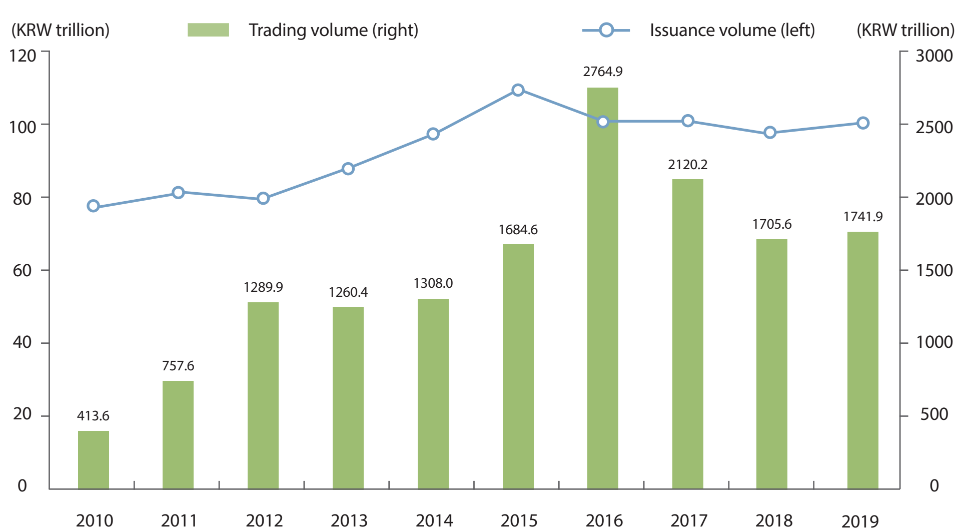
	Details
Trading hours	9:00 – 15:30
Bonds eligible for trading	KTB, MSB, DIFB
Trading unit	Multiples of a par value of KRW 1 billion
Quotation method	Price quote (Time-to-maturity < 2Y: KRW 0.1, < 10Y: KRW 0.5, > 10Y: KRW 1)
Trading execution method	Individual auction with multiple price
Participants	PDs (banks and securities companies), Trusters (institutions and etc.)
Settlement date	T + 1

(3) Evaluation

Ever since its establishment in 1999, the Korean government's policies to vitalize the bond market and PD's active role as market-makers helped achieve quantitative growth and qualitative changes in KRX KTB.

With the primary market having expanded, the trading volume on KRX KTB was merely KRW 10.1 trillion in 2001 but rose sharply to KRW 1,741.9 trillion in 2019.

<Figure 4-4> KTB Issuance and Trading Volume on KRX KTB



In addition, increased market quotes and reduced bid-ask spread contributed to evolving market conditions in which market participants can trade the desired volume without unfavorable price changes.

On KRX KTB, quotes and executed trades and their prices are disclosed in real time. Transactions are carried out between dealers on an electronic trading platform, through individual competitive bidding. Hence, KRX KTB is considered to have not only reduced trading costs but also increased market transparency.

<Table 4-2> Bid-Ask Spread of KTB Benchmarks on KRX KTB

(Unit : KRW)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
3Y KTB	1.9	1.3	1.1	1.2	1.2	1.1	0.8	0.6	0.6	0.6
5Y KTB	3.2	1.5	1.1	1.3	1.1	1.1	1.1	0.8	0.9	1.0
10Y KTB	7.2	3.5	2.1	2.7	1.9	2.0	2.0	1.8	1.8	1.8
20Y KTB	18.7	13.8	8.2	9.6	8.0	8.5	7.7	7.9	8.1	8.0
30Y KTB	-	-	64.1	22.9	11.2	12.8	13.3	10.5	9.3	10.8
Total	7.8	5.0	3.1	3.7	3.1	5.1	5.0	4.3	4.1	4.4

* Average of intra-day spread. KTBi is excluded from 10Y KTBs.

The efficient work performance and close cooperation between the government and market participants helped KRX KTB achieve substantial growth. The government, for its part, laid the foundations to nurture the competitive trading market that can be led by dealers using the electronic trading system, breaking away from past practices of one-to-one trading led by brokers. Primary dealers, as market-makers, continue to supply liquidity into the market by bidding prices of benchmarks with all maturities (3, 5, 10, 20, 30-year).

In addition, PDs provide the on-site market information (demand, market trends and conditions, etc) necessary for the devising and execution of policies. The government and PDs hold regular consultation meetings to discuss areas of improvement in the regulations for the primary and secondary market, and propose policies.

04 OTC Market

(1) Overview

The over-the-counter market encompasses dealer market, broker market, and direct search market. The OTC market can be understood as all markets excluding the KTX KTB market.

While the KRX KTB is driven primarily by PDs, the main participants in the OTC bond market are institutional investors, including banks, asset management companies, pension funds, and insurance companies. The Korea Financial Investment Association (KOFIA) is the managing authority of the OTC market.

While the KRX KTB was established and institutionalized to meet policy goals for such as baby bonds, stock-related corporate bonds and PDs, the OTC market was autonomously created, which the government only later began to regulate. As such, the main characteristics of the OTC market is that it is market-driven, where past practices are a powerful momentum. It is difficult to standardize bond trading in OTC market, since there are numerous numbers of issued bonds and even an identical bond can be traded with various different prices. So the bonds are traded after one-on-one negotiations between the participants, and traded actively.

(2) Trading in the OTC market

In the OTC market, KTBs account for 42.5% (as of 2019) of all bond trading and are used as benchmark bonds. MSBs (20.3%), and Financial bonds (20.1%) are also actively traded. Corporate bonds which accounted for more than half of the secondary market before the 1997 Asian financial crisis, fell markedly following the growth of the KTB market and the active liability management by companies. Their trading volume accounts for 6.1% in the OTC market as of 2019.

<Table 4-3> Trading in the OTC Market by Bond Type

(Unit : KRW trillion)

	2014		2015		2016		2017		2018		2019	
	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%
Government bonds	2,903.4	55.9	2,931.4	56.0	2,520.8	53.8	2,267.5	50.2	2,307.4	48.4	2,236.6	48.4
KTBs	2,706.5	52.1	2,735.8	52.3	2,350.7	50.2	2,125.9	47.1	2,123.4	44.6	1,963.8	42.5
Municipal bonds	14.7	0.3	17.0	0.3	12.1	0.3	10.3	0.2	9.3	0.2	11.6	0.2
Special bonds	311.4	6.0	277.2	5.3	254.4	5.4	245.7	5.4	221.1	4.6	226.0	4.9
MSBs	1,208.3	23.3	1,257.9	24.0	1,130.1	24.1	1,123.9	24.9	1,189.7	25.0	936.4	20.3
Financial bonds	572.7	11.0	604.0	11.5	623.9	13.3	707.0	15.7	832.5	17.5	930.1	20.1
Corporate bonds	184.9	3.6	143.7	2.7	145.8	3.1	160.7	3.6	203.1	4.3	281.1	6.1
Total	5,195.5	100	5,231.1	100	4,687.1	100	4,515.0	100	4,763.1	100	4,621.8	100

* Source: KOSCOM check, based on the bond classification by Korea Financial Investment Association (KOFIA)

(3) Methods of Trading Bonds

While individual investors can participate in the OTC market, institutional investors (including financial institutions and pension funds) and corporations trade the largest volume. The trading unit is in multiples of a par value of KRW 10 billion. There are no restrictions in trading hours, but they are generally between 8:30 and 16:30, the regular business hours of financial institutions.

Bond trading in the OTC market is mostly conducted via online messenger and telephone, where traders exchange real-time trading information and negotiate. In other words, trades in bonds are processed as follows: ①each institutional investor presents a bid-ask price to the financial investment firm they trade with, ②brokers enable financial investment firms and market participants to discover quotes, ③trade negotiation and confirm, and ④settlement. Under the Regulations on Financial Investment Business, settlement date ranges from T+1 TO T+30, although most settlements occur on T+1.

<Table 4-4> KRX KTB and OTC Market

	KRX KTB	OTC market
Participants	Dealers	Brokers
Trading execution method	Competitive bidding (Dealer↔KRX↔Dealer)	Negotiated trading (Institution→Broker→Institution)
Means of trading	Online bond trading system	K-bond, phone
Ask-price method	Ask price (along with yield)	Ask yield (along with price)
Trading unit	KRW 1 billion	KRW 10 billion No limits on trading unit
Trading hours	9:00 – 15:30	8:30 – 16:30
Settlement	T+1	T+1
Settlement method	Real-time net settlement	Gross settlement

(4) Major Systems (Publication of Real-Time and Reference Data for Over-the-Counter Bond Trading)

One of the focal tasks of Korea Financial Investment Association (KOFIA) under its mandate as the self-regulatory organization and administrator for the OTC market, the KOFIA have cooperated closely with the government to reduce the cost of price discovery and to ensure market transparency and the distribution of relevant information to all market participants. Also, the KOFIA has provided the reference data that are being collected and distributed through its system, K-Bond.

A. Publication of OTC Trade Execution Details

As part of its mandate to achieve transparency, KOFIA prescribes a report of transaction details by counterparties to KOFIA within 15 minutes of the trade being concluded; KOFIA then discloses this information via the KOFIA Bond Information website.

In the past, details of bond transactions during the day were all reported to KOFIA after 3pm, off the regular trading hours. This meant that bond trading information was not able to be used during that day's trading hours.

The publication mandate was introduced in 2000 to enhance market transparency. Information on issues, trading volume, yields, and investor categorization codes were to be provided within 30 minutes under that goal. The reporting time was shortened to within 5 minutes in 2001, but was revised to within 15 minutes in 2002. As of now, it remains 15 minutes. The "15-minute rule" has not only enhanced market transparency, but also reduced the cost of seeking out price-related information.

B. Publication of OTC Quotation Information

Alongside the 15-minute rule, which promotes post-trade transparency, it was also necessary to introduce a service for enhancing pre-trade transparency. In an effort to improve market transparency, KOFIA introduced the Bond Quotation System (BQS) in which securities companies report quotation information in the OTC market to KOFIA in real time, and KOFIA discloses the information to the market in real-time.

Previously, domestic bonds were traded mainly by institutional investors in the OTC market, and bid-ask prices were offered through private messengers. This made it difficult for market participants to obtain fair and timely transaction information, and new participants had difficulties entering into the market.

In an effort to promote post-transparency, KOFIA introduced the BQS in December 2017. KOFIA requires financial investment firms, banks, and merchant banks, as well as inter-dealer brokers to report, in real-time, all information on quotes and exercise prices of all bonds traded in the OTC market. This ensures that all OTC quotes can be published on its website (www.kofiabond.or.kr), enhancing the price discovery function and increasing transparency in the OTC market.

C. Publication of OTC Final Quotation Yields

When the market closes, KOFIA posts the final quotation yield for each bond that is represented on the Korean bond market on the BQS website. The final quotation yield is the average of the trading yields submitted by each of the securities companies.

Every six month, KOFIA designates financial institutions actively engaged in bond trading and underwriting as reporting institutions, and have them report their final quotation yields. Information is collected at 11:30am and 4pm each working day, and disclosed at 12 noon and 4:30pm the same day.

<Table 4-5> Bonds Subject to Yield Report

Classification	Type	Time to maturity
Government bonds	Type 1 housing bond(5Y) KTB(1Y) KTB(3Y) KTB(5Y) KTB(10Y) KTB(20Y) KTB(30Y) KTB(50Y)	4years and 6months~5years and 1month 10months~1year 2years and 6months~3years 4years and 6months~5years 9years and 6months~10years 19years~20years 29years~30years 47years~50years
MSBs	MSB(91days) MSB(1Y) MSB(2Y)	85days~91days 10months~1year 1year and 9months~2years
Special bonds	KEPCO bond(3Y)	2years and 9months~3years
Financial bonds	Industrial financial debenture(1 Y)	10months~1year and 1month
Corporate bonds (AA-)	Corporate bond(non-guaranteed 3Y)	2years and 9months~3years
Corporate bonds (BBB-)	Corporate bond(non-guaranteed 3Y)	2years and 9months~3years
Certificate of deposit	Commercial Bank CD(91days) Special Bank CD(91days)	91days 91days
Commercial paper	Commercial paper(91days)	85days~91days

* Based on the bond classification by Korea Financial Investment Association (KOFIA).

D. K-Bond: an online bond trading system

KOFIA launched K-Bond, an online bond trading system, in September 2017. K-Bond[22] enables financial investment firms and market participants to discover quotes, and supports trade negotiations.

K-Bond comprises two main components: an instant messenger system (including chat rooms) and the Trading Board (T-Board). The messenger function provides functions specialized for bond trading negotiations, including chat rooms, which allow participants to discuss 1 to N participants and conclude transactions in private; it also provides automatic storage of chatting records. T-Board offers various types of bond market data, such as market quote information, 15-minute information, and book-building related information for market analysis.

K-Bond enhanced efficiency in OTC trades by putting together individually scattered OTC trading functions into a single trading platform with messenger and chat room features. Also, K-Bond upgraded its security functions which improved trading convenience and stability. As of the end of December 2019, 360 institutions and 8,400 individuals were registered with K-Bond, of which 3,400 individuals were active users, based on the daily average trading volume of about KRW 20 trillion.

22) FreeBond was upgraded to K-Bond in 2010.

Ministry of Economy and Finance

Korea Treasury Bonds 2019

part 05

Government Bond Market Infrastructure

Ministry of Economy and Finance

Korea Treasury Bonds 2019

01 Overview

Development of the bond market requires not only policies but also the infrastructure which ensures smooth issuance and trading of bonds. As successful implementation of bond-related policies requires support from the overall infrastructure of the market, it can be said that the infrastructure functions as the hardware of the bond market.

While domestic bond trade is spurring quantitatively, the nature of it is also becoming more sophisticated, raising the importance of a efficient bond system. In this light, the Korean government has been continuously establishing institutional foundations for the development of the bond market.

To ensure efficient management of bonds, the government introduced bond listing system and standard securities code, and is operating electronic securities system for efficient trading and settlement. It has also put in place the clearing & settlement system to minimize risks of settlement failures in trading processes, and introduced mark-to-market (MTM) evaluation to promote trade through fair bond pricing.

02 Bond Listing System

(1) Implications of Listing

Listing of bonds refers to the qualifying of issued bonds for trading in the KRX KTB. To ensure smooth bond trading and protect investors, the KRX requires certain conditions to be met for bonds to be listed.

Application must be submitted to the KRX to have a bond listed. Although there is no institutional disadvantage for bonds not listed, listed bonds carry many advantages such as being used as substitute securities and the like. For this reason, most issuers choose to list their bonds on the KRX.

(2) Merits of Bond Listing

Information in the issuer of listed bonds and bond it has issued in that year is disclosed to general investors through the KRX. This allows the issuers to gain much public trust compared to those who have not listed their bonds.

Listed bonds can substitute cash for customer margin when trading equity, futures and options, or as deposits for public tender or contract with public entities in Korea. Based on the public confidence listed bonds brings, most institutional investors such as banks and investment trust companies limit the scope of their bond investments to listed bonds.

(3) Listing of KTBs

Issuers wishing to list bonds must submit an application with supporting documents to the KRX. While bonds to be newly listed must be reviewed pursuant to the Regulations on Listing in the Securities Market set forth by the KRX, government bonds are waived of this procedure taking into account their special purpose defined in related laws. In the case of government securities, the BOK currently files the application for the listing of KTBs on behalf of the government. Usually, listing is requested on the auction day and the bond gets listed on the next day, which is the issue date. The following table shows the dates for listing, adjustment of listing amount, and delisting (process of government bond issuance to redemption).

<Table 5-1> Listing and Delisting Date of KTBs

	Issuance	Non-competitive bids	Buyback	Conversion offer	Redemption at maturity
Settlement date	T+1	T+1	T+2	T+2	T
Listing/Delisting date	T+1	T+1	T+3	KTBs for issue: T+2 KTBs for conversion offer: T+3	T+1

* T: Auction date, Date on which non-competitive bidding options are exercised, Date of redemption at maturity

When listed, details of the bond such as issuance date, redemption date, listed amount, coupon rate, and so forth are provided to investors through the KRX webpage and financial information providers.

Meanwhile, government bonds, local bonds, and special bonds, continuously issued throughout the year on a certain day of months, are listed in a lump (called “Batch Listing”) by the KRX for issuer’s convenience on listing requests. Under the batch listing system, issuers set the annual issuance plan for next year at the end of every year and request for batch listing. Then, the KRX lists the planned monthly issue volume at the beginning of every month without extra request procedures. At the end of every month, the KRX receives the final issue amounts from banks and makes adjustments accordingly. Currently, among government bonds, National Housing Bonds are listed through the batch listing system.

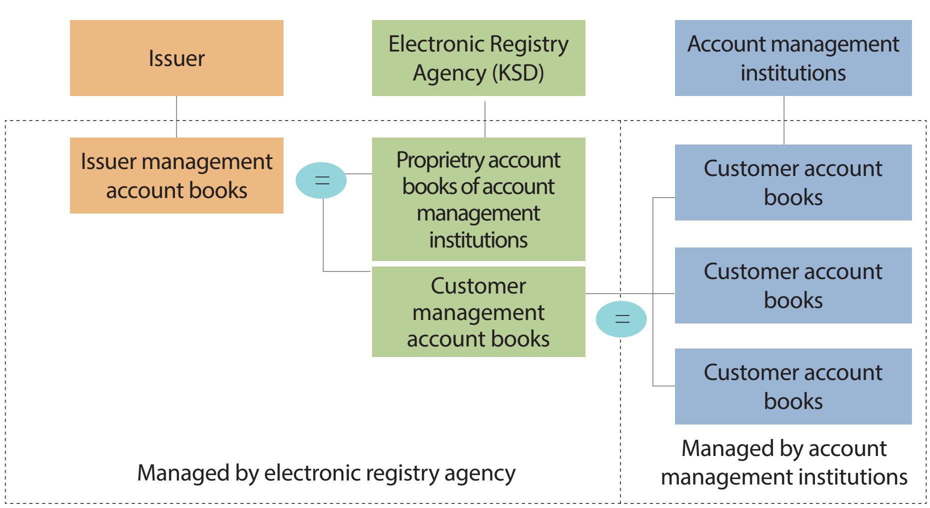
03 Electronic Registration of Securities Issuance and Distribution

(1) Electronic Securities System

Korea introduced an electronic securities system as the 「Act on Electronic Registration of Stocks, Bonds, etc.」 (hereinafter referred to as 'Electronic Securities Act') which took effect on September 16, 2019. The previous securities depository system was transited to the electronic securities system. Under the new system, issuance, distribution, and exercise of rights to securities will no longer be done on paper, allowing investors to acquire, transfer and exercise subsequent rights electronically. Securities certificates of listed stocks and bonds are required to be recorded on an electronic register. Bond owners can claim their rights against the issuers and third parties by registering the details of transactions, pledges, liens and entrustments on the electronic registration account book.

The use of the electronics securities system reduces the burden on all involved parties like issuers, investors and depositories in the management and transfer of the actual bonds, promoting bond trade and efficiency in the market. Within the securities market, the expenses associated with handling and the substantial indirect social costs such as counterfeit securities are spared. The electronic registration of government bonds[23)] and MSB are managed by the BOK, and other public and corporate bonds by the Korea Securities Depository (KSD), which is in charge of operation of relevant IT infrastructure including securities issuance and distribution.

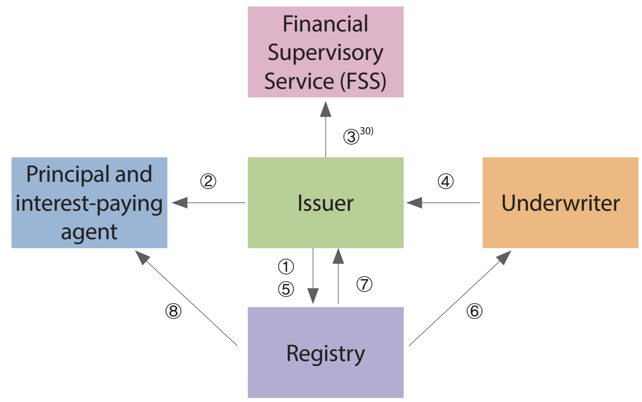
[Figure 5-1] Account Structure of Electronic Securities System



23) NHBs are registered through the KSD.

[Figure 5-2] Bond Registration Procedure

① Designate a registry (issuer→registry)
② Conclude a principal & interest-paying agent contract (issuer→principal & interest-paying agent)
③ Submit a marketable securities Report (issuer→FSS)[24]
④ Subscribe and apply for registration (underwriter→issuer)
⑤ Notify registered issue details (issuer→registry)
⑥ Issue a registration certificate and notify registration details (registry→underwriter)
⑦ Notify registration details (registry→issuer)
⑧ Notify registration details (registry→principal & interest-paying agent)



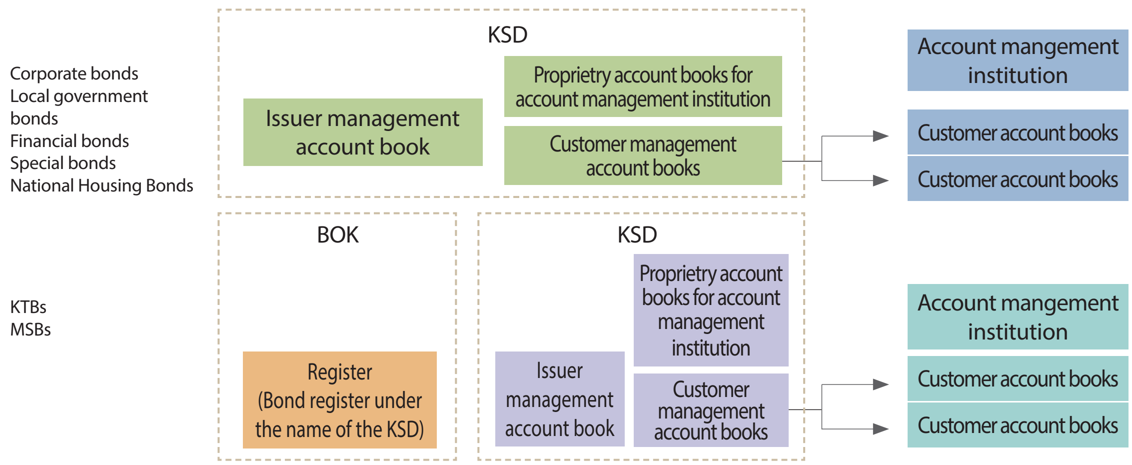
(2) Securities Issuance and Distribution

The KSD has currently took on the tasks related to the electronic registration, however issuance-related tasks are still managed by the BOK for government bonds and MSB, and by the KSD for other public and corporate bonds as they were.

As we mentioned above (1), government bonds and MSBs issuance follows the mass enrollment system where the BOK registers on bond register under the name of the KSD, and then the KSD and account management agency electronically register the bonds under the name of bondholders. In case of other public and corporate bonds, the issuer designates KSD as the registrar and applies for participation in the online bond registration system. The applicant in the online system keys-in the conditions of issuance and details of underwriters.
Securities companies record holdings of marketable securities of clients by making entries to clients' accounts

24) Submission of securities declaration of major public bond including government bond is exempted.

[Figure 5-3] Securities Issuance & Electronic Registration



and deposit the securities to the KSD after specifying they are owned by their clients. To protect clients' rights, securities are considered to be deposited at the point of securities companies making entries to their customer account books.[25)]

04 ISIN Code

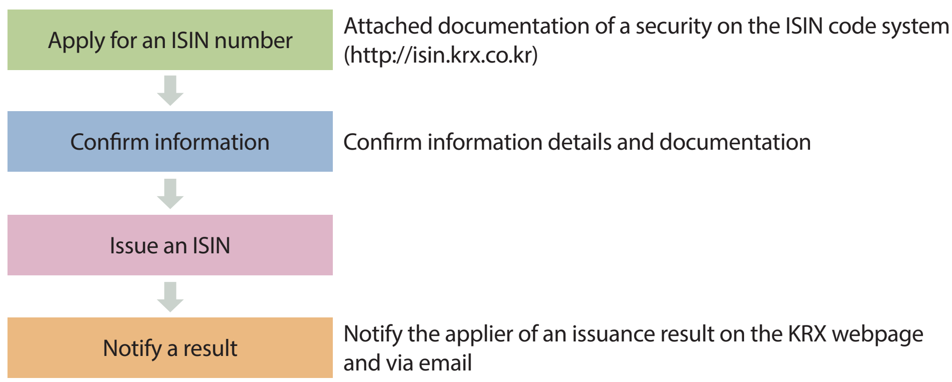
The ISIN[26)] is a unique code, the recognized global standard for unique identification of financial instrument. With the rapid increase in trading of international securities and the use of the electronic system, the ISIN code was introduced to boost convenience in trading, deposit and management of securities products. Globally, the code is issued by exchanges, depository bodies, central banks and like. In Korea, the KRX is responsible for issuing the standard securities codes and handles the code issuance and management tasks in accordance with the "Management Criteria on Standard Codes of Securities and Financial Instruments."

Application for an ISIN code can be submitted over the internet using the KRX's ISIN code system (http://isin.krx.co.kr). A security issuer or issuing agent needs to fill out the application with the requested information and attach required documents Once the forms and documentation are viewed, the KRX will issue an ISIN code.

25) Institutional investors participating in the primary and OTC market usually hold their proprietry account books of account management institutions at the KSD under their own name.

26) ISIN stands for International Securities Identification Number and its structure is defined in ISO 6166.

[Figure 5-4] Process to Issue an ISIN in Korea



The most important characteristic of the ISIN code is its sole uniqueness. A single security is granted a unique 12-digit alpha-numeric ISIN that is recognized throughout the world. The first two digits consist of alpha-letters identifying the country; the following nine digits consist of 1 digit representing the type of securities, 5 digits representing issuer, and 3 digits representing the product feature; the last one digit is the check code used for error detection.

<Table 5-2> ISIN Code Structure

Country code (2 digits)	Basic number (9 digits)	Check digit (1 digit)
□□	□□□□□□□□□	□
'KR' for Korea	Different for each security	Double-Add-Double formula

* Examples of country codes of major countries : U. S. (US), Great Britain (GB), Germany (DE), Japan (JP), Singapore (SG)

In ISIN code, the first digit is "1" (government bond); the following 5 digits are composed of the bond number codes (3 digits) and the monthly issuance order code (2 digits); the last 3 digits consist of interest rate payment code (1 digit), an issuance year code (1 digit), and an issuance month code (1 digit). The structure is followed by a single check-digit.

<Table 5-3> ISIN of KTB 02375-2812 (18-10) (issued in December 2018)

Country code (2 digits)	Attribute code (1 digit)	Unique code of issuer (5 digits)	Securities type code (3 digits)	Check digit (1 digit)
KR	1	0 3 5 0 2	G 8 C	0
Republic of Korea	Government bond	Bond name and issuance order of the month	Coupon bond and issuance year/month	Error detection

05 Clearing and Settlement System

(1) Overview

Upon trade contract in the bond market, the buyer-seller relationship between trading parties is formed. The act of clearing this relationship through delivery and payment for securities is called “settlement.” Settlement procedures for government bond trade can be Free of Payment (FOP) or Delivery versus Payment (DVP) depending on the linkage between the delivery and payment.

Free of Payment (FOP) is a settlement method where the delivery and payment for securities are carried out separately. Due to the time difference in the delivery and payment, counterparts are inevitably exposed to risks. In other words, the one who carries out its own obligation (securities delivery or payment) prior to the other ends up taking the risk. Hence FOP always carries settlement risks (or primarily the principal risk).

Delivery versus Payment (DVP)is a settlement procedure that minimizes settlement risk through simultaneous delivery and payment of securities. Even if there is time difference between the two, it is still usually considered to be DVP if it has a safety mechanism put in place that can control the resultant settlement risks and cannot avoid the time difference for technical reasons.

The DVP method is used both in the KRX KTB and OTC markets. In the case of the OTC market, the FOP method is used in special cases including the request from settlement participants.

(2) Risk Mitigation through Clearing Agencies

In both KRX KTB and OTC markets, the settlement institutions are BOK (payment settlement) and KSD (securities settlement). However, they have different settlement dates, netting methods and settlement assurance.

<Table 5-4> Settlement Method in KRX KTB and OTC market

	Settlement date	Netting method	Central settlement and assurance of settlement	Payment	Securities settlement
KRX KTB	T+1 day[27]	Multilateral netting	KRX	BOK	KSD
OTC	T~T+30 days	Bilateral netting	-	BOK	KSD

* T : Trading date

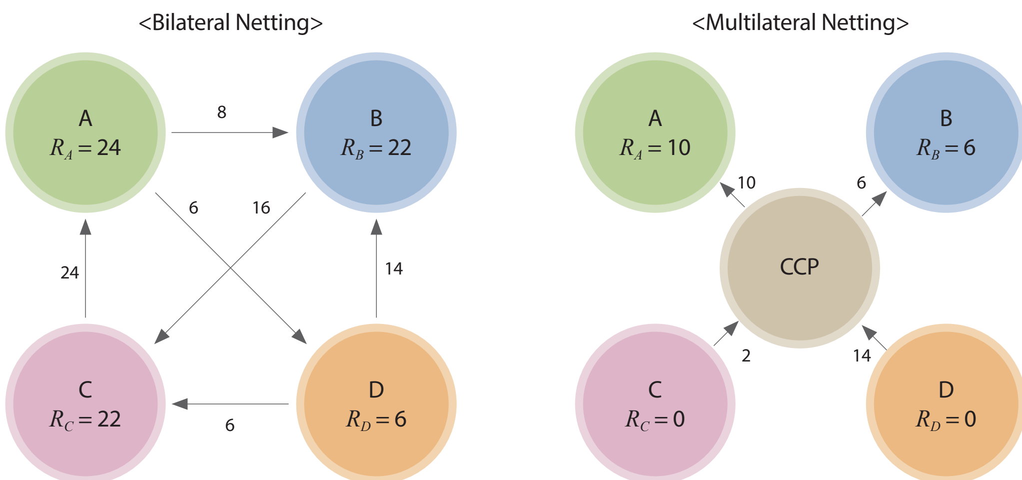
As the OTC market mainly involves trades between individual institutions, there are various settlement dates, and it uses the bilateral netting method. As settlement is not guaranteed by a third party, both trading parties are exposed to a series of potential risks such as payment delay of failure, and liquidity crunch.

In the KRX KTB, the multilateral netting method is used as the market involves competitive trade. The Korea Exchange not only has been responsible for establishing and operating the market but also serving as the Central Counterparty (CCP), in charge of settlement. As a CCP, the Exchange confirms the details of bond trade and underwrites the debt obligation of clients. In short, clients are exempted the same debt obligations through the Exchange's debt take-over. The volume of debt taken over through confirmation of bond trade and a takeover process of obligation can be reduced through the multilateral netting system, thus easing the CCP's settlement risk.

Under the bilateral netting, the settlement volume of customer A against others is '14,' and A's settlement risk size (RA) against others is '24.' However, A's settlement volume comes to '0,' and its risk size against others becomes '10' under the multilateral netting conducted by a CCP,[28] since the customer A ends up with only receiving position from a CCP after going through the multilateral netting. Of course, the actual risk against others gets '0' because the risk refers to one against a CCP.

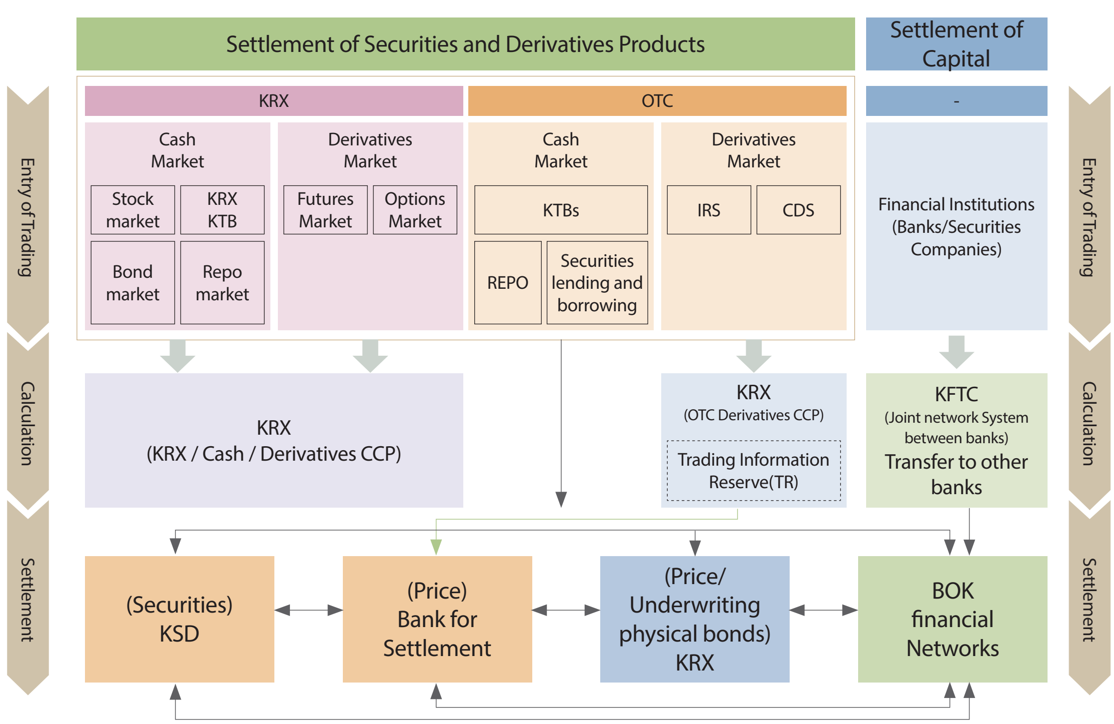
27) If the T+1 is the deadline date of accumulating reserve funds of BOK, the payment is made on the next business day, T+2.
28) In the KRX KTB, the settlement agency is the KRX (CCP) regardless of trading partners.

[Figure 5-5] Bilateral Netting and Multilateral Netting



To prevent default risks from circulating through the whole market, the KRX has been securing extra reserve for settlement such as accumulated settlement funds, joint compensation fund for loss incurred from default, etc.

[Figure 5-6] Clearing and Settlement System in Financial Markets



(3) Clearing and Settlement System of the KRX KTB

The settlement date in the KRX KTB is the next day of trading date (T+1) and settlement must be completed by 16:00 on that day. Settlement of securities in the KRX KTB is completed for each bond. When the sell-side transfer securities to KRX accounts, the KRX without delay transacts payment to sellers with provided liquidity from the BOK. As for buyers, the KRX pays back received capital from buyers to the BOK, receives back government bond securities provided to the BOK as collateral, and delivers them to buyers.

As the KRX KTB involves trading between PDs, the number of issues traded is relatively small while settlement amount per issue is large. For this reason, it is more efficient for securities and payment to be deducted or settled by issue. In consideration of this, the KRX overhauled the clearing and settlement system to enable securities delivery and payment to be settled by issue beginning February 20, 2012. The details of the system overhauls are as follows;

Firstly, the original method of universal deduction for all bond issues was changed to a differential deduction by issue, the same as settlement for securities. This enables receipt of both securities and payment by issue. Also, the KRX eased the requirement for receipt, so that, once customers complete the payment or securities delivery, they are allowed to receive the securities or payment concerned. Accordingly, even when all the securities and payments are not completely delivered or paid, early receipt to customers, who meet the qualification, is doable, thus raising efficiency and immediacy of settlement.

Secondly, the BOK provides the KRX with liquidity for settlement using the government bonds delivered by customers to the KRX as collateral under the "Daily Repo Trade System." Under the system, the KRX can use the liquidity provided by the BOK and immediately make the payment to customers, thus addressing overdue settlement of government bonds.

Thirdly, in the past, the KRX started to make payments or deliver securities from 15:00, after all customers completed payment and securities delivery. However, as the BOK started to provide liquidity for settlement from 09:00, the KRX changed its onset time for opening settlement to 09:00. By doing so, the system operating risk driven by settlement was concentrated in the afternoon and the overdue payment issue were resolved.

06 Mark-to-Market Evaluation

Mark-to-Market (MTM) evaluation refers to the valuation of bonds at market price not at book value.

Before its introduction (before the Asian financial crisis in 1998), bonds in trust accounts were valued at book value, which failed to reflect default risks. As a result, investors and fund management companies only preferred high-yield bonds without considering the accompanied investment risks.

In order to resolve this problem, the Korean government tried to change the evaluation method to MTM, which was not feasible then due to lack of liquidity in the secondary market.

The Korean government began to prepare for the introduction of the MTM evaluation in September 1998 by amending applicable laws and establishing a public disclosure system for bond yields.

In September 1998, the Korea Financial Investment Association (KOFIA), previously the Korean Securities Dealers Association, began to collect data on bond yields (by type and credit rating) from ten securities companies to publicly disclose them. To better reflect various elements like liquidity premiums in bond prices, the Korean government authorized the establishment of three private bond pricing agents, Korean Asset Pricing, KIS Pricing and NICE P&I (name change from “NICE Pricing Services”) in June 2000, (FnPricing was additionally included in September 2011) and provided policy support. In October 2003, the KOFIA stopped disclosing the bond yields, and private pricing agents took over the role. The KOFIA on the other hand monitors bond prices to check on the fairness of pricing and prevent the possible involvement of back-scratching alliances between the evaluation companies and their clients.

<Table 5-5> Measures to Expedite Establishment of Bond Pricing Agents

	Korean Government's Measures
Jun. 2000	Authorized the establishment of Korean Asset Pricing, KIS Pricing and NICE P&I
Nov. 2000	Required subordinated bonds and speculative-grade bonds included in tax-exempt high-yield funds to be priced by multiple pricing agents
Feb. 2001	Required speculative-grade bonds included in mutual funds to be evaluated by multiple pricing agents
Sept. 2001	Required assets in investment trusts to be priced by multiple pricing agents
Jan. 2002	Required assets in bank trusts accounts to be priced by multiple pricing agents
Apr. 2002	Made evaluation by multiple pricing agents obligatory for insurers' separate accounts
May 2002	Made evaluation by multiple pricing agents obligatory for securities companies' bonds for RP
Oct. 2003	Discontinued disclosure of individual bonds' yields by KOFIA
Sep. 2011	Added FnPricing

With the MTM evaluation system fully in place, bond investors can obtain information on bond prices and risks, which helps them make more informed decisions. With fair evaluation of various financial products by professional evaluators, asset management of investment trust companies became more transparent and structured bonds market was stimulated. The MTM evaluation system is, therefore, viewed as a significant boost to the development of not only the KTB market but also the entire financial market.

part 06

KTB-related Markets

Ministry of Economy and Finance

Korea Treasury Bonds 2019

01 Overview

KTB-related market is a market for financial instruments derived from KTBs. The growth of the KTB market led to the formation and development of this market, which is in turn driving the qualitative growth of the KTB market overall.

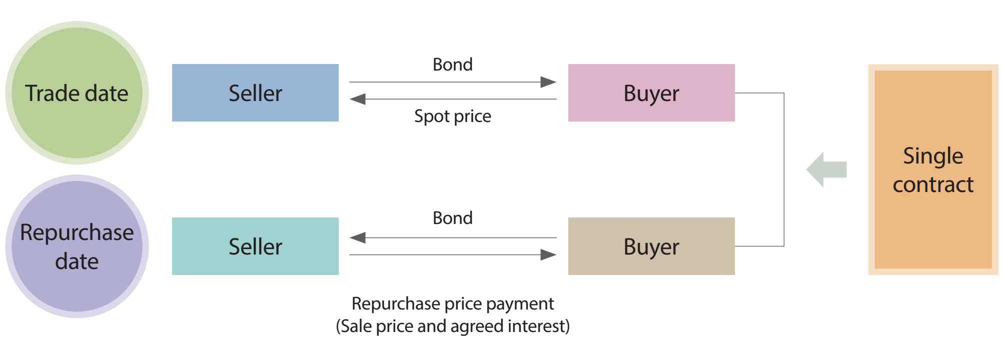
There are several types of KTB-related market. The Repo market trades KTBs but adds the character of money market by attaching certain conditions; STRIPS separates the principal and interest of KTBs and trades them as marketable securities; KTB futures are used to gain profits from fluctuations in KTB prices without actual trading or hedge against KTB prices changes; and ETF invests in KTB indices to diversify investments portfolios. The participants in these markets have different investment purposes compared to those in the KTB market.

02 KTB Repurchase Agreement (Repo)

(1) Understanding Repos

Repo can be defined as an agreement in which one party sells securities or other assets to a counterparty, and simultaneously commits to repurchase the same or similar assets from the counterparty, at an agreed future date or on demand, at a repurchase price equal to the original sale price plus a return on the use of the sale proceeds during the term of the repo.

[Figure 6-1] Repurchase Agreement



Although the term ‘repo’ is applied to the whole transaction, it is market convention to specifically describe the seller’s side of the transaction as the ‘repo’ and the buyer’s side as the ‘reverse repo.’ Dealers talk about sellers ‘repurchase out’ collateral and buyers ‘reverse in’ collateral.

(2) Economic Overview of Repo Transaction

A repo falls under the category of bond trading in form, but is economically similar to a secured loan. Looking at the structure of a repo, ownership of bonds and cash are exchanged on the days of sale and repurchase, making it the same as general trading of securities. However, from an economic perspective, it is a loan transaction collateralized with securities where the party in need of funds (seller) provides securities as collateral and borrows cash. As such, the original repo seller accrues interest and other profits resulting from collateral securities during the term of the repo, unlike general trading.

In other words, the party in need of cash and in possession of bonds maintains the right to the economic profits of the bonds and raises funds at a low interest rate by selling the bonds in the repo transaction. On the other hand, the party in possession of cash can safely manage the fund by buying the bonds in a repo (reverse repo) and is given an opportunity to realize trading profits by freely disposing of the purchased bonds while in ownership of them.

(3) KTBs in the repo market

Due to their “risk-free” reputation, KTBs are used as collateral in the repo market for lower borrowing cost compared to other bonds (lower repo rate).

03 KTB Futures

(1) Overview

Futures are financial contracts obligating the buyer to purchase an asset or the seller to sell an asset, such as a physical commodity or a financial instrument, at a predetermined future date and price. KTB futures are standardized contracts traded on a centralized exchange (KRX). Among government bonds in Korea, it is KTB that has the futures market. Hence KTB futures refer to a financial product whose underlying assets are KTBs.

Currently, there are three KTB futures markets by maturity, namely markets for 3-year, 5-year and 10-year KTB futures. The KTB futures market has steadily grown along with the spot market, and 3-year KTB futures are now the world's 16th most liquid markets, as of the end of 2019. As the demand for KTB futures was concentrated on 3-year KTB futures, trading in 10-year KTB futures has been slow. The Korean government implemented policy measures[29)] to promote the long-term KTB futures market in October 2010. Then, the trade volume of 10-year KTB futures dramatically increased, making it the world's 17th most liquid market.

<Table 6-1> Average Daily Trading Volume of KTB futures

(Unit : Number of contracts)

Year	3Y KTB futures (Sept. 1999)	10Y KTB futures (Feb. 2008)
2009	79,252	-
2010	111,011	132
2011	137,662	14,128
2012	119,871	52,601
2013	118,591	48,554
2014	87,833	40,696
2015	104,827	47,559
2016	105,878	58,918
2017	91,072	50,028
2018	94,218	62,034
2019	108,676	72,105

29) Trading volume of 10Y KTB futures has been assessed in a regular evaluation of PDs, and the final settlement method was changed (physical delivery→cash settlement) to ease the burden on the market participants.

(2) Goals of KTB futures

As the issuance volume of KTBs rapidly increased and trading became active after the 1997 Asian financial crisis, the demand to hedge against the price fluctuation of KTBs increased. Accordingly, to provide investors means to hedge against such risks, the Korean government introduced 3-year KTB futures in September 1999.

<Table 6-2> Example of Hedge Transaction When Falling Bond Prices (increasing interest rate)

	KTB spot	KTB Futures
Now	buying 10,000 won	selling 10,000 won
At a time in the future (In three months)	9,000 won	market price: 9,000 won selling price: 10,000 won
Changes	△1,000 won	+1,000 won

hedge against risks from falling bond prices

<Table 6-3> KTB Futures

	3Y KTB futures	5Y KTB futures	10Y KTB futures
Listing date	Sept. 29, 1999	Aug. 22, 2003	Feb. 25, 2008
Underlying assets	KTBs (par value of 100 million won, 3Y maturity, 5% coupon rate)	KTBs (par value of 100 million won, 5Y maturity, 5% coupon rate)	KTBs (par value of 100 million won, 10Y maturity, 5% coupon rate)
Price indication	Par value of 100 million won converted and indicated as 100.00		
Tick Size	0.01		
Tick Value	10,000 won (=100 million won×0.01×1/100)		
Trading hours	09:00~15:45 (last trading day : 09:00~11:30)		
Settlement months	March, Jun, September, December		
Last trading day	Third Tuesday of the settlement month		
Final settlement method	Cash settlement		
Price limit	1.5%	1.8%	2.7%
Margin rate	0.48%	0.84%	1.72%

* As of January, 2020.

The KTB futures market is regarded to have had positive impact on trading of KTB spots by linking trading of spots and futures. The KTB futures market is contributing to the development of the financial market by providing information on future rates, and diversifying the investor base as new investment tools.

(3) Characteristics of KTB Futures Transactions

A. Daily Settlement

The settlement amounts of futures transactions can be excessively large if settlement is made only once on the maturity date. The KRX hence marks the unsettled contracts to previous closing price everyday. Then, it settles profit and loss resulting from market-to-market to keep settlement amounts small and simplify settlement tasks.

To increase efficiency in daily settlement and guarantee settlement, the KRX requires traders to deposit margins. Customer margin is calculated for each futures account. Hence, a person who has multiple accounts must pay margin on each account. Customer margin is defined as a guarantee for settlement and, therefore, should be paid in cash. However, it can be paid with securities and foreign currency within a certain scope.

B. Cash Settlement

Futures are settled either by transferring actual securities (physical delivery)[30], the underlying assets of futures contracts, on the maturity date, or by paying cash for the change in value (cash settlement). Cash settlement is used for KTB futures as it is burdensome for traders to trade actual securities. Not only that, they do not have to transfer KTBs and funds of large scale for settlement using this method as only the change in value is settled between parties.

30) Physical settlement refers to cash payment calculating profit and loss, and additional transactions are conducted at the final settlement price.

C. Standardized Virtual Bond as an Underlying Asset

It is difficult to standardize trading conditions of bond futures compared to other futures contracts. Trading conditions such as time-to-maturity, coupon rate and interest payment method vary, which leads to inconvenient and costly settlement processes. This is why a standardized virtual bond is used as an underlying asset. It enables trading of KTB futures in large volumes and easy transfer of them to third parties. For instance, a virtual bond with a coupon rate of 5% and the time-to-maturity of three years is used as an underlying asset for 3-year KTB futures. A virtual bond with a 5% coupon rate and a 10-year until maturity is used as an underlying asset for 10-year KTB futures. Current KTB futures can be considered as products targeting forward-rates by maturity on the final trading date.

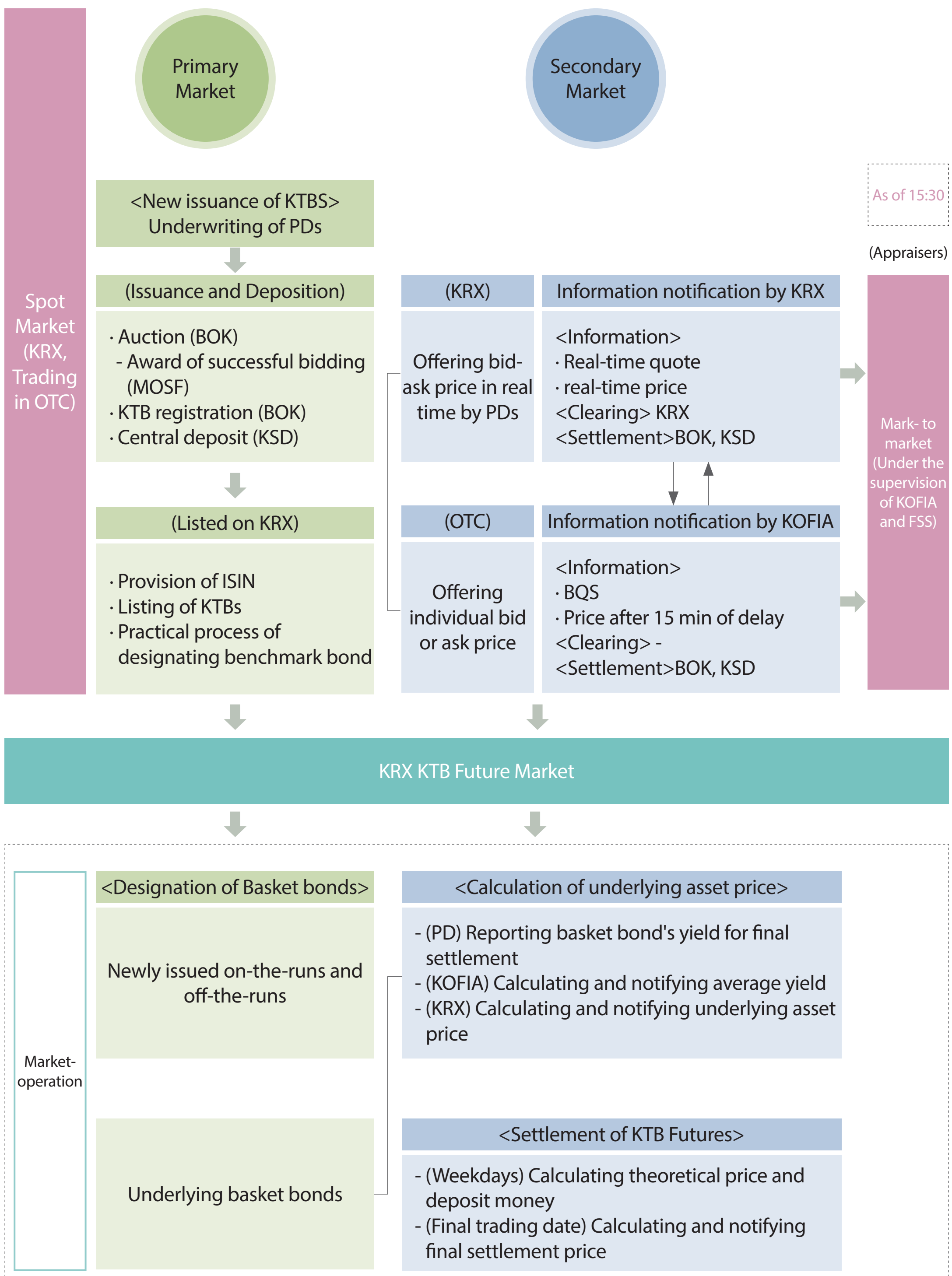
D. KTB Futures Basket

As there is no real underlying asset for KTB futures in the market, actually-traded KTBs are substituted to calculate the theoretical value of the underlying assets. In other words, futures basket is needed to be designated as spot bonds to calculate projections for rate. The KRX designates basket bonds as underlying assets for every KTB futures contract before trading.

Currently, three bond types are designated for 3-year KTB futures, and two types each for 5-year KTB futures and 10-year KTB futures. The average rate of the basket bonds ultimately decides the settlement yield, so futures basket is called “underlying asset”[31) of KTB futures in general.

31) Under the current KRX’s operational regulation of derivatives, an underlying asset is stipulated as standardized virtual bonds.

[Figure 6-2] KTB Spot(Issuance and Trade) and Futures Market



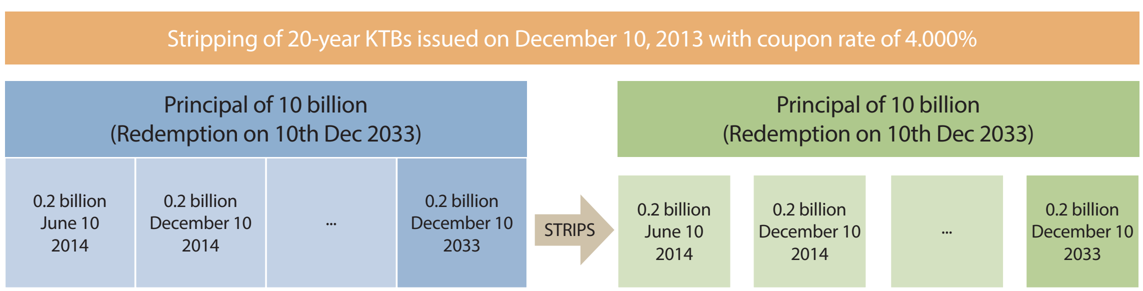
04 STRIPS

(1) Overview

STRIPS is the acronym for Separate Trading of Registered Interest and Principal of Securities. Stripping is a process of converting periodic coupon payments of an existing government security into tradeable zero-coupon securities, which will be usually traded in the market at a discount and are redeemed at face value. For example, a KTB with 20 years remaining to maturity (issued on December 10, 2013) consists of a single principal payment, due at maturity (on December 10, 2033), and 40 interest payments, one every six months (June 10 and December 10) over a 20 year duration.

Stripping of 20-year KTBs issued on December 10, 2013 with coupon rate of 4.000%

[Figure 6-3] How SPRIPS works



Reconstitution is the reverse of stripping, where the coupon strips and principal strips are reassembled into the original government security.

STRIPS program can meet the demand for long-term bonds with diverse maturities and can be used in developing long-end financial instruments. Also, Stripping enables investors to benefit from interest earned on tax-deffered.

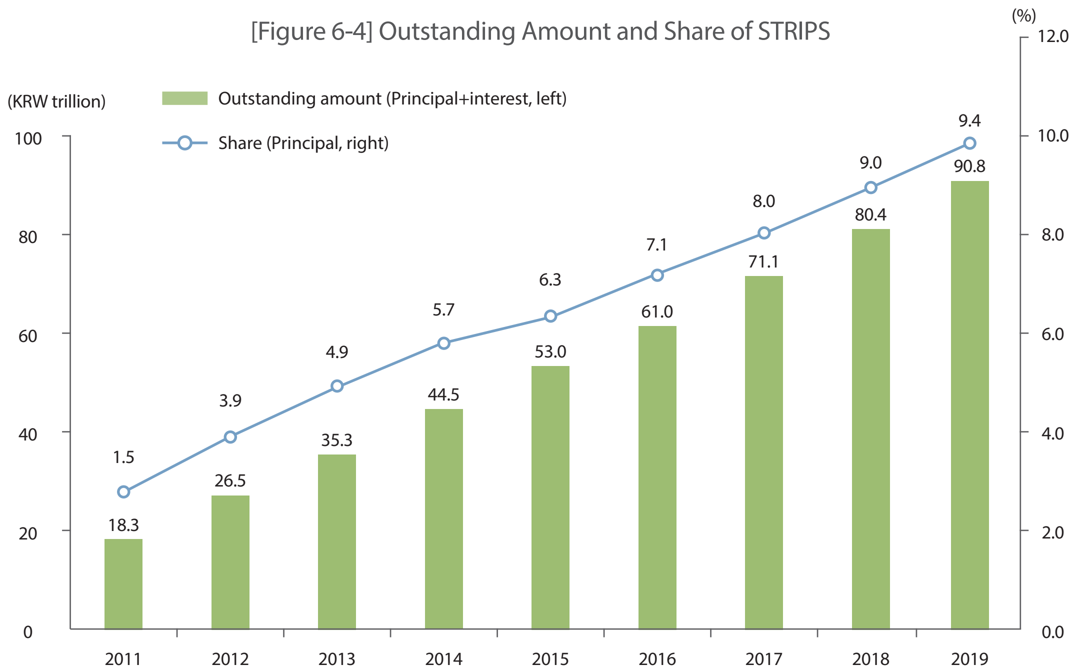
(2) STRIPS in the KTB Market

In March 2006, KTB STRIPS was initiated to increase liquidity of benchmark KTBs, build a yield curve for the long-term bond market growth, meet the demand for long-term zero-coupon bonds, internationalize the KTB market, and others.

KTB STRIPS applies to newly issued KTBs with all maturities. STRIPS components (principals and coupons) can be reassembled into a fully constituted security. However, KTBIs are excluded from STRIPS program as their principals and coupons fluctuate with the consumer price index.

The first STRIPS was offered for 20-year KTBs in April 2007. And, recently 30-year KTBs are being actively requested for STRIPS. In addition, the policy for PDs specializing in a STRIPS program (15 financial institutions) was adopted in 2006 to promote STRIPS in the KTB market. The fifteen PDs were obliged to offer bid-ask prices, and the assessment of their STRIPS performance was added into semi-annual PDs evaluation. As a result, STPIRS trading volume substantially increased to KRW 395.2 trillion, from 18.7 trillion won in 2015.

[Figure 6-4] Outstanding Amount and Share of STRIPS



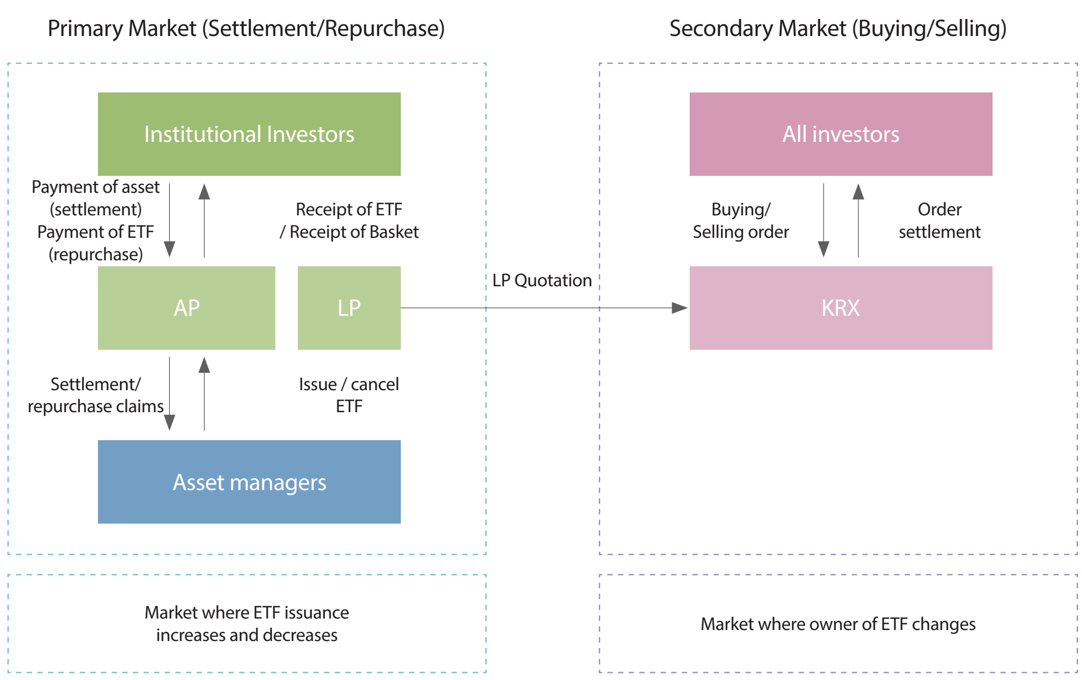
05 KTB ETF (Exchange Traded Fund)

(1) Overview

KTB ETF is a fund that tracks KTB indices of yield changes in the government bond market. It is an indirect investment instrument in which investors can freely trade in the KRX KTB like stocks. Its main objective is to track KTB price moves.

In 2009, the Korean government developed real-time KTB indices and announced them to the public, which served as the foundation for developing KTB ETF. The KRX and KIS Pricing Inc. put joint efforts to develop the KTB indices consisting of three types of KTBs, including 3-year KTB benchmarks, previous benchmarks bonds and 5-year benchmarks, while the KOFIA, Maeil Business News Korea and FnGuide jointly developed the MKF TBI (Treasury Bond Index). These joint efforts made the ETF linked to the yield move of 3-year KTB index become available. By doing so, KTB ETF was listed in the KRX market for the first time on July 29, 2009.

[Figure 6-5] ETF Market Structure



(2) Merits of KTB ETF

KTB ETF is easy to understand and invest compared to other KTB instruments. Investors can simply invest in ETF using their existing accounts for stock. Generally, individual investors have some difficulty investing in the spot-market since the general trade unit is more than KRW 1 billion. The small investment volumes of individual investors also puts them in a disadvantage. However, the minimum trade unit of KTB ETF is between KRW 50,000-100,000, and its trade price is almost similar to the market price of institutional investors, thus being favorable for individuals who make small investments. In addition, KTB ETF does not require analysis or information on each bond types (investors simply follow the market trends). It also automatically enables investment diversification since KTB ETF invests in major market indices. Moreover, it is the most transparent investment tool in that ETF publicly notices the Portfolio Deposit File (PDF) to ensure investors to monitor their fund portfolio on a daily basis. The ETF price of bonds fully reflects the movement of the target index as well as the publicly announced contents of a bond basket and net asset values on a daily basis. Therefore, high product transparency is the most distinctive feature of KTB ETF.

<Table 6-4> Major Financial Product Lines in Korea

	ETF	Stocks, KTBs	Index Fund	Active Fund	Futures
Management Objective	Specific index	Exceeding Profit of Index	Specific index	Exceeding Profit of Index	Hedge and marginal profts
Legal Characteristics	Collective Investment securities	Shares, Debt securities	Collective Investment securities	Collective Investment securities	Derivatives Products
Transparency	High	High	Normal	Normal	High
Liquidity	High	High	Low	Low	High
Settlement Date	T+2	T+2 (KTB T, T+1)	T+3	T+3	T+1
Loans of Securities	Possible	Possible	Impossible	Impossible	Impossible
Functions of Leverage (Purchase of Deposit)	Possible	Possible	Impossible	Impossible	Possible
Trading Cost	Entrustment fees Management cost	Entrustment fees	Management cost	Management cost	Entrustment fees
Tax for Securities Trading	Exempted	Imposed when purchasing	Not applied	Not applied	Exempted

(3) Risks

KTB ETF is basically a fund to invest in fixed income securities and be traded in the market. Although it is important to consider risks that may be accompanied, few risks exist other than risks regarding price and yield changes of KTBs. For example, the bond-type ETF, an indirect investment, is a bond index fund linked to the bond index. One can incur losses due to the fluctuation of bond index. Growing demand on the ETF does not necessarily ensure an increase of ETF price, and the decline in trading volume does not necessarily mean less liquidity in ETF price.

As KTB ETF is a product designed to link yield to KTB index, changes in the net asset value of ETF and KTB indices are supposed to match. However, this may not always be the case. Such disconformity is a tracking error, which may possibly be related to the capability of asset management companies. Investors should carefully consider this before investing.

KTB ETF has no maturity and basket constituents of bond index changes on a regular basis. As such, KTB ETF does not ensure fixed yields like KTBs which are held until maturity.

part 07

Primary Dealer System

Ministry of Economy and Finance

Korea Treasury Bonds 2019

01 Overview

Primary Dealers (PDs)[32] have the exclusive right to participate in the primary KTB market. But also, they have obligations to work as market-makers and provide liquidity in the secondary market.

The PD system, widely adopted by OECD countries[33], is designed not only to stablize successful absorption of treasuries by the market but also to strengthen communication between market participants and the authorities.

In Korea, the government shifted from the syndication to PD system in 1999, and as of December 2019, there are 17 active PDs. Korea's government bond market grew both qualitatively and quantitatively since the introduction, and the PD system is regarded as a significant factor for the development of the Korean bond market.

02 Background

The most ideal state of a bond market would be when KTBs properly serve as a benchmark in the entire bond market. However, this was not the case before the 1997 Asian financial crisis as the KTB market was hardly matured in terms of size and its infrastructure.

KTBs (previous Public Debt Management Fund Bonds) accounted for only 2.8% of the entire bond market in terms of outstanding volume in 1996, which was far lower than that of other advanced countries including the U.S. (28.8%). The outstanding government debt to its GDP was also only 1.3%, much lower than the U.S.(44.1%) and Japan(48.1%). Furthermore, KTBs were not issued according to market principles before the financial crisis as they were allocated to the syndication at yields set by the government.

The role of government funds began to be emphasized after the financial crisis, leading to the rapid increase in government bond issuance and the need to improve the existing syndication system. To ensure efficient absorption of the increasing issuance of KTBs and to advance the financial market structure through revitalization of the secondary KTB market, the PD system was introduced along with the opening of the KRX KTB in August 1999.

32) Among financial institutions authorized to engage in trading KTBs, those who exceed trading performance above a certain level and are financially sound are designated as PDs by the Korean finance minister.

33) According to the OECD survey (February 2017), 33 of 34 member countries have adopted Primary Dealer(PD) system, and the average number of PDs in a country is 11 to 50.

The basic objective of introducing the PD system was to ensure the smooth issuance of KTBs and to promote the secondary market by designating financial institutions with outstanding KTB underwriting and market making performances as PDs.

03 Development in PD System

When first introduced in 1999, 12 banks, 11 securities companies and one merchant bank were designated as PDs for KTBs.

The Korean government afterwards strengthened the obligations of PDs to bolster their market-making function. For instance, the government continuously narrowed the bid-ask spreads that PDs must offer in KRX KTB. With such efforts, fair prices for KTBs were formed in the market and the likelihood of successful trade was heightened. The government also steadily raised the mandatory trading and holding volumes of KTBs for PDs.

Meanwhile, incentives offered to PDs for their market-making roles were continuously strengthened. In March 2000, a financial support system for PDs was introduced so that temporary government surplus funds were used for low-interest loans to outperforming PDs taking KTBs as collateral. Since November 2005, the idle cash of the Public Capital Management Fund, whose purpose is to further encourage efficient issuance and redemption of KTBs, has been used as a resource of the financial support system for PDs. The financial support was halted in 2007 and resumed amid the global financial crisis in 2009. Since September 2006, PDs were also given non-competitive bidding options that can be exercised to underwrite KTBs with winning rates determined in proportion to volumes underwritten in a competitive auction. The Korean government grants different incentives depending on the PD's market-making performance to drive competition among PDs, thus aiming to reduce financing cost and promote the development of the KTB market.

Beginning 2010, the average bid-to-cover ratio in competitive auctions of KTBs surpassed 300%, easing concerns of failure in debt issue. The trading volume of KTBs is also rising year by year. In February 2011, the Korean government gave a major overhaul to its PD system. This was due to the fact that the existing PD system was not much different from the syndication system while the KTB market had steadily developed.

As part of the development, the Korean government introduced Preliminary Primary Dealer(PPD) system to expand the KTB market and to develop the PD system into a more market-oriented one. The Ministry of Economy and Finance appoints PPDs, those wishing to become PDs. After the performance evaluation of annual trading volumes and market-making results, the outperforming PPDs are elevated to PDs.

And, the PD-PPD system was introduced in Q2 2012 to promote self-regulating competition between PDs. Under the system, the outperforming PPDs are elevated to PDs, and the under-performing PDs are downgraded to PPDs.

In 2019, the Korean government improved its PD system in ways that enhanced the base of KTB underwriting – in assessing PDs' performance, scores assigned for underwriting was increased. In addition, criteria for underwriting which was different from both monthly and quarterly assessment was standardized. As of the end of 2019, there are 17 PDs and 5 PPDs.

<Table 7-1> List of PDs and PPDs (As of December 2019)

		Institutions
PD (17)	Banks (7)	Kookmin Bank, Industrial Bank of Korea, National Agricultural Cooperative Federation, Korea Development Bank, KEB Hana Bank, Standard Chartered Bank Korea Limited, Credit Agricole Bank (Seoul branch)
	Securities companies (10)	Kyobo Securities, Daishin Securities, DB Securities, Mertiz Securities, Mirae Asset Daewoo, Samsung Securities, Shinhan Investment Corp., Korea Investment&Securities, KB Securities, NH Investment&Securities
PPD (5)	Banks (3)	BNP PARIBAS, JPMorgan Chase Bank, ING Bank
	Securities companies (2)	Yuanta Securities, SK Securities

04 PD Designation

PDs not only underwrite KTBs; they also have implications as "policy participants," meaning they have to continuously communicate with the authorities. The government hence requires institutions – wishing to become PDs or PPDs – to meet strict criteria such as rich experiences in KTB market, sufficient trading volume, strong financial standing, and so forth.

For PD or PPD designation, the permission for KTB investment trading business (underwriting included)

is required pursuant to the 「Act on Capital Market and Financial Investment Business」 Also, requirements and standards for fiscal soundness[34], staffing, and performance should be met as below.
On the other hand, financial institutions must first be designated as PPDs before becoming PDs. The Ministry of Economy and Finance determines the elevation of PPDs to PDs based on the performance evaluation of market-making. The Ministry receives applications every May and November, and the decision on designation are made by the end of June and December of the year.

<Table 7-2> Standards for Fiscal Soundness

	Criteria	Requirement
Banks	• BIS capital adequacy ratio at the end of the quarter immediately before the quarter which PD designation date belongs (PPD : the date of application)	No less than 8 percent
	• Total equity in the financial statement at the end of the quarter immediately before the quarter which PD designation date belongs (PPD : the date of application)	No less than 4 trillion won[35] (No less than 500 billion won for foreign bank branches)
Securities Companies	• Net operating capital ratio at the end of the quarter immediately before the quarter which PD designation date belongs (PPD : the date of application)	No less than 100 percent
	• Total equity in the financial statement at the end of the quarter immediately before the quarter which PD designation date belongs (PPD : the date of application)	No less than 400 billion won[36]

PPDs can be elevated to PDs if their performances are outstanding, which include offering bid-ask prices, KTB trading, and 10-year KTB futures trading. In detail, PPDs are entitled to become PDs if they gain more than 140 points in the evaluation of annual performance[37]. However, they are not automatically guaranteed PD designation for satisfying these conditions. The final decision will be at the discretion of the Finance Minister, who will factor in the total number of PDs and their level of contribution to the stability and development of the KTB market.

On the other hand, PDs may be demoted to PPDs if their total score for the annual performance in meeting their obligations is less than 280 points out of a possible 400 points; if their quarterly score is below 40 points out of a possible 100 points; or below 60 points for two consecutive quarters. PDs falling short of the required score are not automatically demoted. Like PD designation, it will be up to the Finance

34) In April 2017, the Korean government revised its PD regulations in a way of lowering financial soundness standards which are less related to PDs to the level of capital soundness standards for financial institutions.
35) No less than KRW 3 trillion for PPDs (but KRW 300 billion for foreign bank branches).
36) No less than KRW 300 billion for PPDs.
37) In case of PD→PPD→PD, no less than 70 points for two consecutive quarters.

Minister who will take into consideration the KTB market conditions, the number of PDs, and so forth. PDs can also be revoked of their PD status if their quarterly average KTB holdings fall short of 200 billion won; if they rig the bidding in the KTB auctions; or if they submit false reports.

<Table 7-3> Standards for Staffing and Work Experience

Assessment item	Criteria	Requirement
Dealing personnel	• No. of dealers wholly responsible for dealings of KTBs and have experiences as bond dealers or brokers for at least three years	No less than 5 persons
Research staff	• No. of economic and financial specialists with experiences of at least three years in research and analysis	No less than 3 persons
Back office staff	• No. of specialists for KTBs and fund settlement who have experiences in securities and fund settlement for at least one year	No less than 4 persons
No. of years in KTB dealings	• Period from the day of authorization as a government bond dealer to the day of application for PPD designation	No less than 2 years

<Table 7-4> Performance Standards

	Criteria	Requirement
Trading volume of benchmark bonds in the KRX KTB	• Trading volume of benchmark KTBs in the KRX KTB in comparison with the dealers' total trading volume of benchmark KTBs for two quarters immediately before the quarter of the PD designation ※ PPD designation: two quarters immediately before the quarter which PPD application date belongs	No less than 25% per quarter
Trading volume in the secondary market	• The dealers' trading volume of KTBs in comparison with banks or securities companies' average KTB trading volume for two quarters immediately before the quarter of the PD designation (calculated in accordance with Clause 2 of Article 32) ※ PPD designation: two quarters immediately before the quarter which PPD application date belongs	No less than 25% per quarter
KTB holdings	• Average balance of KTBs for own-account transactions (dealing) for the last six months	No less than 200 billion won

05 PD's Obligations

PDs must fulfill the obligations set forth by the Minister of Economy and Finance to maintain their PD status. The obligations are specified in the Ministry of Economy and Finance notice called "Regulations on KTB issuance and PD system management." When these obligations are fully met, PDs receive a full score (100 points) in their quarterly assessment. Scores are taken away when their obligations are not met. As PPDs are limited in terms of how much they can underwrite and receive no incentives such as financial assistance and non-competitive bidding options, they are only subject to the obligations of offering bid-ask prices and trading (excluding Repo).

Obligations of PDs

① **KTB underwriting:** PDs are to underwrite at least 10% of the amount issued at monthly KTB competitive auctions for each benchmark KTBs.

② **Offering bid-ask prices:** PDs are to submit at least ten bid-ask prices for each benchmark KTBs (but, five prices for 30Y KTB and KTBi) in the KRX KTB during the trading hours.

③ **Trading:** PDs are to trade no less than 150% of the average trading volume of KTBs of either banks or securities companies.

- 10Y KTB futures: no less than 150% of the average trading volume of either banks or securities companies
- Strips: no less than 150% of the average trading volume of the entire PDs
- Term Repo: quarterly trading volume of Term Repos between institutions is to be no less than KRW 5 trillion, or Term Repos are to account for at least 7% of entire Repos between institutions.

④ **Holding:** PDs are required to maintain the average balance of KRW 1 trillion in KTBs on their proprietary accounts each quarter.

⑤ **Buyback and conversion offer:** PDs are to take at least 5% of the total volume in buybacks and conversion offers.

<Table 7-5> Quarterly PD Assessment Scores (Took effect since April 2019)

<table>
<tr><th>Obligatory assessment items</th><th>Scoring</th><th>Scoring method</th></tr>
<tr><td>KTB underwriting
(Article 30)</td><td>36 points
- 3Y KTBs : 3 points
- 5Y KTBs : 4 points
- 10Y KTBs : 10 points
- 20Y KTBs : 7 points
- 30Y KTBs : 10 points
- KTBi : 2 points
* If there is no issuance of KTBi : underwriting score without KTBi × 36/34</td><td rowspan="9">• Obligation fulfilled
⇒ perfect score
- Quarterly perfect score : 100 points
- Annual perfect score : 400 points

• Obligation not fulfilled
⇒ Full score × (performance score/Base)
* Underwriting, purchase and conversion is evaluated by the average score by month

• Total score
⇒ Sum of the scores for each criterion which is rounded down at the third decimal points

• Trading volume on consignment is excluded</td></tr>
<tr><td>KTB purchase · conversion
(Article 35)</td><td>KTB purchase and conversion : 4 points
* If there is no KTB purchase and conversion : underwriting score × 4/36</td></tr>
<tr><td>Offering of bid-ask prices
(Article 31)</td><td>31 points
- Base : Number of business days in a quarter
- Performance score: Sum of Min[1, actual hours of price offering/obligatory hours for all trading days in a quarter] for business days
* If the ratio of actual offering to obligatory offering is less than 60%, zero point is to be assigned</td></tr>
<tr><td>Trading in the secondary market
(Article 32)</td><td>10 points</td></tr>
<tr><td>Trading volume for STRIPS
(Article 32, 2)</td><td>2 points</td></tr>
<tr><td>Trading volume for 10Y KTB futures
(Article 33)</td><td>1 points</td></tr>
<tr><td>Holdings
(Article 34)</td><td>11 point</td></tr>
<tr><td>Trading volume for term Repo between institutions
(Article 36)</td><td>1 points</td></tr>
<tr><td>Policy cooperation
(Article 37)</td><td>4 points</td></tr>
</table>

<Table 7-6> Monthly PD Assessment Scores (as of October 2018)

<table>
<tr><th>Obligatory assessment items</th><th>Scoring</th><th>Scoring method</th></tr>
<tr><td>KTB underwriting
(Article 30)</td><td>36 points
- 3Y KTBs : 3 points
- 5Y KTBs : 4 points
- 10Y KTBs : 10 points
- 20Y KTBs : 7 points
- 30Y KTBs : 10 points
- KTBi : 2 points
* If there is no issuance of KTBi : underwriting score without KTBi × 36/34</td><td rowspan="4">• Obligation fulfilled
⇒ perfect score
- Monthly perfect score : 83 points

• Obligation not fulfilled
⇒ Full score × (performance score/Base)

• Total score
⇒ Sum of the scores for each criterion which is rounded down at the third decimal points

• Trading volume on consignment is excluded</td></tr>
<tr><td>Buy-backs · conversion offers
(Article 35)</td><td>KTB purchase and conversion : 4 points
* If there is no KTB purchase and conversion : underwriting score × 4/36</td></tr>
<tr><td>Offering of bid-ask prices
(Article 31)</td><td>31 points
- Base : Number of business days in a quarter
- Performance score: Sum of Min[1, actual hours of price offering/obligatory hours for all trading days in a quarter] for business days
* If the ratio of actual offering to obligatory offering is less than 60%, zero point is to be assigned</td></tr>
<tr><td>Trading in the secondary market
(Article 32)</td><td>10 points
- limited to trading performance at KRX KTB</td></tr>
<tr><td>Trading volume of STRIPS
(Article 32, 2)</td><td>2 points
- limited to trading performance at KRX KTB</td><td></td></tr>
</table>

06 PD's Privileges and Incentives

As PDs carry out their market-making obligations in the domestic bond market, the government grants them rights and incentives as rewards.

Firstly, PDs can exclusively participate in the competitive auctions for KTBs and underwrite up to 30% of the scheduled issuance volume. PPDs can also participate but underwrite up to 15%. The purpose of granting rights to participate exclusively in the bidding to only PDs and PPDs is to strengthen the link between their obligations and incentives, thereby ensuring the stable issuance of KTBs and reducing the borrowing cost.

PDs are also granted a right to non-competitive bidding option. During the three business days following a competitive auction, PDs can additionally underwrite KTBs at the same yield as the highest yield at the competitive auction. The amount of KTBs they can underwrite through the non-competitive bidding options depends on the results of their semi-annual performance. Non-competitive bidding amount based on PD's monthly performance results is added by adjusting the percentage of which PDs can additionally underwrite through the former. PDs that placed 1st to 5th in the bi-annual performance assessment can additionally underwrite up to 20% of their total underwriting volume at the competitive auction. Those that ranked 6th to 10th can underwrite up to 15%, and those in 11th to 15th can underwrite up to 10%. The remaining PDs can underwrite up to 5%. Top five PDs in the monthly assessment were then granted an additional 10%p. From 2018, those that ranked 6th to 10th in the monthly assessment have been granted an additional 5%p in order to foster competition between mid-level PDs.

PDs specializing in a STRIPS have obtained the right to purchase KTB STRIPS. The option is granted according to the outcomes of monthly evaluation conducted in the previous month. KTB STRIPS are supplied for up to KRW 160 billion for 3Y, 5Y and 20Y KTBs, and up to KRW 210 billion for 10Y and 30Y KTBs. PDs that have obtained the right to purchase these KTB STRIPS can make purchases of up to KRW 20 billion on the third business day.

In addition to the aforementioned privileges, a financial support system is being operated to provide low-interest loans to PDs[38] with outstanding performance, using the government's temporary surplus funds and taking their KTBs as collateral.

The Korean government conducts bi-annual PD assessment on their KTB underwriting and market-making performances, and selects top five PDs (the best overall, two securities companies and two banks) that will receive the Finance Minister award.

38) Top five PDs in the quarterly assessment and one outstanding PD which shows substantial growth in performance among the remaining PDs.

<Table 7-7> Top Five PDs for 2H 2018 and 1H 2019

	2H 2018	1H 2019
Securities companies	• Meritz Securities (1st overall) • Shinhan Investment Corp (1st among securities companies) • NH Investment & Securities (2nd among securities companies)	• KB Securities (1st overall) • NH Investment & Securities (1st among securities companies) • Meritz Securities (2nd among securities companies)
Banks	• Kookmin Bank (1st among banks) • Industrial Bank of Korea (2nd among banks)	• Credit Agricole Bank (1st among banks) • Kookmin Bank (2nd among banks)

part 08

Foreign Investment in KTBs

Ministry of Economy and Finance

Korea Treasury Bonds 2019

01 Overview

While domestic investors dominated the KTB market before 2007, foreign investors have gradually gained importance year by year. The diversification of the investor base by attracting investors with different time horizons, risk preferences and trading objectives, can bring about benefits such as dispersion of systematic risks and easing of market volatility.

Foreign investors can freely invest and hold KTBs as there are no procedural restrictions for them in investing in KTBs. On the other hand, the continuous increase of foreign investor is considered to have come from Korea's quick and robust economic recovery since the 2008 global financial crisis. In particular, following 2010, the abundance of global liquidity and growing preference for KTBs derived from Korea's fiscal soundness and good sovereign ratings, have made KTBs attractive. The demand in and abroad continues to remain strong.

<Table 8-1> Bond Market Investment by Foreign Investors

(Unit : KRW trillion)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	74.2	83.0	91.0	94.7	100.4	101.4	89.3	98.5	113.8	123.7
(%*)	6.6	6.9	7.0	6.8	6.9	6.5	5.6	5.9	6.6	6.8
KTBs	47.7	60.9	57.1	58.7	65.9	67.9	72.5	77.8	86.3	98.3
(%)	15.4	17.9	15.7	14.5	15.0	13.8	14.0	14.2	15.2	16.1
MSBs	25.4	20.0	31.6	34.4	33.2	32.7	15.5	19.5	26.2	24.3
(%)	15.5	11.9	19.4	20.8	18.7	17.9	9.2	11.4	15.3	14.7

* The share of foreign investor's bond holdings against total listed bonds

02 Development of Foreign Investments

The Korean government had initially allowed nonresidents to invest in the bond market, starting with bonds issued by SMEs in 1994, and planned to gradually expand the scope of eligible bonds. However, foreign investors were limited to investing in only few types of securities such as corporate bonds.

The government's plans to expand the investor base were accelerated with the full opening of the Korean bond market to foreign investment in December 1997. However, despite the full-fledged opening of Korea's bond market, investment in KTBs by foreign investors remained negligible until the mid-2000s due to the absence of an active secondary market. Up until 2006, their holdings took up less than 2%.

In and after 2007, motivated by growing marketability of KTBs and greater opportunities for arbitrage profit, foreign investment rapidly increased. As of the end of 2019, foreign holdings reached KRW 98.3 trillion (holdings share: 16.1%), which was a huge increase compared to late 2006 (KRW 4.2 trillion, holdings share: 2%). The number of investing countries also increased to 47 in 2019 from 27 in 2007. While foreign investors were mainly focused on investing in short-term bonds (i.e. 3-year), they have gradually been expanding their investments to medium and long-term bonds, more than 10-year KTBs as well.

In particular, investment by banks and funds – mainly seeking arbitrage profits – have recently diminished while those by foreign central banks and sovereign wealth fund, which tend to follow a long-term conservative investing approach, have increased. As of the end of 2019, foreign central banks' holdings in Korea's bond market reached roughly KRW 60.4 trillion, equivalent to 48.8% of total foreign investments. Such changes are indicative of the positive transformation of the nature of foreign investments from hot money to real money amid Korea's strong fiscal soundness and highly praised long-term growth potential.

03 Foreign Investment Management System (FIMS)

While the rapid increase in foreign investments reflects the improvement of foreign investors' confidence in Korea's bond market, it also implies the possibility of greater volatility in the capital or foreign exchange market. Recently, concerns of such volatility, which may be triggered by rapid capital flows in and out of Korea amid QE in major countries, have risen. In response, the Korean government has strengthened its monitoring of foreign investments in bonds.

FIMS was established to monitor foreign investment flows. The FIMS reports data on foreign holdings and trades in stock and bond markets in real-time to Financial Supervisory Service. The FSS then analyzes the information to preemptively respond to capital flows induced by domestic and offshore financial markets.

On the other hand, the Korean government has been working on attracting foreign investors with long-term conservative investment strategies, such as central banks, and establishing cooperative relationships with them. We have discussed current issues in the financial market and shared market outlook. Such efforts are expected to prevent the possibility of sudden capital movements.

<Table 8-2> Overview of FIMS

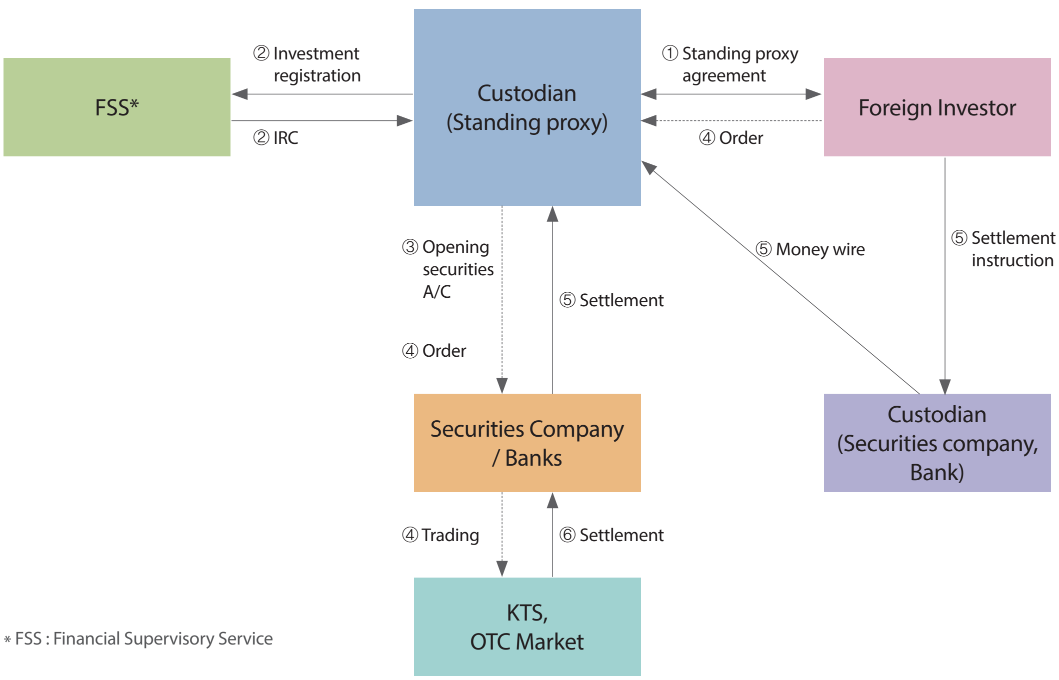
Tasks	Details
Investor management	• Investor registration, account and identification documents
Investment ceiling	• Management of orders and transactions (listed securities, KOSDAQ, bonds) • Management of foreign investment limits
Investment traded	• Daily management of investment funds
Statistics	• Management of investment status and statistics on foreign investment
Futures / Options	• Matching orders and management of balance

04 Foreign Investment Procedures

(1) Foreign Investment Procedures

In order to invest in Korean bonds, foreign investors must handle the following procedure: appoint a standing proxy - register as an investor - open a trading account - place trading orders - order settlement and deposit funds - complete the settlement.

[Figure 8-1] Foreign Investment Procedures



* FSS : Financial Supervisory Service

A. Standing Proxy Agreement

Foreign investors must appoint a standing proxy that will handle necessary procedures for securities trading in Korea, and a custodial institution that will keep acquired securities in custody. The custodial institution is limited to KSD, a foreign exchange bank under the Foreign Exchange Transaction Act, an investment business entity, an investment broker, a collective investment business entity, and an internationally recognized foreign custodian. The qualifications for a standing proxy are the same as that of a custodian.

B. Investment Registration and Opening Account (Standing proxy)

With the letter of attorney from a foreign investor, the standing proxy receives the investment registration certificate(IRC) from Financial Supervisory Service. Foreign investors must open a foreign currency account and a non-resident Korean won account for securities investment at a domestic custodian institution, which are used for foreign currency deposits and conversion to and from Korean won.

C. Trading Order and Report on Result

Foreign investors place order on their own or via a standing proxy, and they request the standing proxy to settle.

D. Settlement

When foreign investors make deposits in foreign currency to domestic custodians, the custodians convert them to domestic currency and process settlement with financial intermediaries (including securities companies and banks). For each trade deal in the OTC market, DVP (Delivery versus Payment) under the Gross Settlement System is used. Funds are transferred through BOK-Wire or bank accounts, and bonds are settled by book-entry clearing method via SAFE system of KSD.

(2) Domestic Securities Trading and Settlement by Foreign Investors

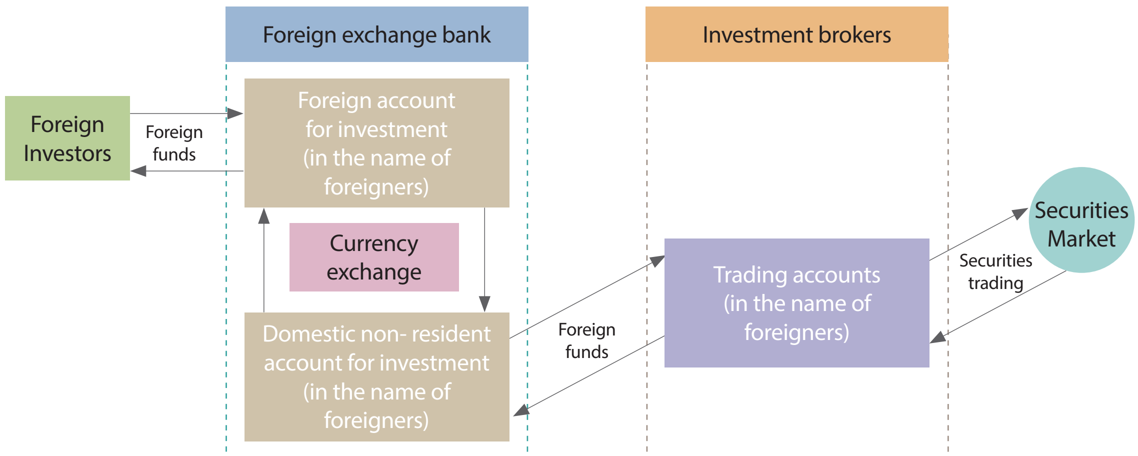
In order to trade securities, foreign investors must open a trading account at a securities company. For payments, they can open a foreign currency account at a foreign exchange bank pursuant to the Foreign Exchange Transactions Regulations, or use investment brokers' accounts.

A. When Foreign Investors Open an Account in Their Name

Foreign investors can open a foreign currency account and a non-resident Korean won account for security investment in their name to deposit and dispose funds. Such accounts should be opened for each type of investment security, and funds in foreign currency accounts are restricted to use for specific purposes such acquiring domestic securities and wiring money overseas.

In order for foreigners to invest in Korean securities, they need to transfer money in foreign currency to their foreign currency account (opened in their own name) exclusively for securities investment. They must then convert the money into Korean won and transfer to their non-resident Korean won account exclusively for investment. The converted proceeds need to be transferred again to their trading account held at the investment broker institution for securities trading.

[Figure 8-2] When Foreigners Open an Account in Their Own Name

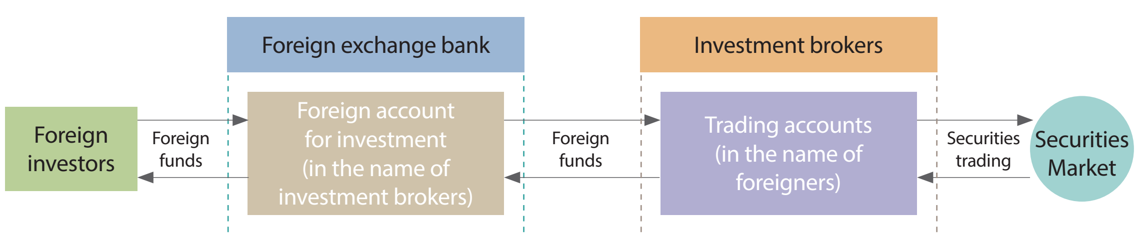


B. When Foreigners Use the Account of an Investment Broker

Investment brokers can open a foreign currency account at foreign exchange banks in their name for foreign investors' trading of Korean won securities, or lending and borrowing of approved securities.

For trading securities using the account of the investment broker, foreigners need to transfer money in foreign currency to foreign currency account (in broker's name) exclusively for securities investment. The broker then exchange the funds into Korean won and transfer to the foreign investor's trading account held at the broker's institution.

[Figure 8-3] When Foreigners Invest Through Broker's Account



05 Taxation on Fixed-Income Securities in Korea

The domestic tax laws classify foreigners as either "non-residents" under the Income Tax Act or "foreign corporations" under the Corporate Tax Act. "Residents" are defined, under the Income Tax Act, as individuals who have resided in Korea for no less than 183 days. "Foreign corporations" are defined, under the Corporate Tax Act, as corporations that have the headquarters or main office outside of Korea.

For residents, only the interest income on bonds is taxed (capital gains are exempted from taxation). For foreign corporations and non-residents, both interest income on bonds and capital gains are subject to taxation. However, if the country of the non-resident signed a tax treaty with Korea, capital gains on bonds are not taxed in most cases.

(1) Withholding Tax

Interest income for non-residents is subject to consolidated taxation after the payment of withholding tax (14%) like residents, while interest income for non-residents without a domestic business location are subject to separate taxation.

Interest income on bonds for foreign corporations, which is generated in Korea (domestic source income)[39] and is not practically related to a domestic place of business or does not belong to such domestic place of business, is generally subject to 20% withholding tax at the time of payment. However, income generated from bonds issued by the government, local governments, and domestic corporations is subject to 14% withholding tax.

(2) Capital Gains Tax

Non-residents with a domestic place of business are taxed for capital gains on bonds without regard to buyer of the bonds. Non-residents without a domestic place of business are subject to taxation only when the bonds are sold to domestic corporations. Capital gains are exempted from[40] income tax and corporate tax if they are generated from overseas sale of foreign currency denominated bonds issued overseas by the government, local governments, or domestic corporations.

39) The Korean taxation system defines interest paid by a domestic place of business run by residents, domestic corporations, foreign corporations, and non-residents as domestic source interest income. In other words, the tax law of the country where payment of interest is made applies in principle.

40) Clause 3 of Article 21 of the Restriction of Special Taxation Act, Clause 4 of Ordinance 18 of the Restriction of Special Taxation Act.

A tax rate of 10% applies to the transfer price of bonds. If the acquisition price and transfer expenses can be confirmed, a 20% tax on capital gains or a 10% tax on transfer price, whichever less, is applied. Nevertheless, if the recipient of income is a resident of a country with a tax treaty, the income is taxed in the country of non-residents and there would be no tax collection in Korea even though the income was generated in Korea.

Withholding taxes were exempted in 2009, on interest and capital income for foreigners from investment in government bonds, in order to encourage foreign investment in KTBs. However, the exemption was repealed in 2010 to mitigate market volatility triggered by the excessive inflow of foreign funds.

To prevent tax evasion using the status of foreign investors, withholding tax equal to the domestic tax rate is imposed for the countries suspected of tax evasion.

06 BOK's Securities Custody Services

Since the global financial crisis in 2008, the need to diversify investment portfolio and robust profit opportunities in domestic bond market have prompted central banks and international financial institutions to continuously increase their investment in Korea's bond market.

In judgment that the investments in Korean bonds by foreign central banks are part of the management of the respective countries' foreign reserves, and that their relatively stable inflows and outflows contribute to the stabilization of Korea's foreign exchange and capital markets, BOK has been providing Custody Service since 2015.

When foreign central banks, international financial institutions, and foreign government invest in KTBs, MSBs, or T-bills, BOK enters into cooperative partnership with them and provides various services like safe deposit of securities certificates, receipt of principal, settlement, deduction of withholding tax, management of trading details, etc. As of the end of 2019, five foreign central banks and one international organization signed an MOU (Memorandum of Understanding) to enhance collaboration in the area.

The custody service has reduced counterparty risks, helping enlarge investment by foreign central banks into KTBs. And the service also has intensified monitoring of capital flows, contributing to global cooperation for financial stability.

Major countries including U.S., U.K. and Japan have offered this Securities Custody Services. The BOK has discussed Securities Custody Services with Roundtable for Official Sector Service Providers which consist of 11 foreign central banks and the BIS.

<Table 8-3> BOK's Securities Custody Services

Eligible customers	Eligible securities	Business
Foreign central banks international financial institutions foreign governments	KTBs Treasury bills MSBs	Safekeeping of securities, interest receipt and payment, tax withholding, reporting of daily transaction results, etc.

* Source : BOK

Ministry of Economy and Finance

Korea Treasury Bonds 2019

part 09

Investment Guide

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01 Retail Investors in KTB Auctions

KTBs are issued through auctions. While PDs have the exclusive rights to participate in KTB auctions, individuals (retail investors) and corporate bodies wishing to participate can do so through PDs. For individuals (retail investors) and corporate bodies, they are not allowed to submit the bid rates, and their purchase amounts must be from a minimum of 100,000 won upto a maximum of 1 billion won.

Retail investors must first open a brokerage account at a securities company designated as a PD (or an existing brokerage account can be used). They must then submit the application for bid participation and make deposits for subscription.

For retail investors participating in competitive bids, KTBs no more than 20% of the offered in the auction will be allocated first at the highest accepted bid rate – not allowed to submit the bid rates. And their purchase amounts must be from a minimum of KRW 100,000 up to a maximum of KRW 1 billion.

The delivery and settlement of KTBs are completed on the next business day after the auction. As all KTBs are registered, issued, and deposited to Korea Securities Depository (KSD), bondholders can trade and exercise their rights without having to issue physical securities.

Once KTBs are issued through auctions, they can be traded in the secondary market. In other words, investors can purchase or sell KTBs in the secondary market without having to participate in auctions. They can easily trade KTBs on the HTS/MTS (of securities companies) or the phone, like equity.

Procedure of Retail Investors' Participation in KTB Auctions

e.g.) 10-yr KTB, auction date: Monday January 20, 2020

Notice (3 days before auction) Wednesday, January 15, 2020	• Public notice of the auction on the BOK website (3days in advance) (or inquiries can be made to the bond division of PD institutions)
⬇	
Opening brokerage account	• Open an account at a PD institution before the auction; existing account can be also used. • Required documents: registered seal (or signature) and ID card
⬇	
Apply for bid participation	• Submit application form including the desired purchasing amount to PD; pay 100% deposit (before the auction). • Bidding amount: 100,000 won to 1 billion won
⬇	
Auction Monday, January 20, 2020	• PDs participate in an electronic auction through BOK-WIRE[+](10:40 am to 11:00 am) • PDs submit the bidding for retail investors by 10:00am on the same day (for auctions of pre-issuance, by 9:00am)
⬇	
KTB allocation	• KTBs are underwritten at the highest winning rate at the competitive auction. (The yield is converted to per-unit cost, and then purchasing amount is decided.)
⬇	
KTB delivery Tuesday, January 21, 2020	• KTBs are delivered to each investor's account on the next day after the auction.
⬇	
Investor's ownership	• When holding to maturity: interest earnings (every 6 months) + principal (at maturity) • In the case of falls in rates, bonds can be sold before maturity in the secondary market for profit opportunities.

02 KTB Information

The Government Bond Policy division of the Ministry of Economy and Finance (MOEF) has been running the official website, http://ktb.moef.go.kr/eng, since January 2011 to promote and revitalize the government bond market. The One-Stop website for KTBs provides information on the government bond market not only to market specialists, but to retail investors.

In 2015, KTB information website was established to integrate information to a single page at http://ktbinfo.or.kr for information management. Before the website was established, Information on the primary market was provided by the Bank of Korea and Korea Exchange, while information on the secondary market was provided by Korea Financial Investment Association, Korea Securities Depository, Financial Supervisory. Such division made it difficult to utilize the information and manage the KTB market in a timely manner. In order to deal with the difficulties, the Korean government established an integrated information system in October 2015.

Issuance	Exchange Trading	OTC	Holdings	Redemption	Foreign Holdings
BOK	KRX	KOFIA	KSD	BOK	FSS

Single integrated System	
1. Improve data accuracy	2. Offer a broader range of information
3. Keep the most recent data updated	4. Support easier access to KTB information

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Annex : Statistics

1. Major KTB Index
2. KTBs by Maturity
3. Outstanding KTBs and Time-to-Maturity
4. Redemption Amounts at Maturity by Year (As of the end of 2019)
5. Yearly Issuance Amount
6. Issuance Amount by Type
7. Outstanding Amount by Type
8. Trading Volume by Type
9. Turnover Ratio by Type
10. Foreign Holdings by Type

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Korea Treasury Bonds 2019

01 Major KTB Index

1 Yearly Issuance Result

(KRW trillion)

		'12	'13	'14	'15	'16	'17	'18	'19
Outstanding KTBs (% to total outstanding bonds)		362.9 (28.1)	400.7 (28.7)	438.3 (30.1)	485.1 (31.2)	516.9 (32.4)	546.7 (33.0)	567.0 (33.0)	611.5 (33.6)
Issuance amount		79.7	88.4	97.5	109.3	101.1	100.8	97.4	101.7
	3Y (%)	19.4 (24.3)	23.1 (26.1)	24.3 (24.9)	26.7 (24.5)	23.8 (23.6)	20.0 (19.9)	19.5 (20.0)	20.6 (20.3)
	5Y (%)	23.5 (29.5)	22.7 (25.7)	25.5 (26.2)	29.7 (27.2)	24.5 (24.2)	23.9 (23.7)	19.9 (20.4)	18.5 (18.2)
	10Y (%)	20.6 (25.9)	23.8 (26.9)	25.7 (26.3)	27.9 (25.6)	24.7 (24.4)	24.6 (24.4)	22.6 (23.2)	24.9 (24.4)
	KTBi (%)	3.7 (4.7)	1.1 (1.2)	0.9 (1.0)	1.8 (1.7)	2.5 (2.5)	2.0 (2.0)	0.9 (1.0)	1.3 (1.2)
	20Y (%)	10.8 (13.6)	8.7 (9.9)	10.8 (11.0)	11.0 (10.0)	10.1 (10.0)	10.0 (9.9)	9.8 (10.0)	7.7 (7.5)
	30Y (%)	1.6 (2.1)	9.0 (10.2)	10.3 (10.6)	12.1 (11.1)	14.3 (14.2)	20.1 (19.9)	22.6 (23.2)	25.6 (25.2)
	50Y (%)	-	-	-	-	1.1 (1.1)	0.2 (0.2)	2.1 (2.2)	3.2 (3.2)
Bid to cover ratio(%)		464.9	412.1	409.1	372.7	383.3	333.6	295.2	297.6
Average financing rate(%)		3.23	3.14	3.02	2.15	1.62	2.10	2.43	1.68
Average time-to-maturity(year)		5.96	6.50	7.11	7.62	8.30	9.06	10.03	10.64
Redemption (A+B+C)		56.8	50.6	59.9	62.4	69.3	71.0	77.1	57.2
	At maturity (A)	42.8	42.1	51.6	45.7	53.9	51.7	47.9	35.4
	Buy-back (B) (in the year)	12.0 (-)	5.6 (-)	5.2 (-)	12.1 (5.9)	11.3 (-)	17.6 (-)	27.1	20.2
	Conversion offer (C)	2.0	2.9	3.1	4.6	4.2	1.7	2.2	1.6
Average rate (%)	3Y	3.13	2.793	2.589	1.794	1.442	1.801	2.099	1.529
	5Y	3.24	2.999	2.836	1.974	1.533	2.001	2.308	1.589
	10Y	3.44	3.277	3.183	2.304	1.749	2.281	2.502	1.700
	20Y	3.53	3.459	3.375	2.478	1.821	2.333	2.477	1.711
	30Y	3.13	3.565	3.460	2.549	1.840	2.337	2.449	1.698

(KRW trillion)

		'12	'13	'14	'15	'16	'17	'18	'19
Trading amount of KTBs* (% to total bonds)		2,876.8 (67.2)	2,976.7 (68.4)	2,661.0 (67.0)	3,056.3 (69.7)	3,940.2 (71.0)	3,182.8 (67.9)	2,767.3 (57.8)	2,723.9 (60.3)
	3Y	686.4	689.4	607.9	908.1	2,190.8	1,886.1	1,428.9	1,380.9
	5Y	1,505.6	1,363.4	1,349.1	1,480.2	1,082.5	699.9	707.9	593.9
	10Y	592.5	802.7	616.5	557.4	544.4	467.4	503.4	575.4
	20Y	90.5	90.6	58.0	69.3	67.5	60.5	52.9	64.9
	30Y	1.8	30.5	29.4	41.4	55.0	68.7	72.3	105.4
	50Y	-	-	-	-	-	0.3	1.9	3.3
Turnover ratio of KTBs * (Turnover ratio of total bonds, %)		792.7 (331.3)	742.9 (311.7)	607.2 (273.1)	630.0 (281.5)	762.3 (347.2)	582.2 (282.6)	488.0 (278.3)	445.4 (248.1)
Foreign holdings of KTBs** (% to listed outstanding KTBs)		57.1 (15.7)	58.7 (14.5)	65.9 (15.0)	67.7 (14.0)	72.5 (14.0)	77.8 (14.2)	86.3 (15.6)	98.3 (16.1)
PD/PPD holdings of KTBs*** (% to listed outstanding KTBs)		22.1 (6.1)	25.3 (6.3)	30.9 (7.0)	32.8 (6.8)	33.8 (6.5)	34.3 (6.3)	38.0 (6.7)	37.6 (6.2)
KTB holdings by institution		375.1	416.3	457.5	507.4	541.0	573.8	596.9	644.7
	Bank	144.0	156.0	165.5	165.1	177.8	205.4	229.1	264.1
	Pension funds	82.5	84.2	86.7	99.5	104.5	102.7	99.8	94.1
	Insurance company	87.2	106.8	123.6	143.0	158.3	179.4	182.2	195.8
	Securities company	36.4	43.8	52.4	61.7	61.3	55.3	60.2	57.8
	Securities company	16.4	17.9	20.6	29.9	30.9	21.7	17.8	21.6
	Other	8.5	7.7	8.8	8.2	8.2	9.3	7.7	11.2

* As of the end of the month

* Source : KRX

** Source : KOSCOM

*** Source : KSD

2 2019 Monthly Issuance Result

(KRW trillion)

		Jan	Feb	Mar	Apr	May	Jun
Issuance amount		9.8	9.2	9.9	8.8	10.2	10.5
	3Y (%)	2.1 (21.6)	2.1 (23.0)	2.0 (20.1)	1.4 (16.4)	2.2 (21.9)	2.2 (20.4)
	5Y (%)	1.8 (18.1)	1.4 (15.3)	1.7 (16.9)	1.7 (19.0)	2.2 (21.6)	2.2 (20.5)
	10Y (%)	2.4 (24.1)	1.9 (21.2)	2.5 (25.0)	2.3 (26.7)	2.4 (23.7)	2.9 927.9)
	KTBi (%)	0.2 (2.1)	0.1 (1.2)	0.1 (0.7)	0.1 (1.4)	0.2 (1.6)	0.0 (0.3)
	20Y (%)	0.9 (8.7)	0.6 (6.5)	0.9 (9.0)	0.8 (8.6)	0.8 (7.6)	0.5 (94.8)
	30Y (%)	2.5 (25.5)	2.4 (26.3)	2.4 (24.2)	1.9 (22.2)	2.4 (23.6)	2.5 (23.3)
	50Y (%)	-	0.6 (6.5)	0.4 (4.1)	0.5 (5.7)	-	0.3 (2.8)
Bid to cover ratio(%)		287.9	282.0	277.9	282.6	286.4	286.9
Average financing rate(%)		1.92	1.95	1.94	1.74	1.80	1.62
Average time-to-maturity(year)		10.00	10.00	10.18	10.20	10.16	10.34
Redemption (A+B+C)		1.2	0.1	10.6	1.1	1.2	11.7
	At maturity (A)	-	-	9.5	-	-	10.6
	Buy-back (B)	1.0	-	1.0	1.0	1.0	1.0
	Conversion offer (C)	0.2	0.1	0.1	0.1	0.2	0.1
Average rate (%)	3Y	1.807	1.802	1.789	1.736	1.679	1.496
	5Y	1.879	1.869	1.838	1.771	1.716	1.530
	10Y	1.991	1.988	1.953	1.889	1.828	1.618
	20Y	2.023	2.050	1.995	1.913	1.865	1.660
	30Y	2.003	2.031	1.989	1.902	1.858	1.662

(KRW trillion)

		Jan	Feb	Mar	Apr	May	Jun
Trading amount of KTBs*		201.0	145.5	218.0	247.7	207.8	260.4
	3Y	85.6	58.2	91.4	126.9	96.5	134.2
	5Y	58.6	42.1	59.9	57.2	50.9	55.0
	10Y	41.2	34.1	50.1	49.9	49.1	56.9
	20Y	5.7	4.3	6.0	5.7	4.3	5.1
	30Y	9.9	6.2	10.2	7.6	7.0	8.6
	50Y	0.0	0.6	0.5	0.4	0.0	0.5
Turnover ratio of KTBs* (Turnover ratio of total bonds, %)		34.9 19.9	24.9 14.4	37.3 22.1	41.9 24.6	34.6 20.3	43.4 23.3
Foreign holdings of KTBs** (% to listed outstanding KTBs)		84.3 (14.6)	84.7 (14.5)	84.3 (14.4)	85.4 (14.4)	90.0 (15.0)	92.7 (15.5)
PD holdings of KTBs*** (% to listed outstanding KTBs)		37.2 (6.5)	39.6 (6.8)	41.6 (7.1)	42.8 (7.2)	42.9 (7.1)	43.0 (7.2)
KTB holdings by institution		609.8	616.3	616.0	624.1	633.4	632.0
	Bank	220.7	224.8	231.7	228.4	231.7	240.1
	Pension funds	105.0	103.3	100.9	102.9	102.2	100.2
	Insurance company	186.5	191.2	191.8	198.4	198.9	200.1
	Securities company	63.4	65.5	64.5	62.1	63.0	60.4
	Investment trust company	20.6	19.3	18.2	20.3	24.2	22.6
	Other	13.8	12.3	8.9	12.0	13.4	8.6

* As of the end of the month

* Source : KRX

** Source : KOSCOM

*** Source : KSD

(KRW trillion)

		Jul	Aug	Sep	Oct	Nov	Dec	Total
Issuance amount		8.0	7.4	7.8	7.2	8.8	4.1	101.7
	3Y (%)	1.6 (19.4)	1.3 (18.2)	1.5 (18.5)	1.6 (22.4)	1.9 (21.2)	0.8 (18.3)	20.6 (20.3)
	5Y (%)	1.6 (19.4)	1.3 (17.9)	1.4 (17.9)	1.2 (16.7)	1.4 (15.4)	0.8 (18.6)	18.5 (18.2)
	10Y (%)	1.8 (22.4)	1.7 (22.5)	2.0 (25.9)	1.5 (20.9)	2.4 (27.3)	1.0 (24.5)	24.9 (24.4)
	KTBi (%)	0.1 (1.2)	0.2 (2.1)	0.2 (2.6)	0.0 (0.6)	0.1 0.6)	-	1.3 (1.2)
	20Y (%))	0.8 (9.4)	0.5 (6.1)	0.6 (7.8)	0.5 (7.0)	0.8 (8.8)	0.2 (4.9)	7.7 (7.5)
	30Y (%)	2.3 (28.2)	2.0 (26.5)	1.9 (24.8)	1.9 (26.8)	2.3 (26.8)	1.1 (25.8)	25.6 (25.2)
	50Y (%)	-	0.5 (6.7)	0.2 (2.6)	0.4 (5.6)	-	0.3 (7.8)	3.2 (3.2)
Bid to cover ratio(%)		291.8	292.2	294.8	296.6	297.1	297.6	297.6
Average financing rate(%)		1.52	1.20	1.29	1.40	1.69	1.57	1.68
Average time-to-maturity(year)		10.34	10.37	10.51	10.54	10.55	10.64	10.64
Redemption (A+B+C)		2.4	2.3	11.1	2.8	3.0	9.7	57.2
	At maturity (A)	-	-	8.7	-	-	6.6	35.4
	Buy-back (B)	2.2	2.2	2.3	2.7	2.8	3.0	20.2
	Conversion offer (C)	0.2	0.1	0.1	0.1	0.2	0.1	1.6
Average rate (%)	3Y	1.382	1.164	1.287	1.357	1.492	1.390	1.529
	5Y	1.421	1.201	1.353	1.442	1.593	1.481	1.589
	10Y	1.506	1.254	1.420	1.577	1.750	1.653	1.700
	20Y	1.520	1.251	1.386	1.568	1.709	1.628	1.711
	30Y	1.514	1.245	1.380	1.556	1.681	1.597	1.698

(KRW trillion)

		Jul	Aug	Sep	Oct	Nov	Dec	Total
Trading amount of KTBs*		249.8	298.0	233.5	249.9	249.5	162.8	2,723.9
	3Y	127.1	174.8	128.9	139.7	138.3	79.3	1,380.9
	5Y	55.2	51.7	44.6	40.5	45.1	33.2	593.9
	10Y	52.7	54.9	47.8	52.2	49.9	36.5	575.4
	20Y	5.2	6.3	5.2	5.8	6.0	5.2	64.9
	30Y	9.4	9.9	6.8	11.3	10.2	8.3	105.4
	50Y	0.1	0.4	0.2	0.4	0.0	0.3	3.3
Turnover ratio of KTBs * (Turnover ratio of total bonds, %)		41.3 (23.0)	48.8 (24.8)	38.5 (20.2)	40.9 (22.3)	40.4 (21.5)	26.6 (16.1)	445.4 (248.1)
Foreign holdings of KTBs** (% to listed outstanding KTBs)		93.9 (16.3)	95.6 (15.7)	96.6 (15.9)	97.5 (15.9)	97.8 (15.8)	98.3 (16.1)	98.3 (916.1)
PD holdings of KTBs*** (% to listed outstanding KTBs)		42.5 (7.0)	43.0 (7.0)	39.5 (6.5)	38.9 (6.4)	39.2 (6.3)	37.6 (6.2)	37.6 (6.2)
KTB holdings by institution		640.3	646.4	639.7	647.8	652.5	644.7	644.7
	Bank	229.8	235.5	246.7	239.0	246.9	264.1	264.1
	Pension funds	104.0	103.9	100.2	102.6	102.6	94.1	94.1
	Insurance company	201.8	200.4	197.8	201.0	200.2	195.8	195.8
	Securities company	64.4	66.4	60.9	63.9	61.9	57.8	57.8
	Investment trust company	27.2	28.1	25.0	28.3	26.7	21.6	21.6
	Other	13.2	12.2	9.2	13.0	14.2	11.2	11.2

* As of the end of the month

* Source : KRX

** Source : KOSCOM

*** Source : KSD

Annex : Statistics

02 KTBs by Maturity

(KRW trillion)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
3Y	Issue amount	2.1	2.1	2.0	1.4	2.2	2.2	1.6	1.3	1.5	1.6	1.9	0.8	20.6
	Winning rate (pre-issuance)	1.815	1.820	1.825	1.710 (1.700)	1.720 (1.705)	1.575	1.470	1.300	1.115	1.285 (1.290)	1.485 (1.450)	1.430	
	Bid-to-cover ratio (pre-issuance)	279.0	277.1	255.5	302.9 (363.3)	259.7 (322.2)	293.2	316.0	329.6	335.7	368.9 (352.0)	321.7 (304.9)	344.1	308.0
	Trading amount	85.6	58.2	91.4	126.9	96.5	134.2	127.1	174.8	128.9	139.7	138.3	79.3	1,380.9
	Market rate	1.807	1.802	1.789	1.736	1.679	1.496	1.382	1.164	1.287	1.357	1.492	1.390	1.529
5Y	Issue amount	1.8	1.4	1.7	1.7	2.2	2.2	1.6	1.3	1.4	1.2	1.4	0.8	18.5
	Winning rate (pre-issuance)	1.870 (1.885)	1.835 (1.840)	1.860	1.755	1.760	1.565	1.460 (1.460)	1.225 (1.235)	1.240	1.260	1.620	1.500	
	Bid-to-cover ratio (pre-issuance)	345.0 (359.0)	336.9 (357.0)	267.5	300.4	298.5	303.1	389.0 (391.3)	308.4 (318.9)	330.5	326.0	323.0	318.1	320.4
	Trading amount	58.6	42.1	59.9	57.2	50.9	55.0	55.2	51.7	44.6	40.5	45.1	33.2	593.9
	Market rate	1.879	1.869	1.838	1.771	1.716	1.530	1.421	1.201	1.353	1.442	1.593	1.481	1.589
10Y	Issue amount	2.6	2.1	2.5	2.5	2.6	3.0	1.9	1.8	2.2	1.5	2.4	1.0	26.1
	Winning rate (pre-issuance)	1.14	2.18	3.18	1.920 (1.915)	1.845 (1.830)	1.620	1.550	1.280	1.460	1.495 (1.485)	1.850 (1.835)	1.680	
	Bid-to-cover ratio (pre-issuance)	1.995	1.985	1.990	298.7 (380.1)	339.9 (291.3)	296.8	328.4	323.9	310.9	377.3 (306.7)	282.6 (289.6)	299.7	305.5
	Trading amount	273.5	276.1	294.0	49.9	49.1	56.9	52.7	54.9	47.8	52.2	49.9	36.5	575.4
	Market rate	1.991	1.988	1.953	1.889	1.828	1.618	1.506	1.254	1.420	1.577	1.750	1.653	1.700

(KRW trn, %)

Division		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
20Y	Issue amount	0.9	0.6	0.9	0.8	0.8	0.5	0.8	0.5	0.6	0.5	0.8	0.2	7.7
	Winning rate (pre-issuance)	2.035	2.065	1.870	1.940	1.830	1.605	1.470	1.160 (1.150)	1.430	1.640	1.745	1.560	
	Bid-to-cover ratio (pre-issuance)	297.0	298.3	310.5	316.4	319.2	321.8	327.6	395.2 (340.5)	337.8	316.2	332.2	322.0	320.8
	Trading amount	5.7	4.3	6.0	5.7	4.3	5.1	5.2	6.3	5.2	5.8	6.0	5.2	64.9
	Market rate	2.023	2.050	1.995	1.913	1.865	1.660	1.520	1.251	1.386	1.568	1.709	1.628	1.711
30Y	Issue amount	2.5	2.4	2.4	1.9	2.4	2.5	2.3	2.0	1.9	1.9	2.3	1.1	25.6
	Winning rate (pre-issuance)	1.960	2.085 (2.095)	2.075	1.910	1.900	1.725	1.605	1.375	1.260	1.425	1.750	1.635	
	Bid-to-cover ratio (pre-issuance)	257.4	281.2 (211.5)	261.5	274.8	275.7	272.5	302.1	268.0	299.0	289.6	283.2	303.0	276.7
	Trading amount	9.9	6.2	10.2	7.6	7.0	8.6	9.4	9.9	6.8	11.3	10.2	8.3	105.4
	Market rate	2.003	2.031	1.989	1.902	1.858	1.662	1.514	1.245	1.380	1.556	1.681	1.597	1.698
50Y	Issue amount	-	0.6	0.4	0.5	-	0.3	-	0.5	0.2	0.4	-	0.3	3.2
	Winning rate	-	1.970	1.980	1.880	-	1.650	-	1.275	1.395	1.500	-	1.540	
	Bid-to-cover ratio	-	163.1	203.5	123.8	-	182.0	-	138.8	214.0	125.8	-	225.0	164.3
	Trading amount	0.0	0.6	0.5	0.4	0.0	0.5	0.1	0.4	0.2	0.4	0.0	0.3	3.3
	Market rate	1.991	2.015	1.968	1.878	1.854	1.657	1.515	1.241	1.374	1.553	1.687	1.600	1.691

* As of the end of the month

1. KTBis (issue and trading amounts) are included in 10Y KTBs.

2. Issue volume includes competitive auctions, non-competitive biddings and conversion offers.

3. Bid-to-cover ratio = total bids received in competitive auction in corresponding period / total issuance amount planned in the competitive auction

03 Outstanding KTBs and Time-to- Maturity

1 Outstanding KTBs

(Unit : KRW trillion)

Division	'12	'13	'14	'15	'16	'17	'18	'19
3Y (%)	47.7 (13.1)	50.5 (12.6)	58.5 (13.3)	64.1 (13.2)	62.1 (12.0)	51.1 (9.3)	47.2 (8.3)	47.4 (7.8)
5Y (%)	95.9 (26.4)	99.4 (24.8)	103.0 (23.5)	110.7 (22.8)	108.0 (20.9)	109.5 (20.0)	104.2 (18.4)	99.3 (16.2)
10Y (%)	152.4 (42.0)	165.7 (41.4)	170.1 (38.8)	179.9 (37.1)	189.0 (36.6)	198.5 (36.3)	195.1 (34.4)	208.4 (34.1)
KTBi (%)	7.6 (2.1)	8.1 (2.0)	8.4 (1.9)	9.1 (1.9)	11.0 (2.1)	10.5 (1.9)	9.4 (1.7)	9.2 (1.5)
20Y (%)	57.7 (15.9)	66.4 (16.6)	77.2 (17.6)	88.1 (18.2)	98.2 (19.0)	108.3 (19.8)	117.5 (20.7)	124.8 (20.4)
30Y (%)	1.6 (0.4)	10.7 (2.7)	21.0 (4.8)	12.1 (11.1)	47.5 (9.2)	67.6 (12.4)	90.2 (15.9)	115.8 (18.9)
50Y (%)	-	-	-	-	1.1 (0.2)	1.3 (0.2)	3.4 (0.6)	6.7 (1.1)
Total	362.9	400.7	438.3	485.1	516.9	546.7	567.0	611.5

2 Structure of Time-to-Maturity (As of the end of the year)

(Unit : KRW 100 million)

Financial Year / Time to maturity	'12	'13	'14	'15	'16	'17	'18	'19
less than 1Y (%)	421,370 (11.6)	515,864 (12.9)	516,440 (11.8)	539,037 (11.1)	516,110 (10.0)	478,602 (8.8)	354,030 (6.2)	451,430 (7.4)
1Y~3Y (%)	1,044,104 (28.8)	1,041,678 (26.0)	1,075,118 (24.5)	1,217,402 (25.1)	1,049,442 (20.3)	1,070,040 (19.6)	1,135,150 (20.0)	1,069,335 (17.5)
3Y~5Y (%)	990,189 (27.3)	854,882 (21.4)	725,652 (16.6)	705,100 (14.5)	944,810 (18.3)	856,905 (15.7)	820,309 (14.5)	914,604 (15.0)
5Y~10Y (%)	579,863 (16.0)	830,046 (20.7)	1,083,679 (24.7)	1,177,019 (24.3)	1,257,401 (24.3)	1,408,997 (25.8)	1,477,773 (26.1)	1,545,766 (25.3)
More than 10Y (%)	593,408 (13.8)	764,461 (19.1)	981,659 (22.4)	1,212,480 (25.0)	1,401,318 (27.1)	1,652,608 (30.2)	1,883,178 (33.2)	2,134,196 (34.9)
Total	3,628,934	4,006,929	4,382,548	4,851,038	5,169,082	5,467,152	5,670,440	6,115,330

04 Redemption Amounts at Maturity by Year (As of the end of 2019)

(Unit : KRW 100 million)

Year	'20	'21	'22	'23	'24	'25	'26	'27	'28
Amount	451,430	564,750	504,585	452,794	461,810	285,010	345,972	296,560	355,270

Year	'29	'30	'31	'33	'35	'36	'37	'38	'39
Amount	262,953	112,433	198,636	176,735	123,591	97,930	95,560	82,210	22,800

Year	'42	'44	'46	'47	'48	'49	'66	'68	Total
Amount	202,780	150,830	143,870	214,130	229,020	217,050	21,840	44,780	6,115,330

05 Yearly Issuance Amount

(Unit : KRW trillion)

Division		'12	'13	'14	'15	'16	'17	'18	'19
Treasury bonds	Issuance	79.7	88.4	97.5	109.3	101.1	100.8	97.4	101.7
	Redemption	56.8	50.6	59.9	62.4	69.3	71.0	77.1	57.2
	Outstanding	362.9	400.7	438.3	485.1	516.9	546.7	567.0	611.5
Foreign exchange stabilization bonds (foreign currency)	Issuance	-	1.1	2.1	0.5	-	1.2	1.1	1.8
	Redemption	-	1.1	2.6	0.6	0.6	-	0.5	1.7
	Outstanding	7.6	7.5	7.0	7.1	6.7	7.2	8.0	8.3
National Housing bonds	Issuance	9.7	10.5	12.4	16.2	15.9	14.3	15.1	15.4
	Redemption	9.1	8.8	10.9	9.7	11.2	8.9	11.3	12.3
	Outstanding	49.5	51.3	52.8	59.3	63.9	69.4	73.3	76.4
Treasury bills	Issuance	22.4	36.7	38.0	37.5	20.9	7.9	2.0	48.7
	Redemption	22.4	36.7	38.0	37.5	20.9	7.9	2.0	48.7
	Outstanding	-	-	-	-	-	-	-	-
Total	Issuance	111.8	136.7	150.0	163.5	138.0	124.2	115.6	167.6
	Redemption	88.3	97.2	111.4	110.3	102.1	87.8	90.8	119.9
	Outstanding	420.0	459.4	498.0	551.5	587.5	623.3	648.3	696.2

1) In terms of issuance

2) Foreign exchange stabilization bond denominated in foreign currency : quoted by the national debt management check (Additional or deleted amount due to exchange rate change was reflected)

3) Foreign exchange stabilization bond denominated in domestic currency was unified into KTBs in November 2003 and was redeemed at the end of 2008. Since 2009, foreign exchange stabilization bond has been denominated in foreign currency only

06 Issuance Amount by Type

(Unit : KRW trillion)

Division	'12	'13	'14	'15	'16	'17	'18	'19
Gov't bonds (%)	111.8 (19.8)	135.6 (24.1)	147.9 (26.1)	163.0 (25.7)	138.2 (25.6)	123.1 (22.1)	114.5 (20.4)	165.8 (26.7)
KTBs (%)	79.7 (14.1)	88.4 (15.7)	97.5 (17.2)	109.3 (17.2)	101.1 (18.7)	100.8 (18.1)	97.4 (17.3)	101.7 (16.4)
KTBs (%)	5.3 (0.9)	4.5 (0.8)	4.6 (0.8)	5.8 (0.9)	3.5 (0.6)	3.4 (0.6)	3.3 (0.6)	4.7 (0.8)
MSBs (%)	167.2 (29.5)	175.0 (31.1)	189.9 (33.6)	188.0 (29.6)	161.1 (29.8)	163.7 (29.4)	159.8 (28.4)	142.1 (22.9)
Non-financial special bonds (%)	107.5 (19.0)	85.3 (15.1)	64.0 (11.3)	87.7 (13.8)	58.0 (10.7)	61.1 (11.0)	50.7 (9.0)	55.5 (8.9)
financial special bonds (%)	49.4 (8.7)	51.0 (9.1)	51.1 (9.0)	78.7 (12.4)	80.2 (14.8)	81.3 (14.6)	93.0 (16.5)	92.4 (14.9)
Corporate bonds (%)	124.7 (22.0)	112.1 (19.9)	108.4 (19.2)	111.3 (17.5)	99.9 (18.5)	124.7 (22.4)	141.4 (25.1)	160.7 (25.9)
General Corporate bonds (%)	86.4 (15.3)	71.4 (12.7)	62.4 (11.0)	61.8 (9.7)	50.3 (9.3)	56.5 (10.1)	67.1 (11.9)	72.2 (11.6)
Financial Institution bonds (%)	38.3 (6.8)	40.3 (7.2)	45.7 (8.1)	49.2 (7.8)	49.0 (9.1)	67.5 (12.1)	74.0 (13.2)	88.1 (14.2)
Foreign bonds (%)	-	-	-	0.2 -	-	-	-	-
Total	566.0	563.4	565.7	634.6	540.9	557.4	562.7	621.1

1) In terms of listed bonds in KRX

2) Listed amount of Treasury bills was included and foreign exchange stabilization bond (denominated in foreign currency) is excluded

3) The distinction between non-financial special bonds and financial special bonds applied since 2002 (before 2002, financial special bonds were included into non-financial special bonds)

4) Issuance amount after 2003 applied to the revised bond classification system in accordance with Capital Market Act (4th, Feb 2009)
(Bank bonds, loan bonds, other financial bonds and securities financial bonds among non-financial special bonds are classified into corporate bonds

5) Revised information on listing due to the establishment of Korea Finance Corporation and KDB Financial Group on 28th October 2009 was excluded in the issuance amount

07 Outstanding Amount by Type

(Unit : KRW trillion)

Division	'12	'13	'14	'15	'16	'17	'18	'19
Gov't bonds (%)	412.4 (31.9)	452.0 (32.4)	491.0 (33.7)	544.4 (35.0)	582.0 (36.4)	616.1 (37.1)	640.3 (37.2)	688.0 (37.8)
KTBs (%)	362.9 (28.1)	400.7 (28.7)	438.3 (30.1)	485.1 (31.2)	516.9 (32.3)	546.7 (33.0)	567.0 (33.0)	611.5 (33.6)
KTBs (%)	17.4 (1.3)	18.5 (1.3)	19.5 (1.3)	21.2 (1.4)	21.4 (1.3)	21.0 (1.3)	20.8 (1.2)	21.4 (1.2)
MSBs (%)	163.1 (12.6)	165.4 (11.9)	178.0 (12.2)	182.1 (11.7)	168.4 (10.5)	170.9 (10.3)	171.6 (10.0)	165.0 (9.1)
Non-financial special bonds (%)	296.0 (22.9)	331.5 (23.8)	330.8 (22.7)	310.9 (20.0)	315.2 (19.7)	319.6 (19.3)	310.7 (18.1)	310.7 (17.0)
financial special bonds (%)	71.9 (5.6)	82.4 (5.9)	86.6 (6.0)	141.4 (9.0)	149.7 (9.4)	149.5 (9.0)	160.1 (9.3)	169.3 (9.3)
Corporate bonds (%)	331.5 (25.7)	345.7 (24.8)	349.2 (24.0)	357.2 (22.9)	361.4 (22.6)	381.7 (23.0)	416.4 (24.2)	467.9 (25.7)
General Corporate bonds (%)	216.3 (16.7)	227.3 (16.3)	220.9 (15.2)	218.8 (14.1)	211.6 (13.2)	209.9 (12.7)	220.6 (12.8)	244.2 (13.4)
Financial Institution bonds (%)	114.1 (8.8)	117.5 (8.4)	127.7 (8.8)	137.7 (8.8)	149.0 (9.3)	170.6 (10.3)	193.8 (11.3)	221.9 (12.2)
Foreign bonds (%)	0.0 -	0.0 -	0.0 -	0.2 (0.0)	0.2 (0.0)	0.2 (0.0)	0.2 (0.0)	0.2 (0.0)
Total	1,292.4	1,395.3	1,455.1	1,557.3	1,598.1	1,658.9	1,720.1	1,822.3

1) In terms of listed bonds in KRX

2) Listed amount of Treasury bills was included and foreign exchange stabilization bond(denominated in foreign currency) is excluded

3) The distinction between non-financial special bonds and financial special bonds applied since 2002(before 2002, financial special bonds were included into non-financial special bonds)

4) Issuance amount after 2003 applied to the revised bond classification system in accordance with Capital Market Act(4th, Feb 2009)
(Bank bonds, loan bonds, other financial bonds and securities financial bonds among non-financial special bonds are classified into corporate bonds

5) Part of financial special bonds were reclassified into non-financial special bonds and corporate bonds due to the establishment of Korea Finance Corporation and KDB Financial Group on 28th October 2009

08 Trading Volume by Type

(Unit : KRW trillion)

Division	'12	'13	'14	'15	'16	'17	'18	'19
Gov't bonds (%)	2,961.3 (69.2)	3,082.4 (70.9)	2,802.9 (70.5)	3,211.6 (73.3)	4,444.8 (80.1)	3,546.4 (75.7)	3,540.8 (74.0)	3,304.4 (73.1)
KTBs (%)	2,876.8 (67.2)	2,976.7 (68.4)	2,661.0 (67.0)	3,056.3 (69.7)	3,940.2 (71.0)	3,182.8 (67.9)	2,767.3 (57.8)	2,723.8 (60.3)
Municipal bonds (%)	13.9 (0.3)	13.3 (0.3)	14.2 (0.4)	17.3 (0.4)	13.2 (0.2)	11.9 (0.3)	11.5 (0.2)	12.2 (0.3)
Non-financial special bonds (%)	748.6 (17.5)	707.2 (16.3)	615.8 (15.5)	637.8 (14.6)	570.4 (10.3)	568.7 (12.1)	603.8 (12.6)	481.8 (10.7)
Financial special bonds (%)	189.7 (4.4)	172.2 (4.0)	156.2 (3.9)	138.9 (3.2)	127.3 (2.3)	123.0 (2.6)	110.6 (2.3)	113.1 (2.5)
Corporate bonds (%)	115.8 (2.7)	122.2 (2.8)	121.7 (3.1)	143.4 (3.3)	153.1 (2.8)	153.1 (3.3)	163.4 (3.4)	164.1 (3.6)
General Corporate bonds (%)	252.1 (5.9)	251.2 (5.8)	262.7 (6.6)	234.2 (5.3)	239.3 (4.3)	284.7 (6.1)	357.3 (7.5)	445.1 (9.8)
General Corporate bonds (%)	110.2 (2.6)	107.0 (2.5)	95.4 (2.4)	73.9 (1.7)	79.6 (1.4)	83.0 (1.8)	102.2 (2.1)	141.9 (3.1)
Financial Institution bonds (%)	137.4 (3.2)	143.7 (3.3)	166.4 (4.2)	159.5 (3.6)	159.1 (2.9)	200.7 (4.3)	253.0 (5.3)	301.4 (6.7)
Total	4,281.6	4,348.7	3,973.5	4,383.2	5,548.1	4,687.8	4,787.4	4,520.7

1) KRX KTB : Trading amount in KRX
OTC : Trading statistics through data terminal of Koscom (only 50% of the statistics was reflected. On assumption of two-way declaration of buying and selling)

2) Issuance amount after 2002 applied to the revised bond classification system in accordance with Capital Market Act(4th February 2009)

3) Part of financial special bonds were reclassified into non-financial special bonds and corporate bonds due to the establishment of Korea Finance Corporation and KDB Financial Group on 28th October 2009

09 Turnover Ratio by Type

(Unit : %)

Division	'12	'13	'14	'15	'16	'17	'18	'19
Gov't bonds	718.7	682.0	570.8	590.0	763.8	575.6	553.0	480.3
KTBs	792.7	742.9	607.2	630.0	762.3	582.2	488.0	445.4
Municipal bonds	78.6	72.0	73.0	81.8	61.8	56.7	55.1	57.2
MSBs	455.0	427.6	346.0	350.2	338.7	332.9	351.8	292.1
Non-financial special bonds	69.7	51.9	47.2	44.7	40.4	38.5	35.6	36.4
Financial special bonds	159.1	148.4	140.5	101.4	102.3	102.4	102.1	96.9
Corporate bonds	94.6	72.7	75.2	65.6	66.2	74.6	85.8	95.1
General Corporate bonds	55.9	47.1	43.2	33.8	37.6	39.5	46.5	58.1
Financial Institution bonds	122.0	122.4	130.3	115.9	106.8	117.7	130.5	135.8
Total	331.3	311.7	273.1	281.5	347.2	282.6	278.3	248.1

1) Turnover ratio : (Total issuance amount in KRX and OTC market)/(Listed amount at the end of the year)*100

2) The distinction between non-financial special bonds and financial special bonds applied since 2002(before 2002, financial special bonds were included into non-financial special bonds)

3) Issuance amount after 2003 applied to the revised bond classification system in accordance with Capital Market Act(4th February 2009)

4) Part of financial special bonds were reclassified into non-financial special bonds and corporate bonds due to the establishment of Korea Finance Corporation and KDB Financial Group on 28th October 2009

10 Foreign Holdings by Type

(Unit : KRW 100 million)

Division	Gov't bonds	Corporate bonds	Municipal bonds	Special bonds (MSBs included)	Total
'10 (%)	477,450 (64.4)	3,047 (0.4)	1 (0.0)	261,425 (35.2)	741,923 (100)
'11 (%)	609,923 (73.5)	5,388 (0.6)	13 (0.0)	214,951 (25.9)	830,274 (100)
'12 (%)	572,283 (62.9)	5,980 (0.7)	28 (0.0)	331,874 (36.5)	910,165 (100)
'13 (%)	586,914 (62.0)	3,151 (0.3)	11 (0.0)	388,480 (38.6)	957,381 (100)
'14 (%)	658,888 (65.7)	2,134 (0.2)	0 (0.0)	342,598 (34.1)	1,003,621 (100)
'15 (%)	678,905 (67.0)	1,853 (0.2)	0 (0.0)	332,886 (32.8)	1,013,644 (100)
'16 (%)	728,426 (81.8)	515 (0.1)	0 (0.0)	164,420 (18.4)	893,361 (100)
'17 (%)	728,436 (79.4)	1,017 (0.1)	0 (0.0)	201.813 (20.5)	985,266 (100)
'18 (%)	862,847 (75.8)	430 (0.0)	0 (0.0)	274,752 (24.1)	1,138,029 (100)
'19. 1Q (%)	856,460 (76.8)	283 (0.1)	- (0.0)	257,783 (23.1)	1,114,526 (100)
'19. 2Q (%)	949,077 (76.2)	230 (0.1)	- (0.0)	296,091 (23.8)	1,245,398 (100)
'19. 3Q (%)	986,780 (77.6)	233 (0.0)	- (0.0)	284,868 (22.4)	1,271,881 (100)
'19. 4Q (%)	985,276 (79.7)	627 (0.1)	- (0.0)	250,611 (20.3)	1,236,514 (100)

* Source : FSS

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