Publication registration No
11-1051000-000417-10

http://ktb.moef.go.kr/eng/main.do

2021

MINISTRY OF ECONOMY AND FINANCE

Korea Treasury Bonds

Ministry of Economy and Finance

Preface

2021 was a year of challenges and a new leap forward for the KTB market. Despite unfavorable domestic and international circumstances, the KTB market fully committed itself to serving its role of ensuring stable financing with successful issuance of KTBs at lower funding rates than market interest rates. In particular, in the process of supplementary budgeting worth KRW 117 trillion for 2020 and 2021, the KTB market stably absorbed additional issuance of KTBs worth KRW 54 trillion, actively supporting national efforts to overcome the COVID-19 crisis.

In such a process, stability of the KTB market was further improved with increased issuance volume of KTBs from KRW 100 trillion prior to the pandemic to the record high of KRW 180 trillion in 2021. Time-to-maturity was also extended to 11.7 years, the longest in history, contributed by increase in issuance of long-term bonds. In addition, when market volatility expanded due to normalization of monetary policy at home and abroad, market stabilization measures, such as emergency buybacks, were implemented in a timely manner to ease instability at an early stage. As such, in 2021, the KTB market took a step further in both quantitative and qualitative aspects.

Meanwhile, the Korean government has steadily promoted systemic improvement, aiming to advance the KTB market. First of all, while diversifying maturity of KTBs with the introduction of 2-year KTB, it enhanced underwriting capacity of the market by reinforcing incentives for Primary Dealers. In addition, efforts have been made to expand the base of demand that is currently concentrated in domestic financial institutions to individuals. For instance, as part of such efforts, a revision of the State Bond Act was submitted to the National Assembly for the introduction of the government bonds for individual investment.

Along with such efforts to advance the KTB market, great progress has been made with internationalization of the KTB market. Attracting constant foreign investment through active global IR, including holding of the International KTB Conference, was one of the main contributor. In 2021, net investment in KTBs by foreigners reached KRW 42.5 trillion, nearly fourfold increase from the

annual average of KRW 11 trillion over the past five years. Outstanding held by foreigners exceeded KRW 200 trillion for the first time in history.

In 2022, the KTB market is faced with a number of challenges both at home and abroad. Amid uncertainties over macroeconomic conditions, including global inflation and normalization of monetary policy in major economies, volatility in the real economy as well as in the financial markets has been growing with Russia's recent invasion of Ukraine. Domestically, demands for the role of finances are expected to grow further due to structural factors, such as changes in the demographic structure and slowing potential growth, the launch of a new administration and the continuous spread of COVID-19.

In response to such circumstances surrounding the KTB market, the Korean government will make every effort to ensure stable issuance of KTBs and management of the market throughout the year, while further accelerating improvement of the fundamental system to match the upgraded status of the KTB market. In particular, we will closely communicate with the market and implement stabilization measures in a timely manner in case of necessity, while systematizing the issuance system of KTBs. At the same time, we will also place our priorities on diversifying demands for KTBs, advancing the KTB market infrastructure and reforming the policy support system.

"Korea Treasury Bond 2021" contains vivid and eventful records that the KTB market experienced throughout a year. We hope that the ninth issuance of this white paper will help the public understand the KTB market and serve as a stepping stone for the development of the KTB market in the future.

March 2022

Deputy Prime Minister and Minister of Economy and Finance

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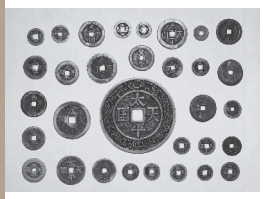

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Introduction

Ministry of Economy and Finance

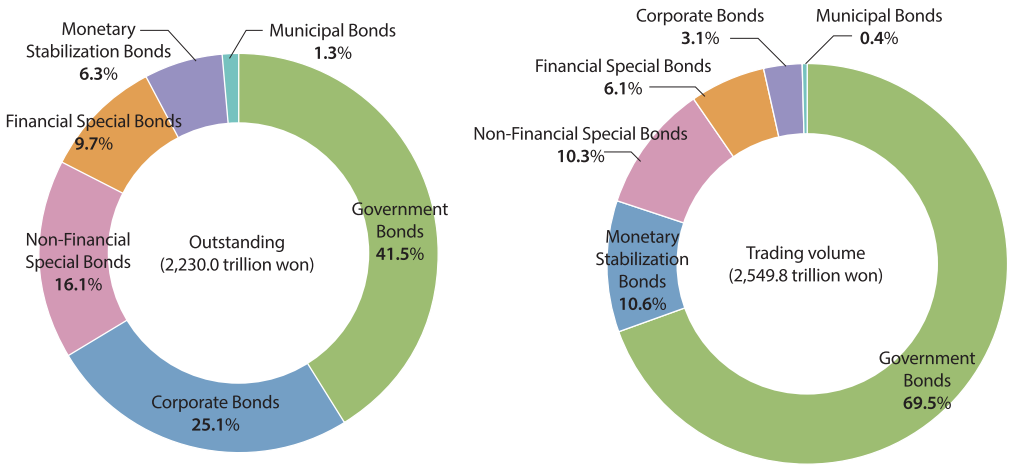
Korea Treasury Bonds 2021

01 Overview[1)]

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 2020, four types of government bonds are issued: Korea Treasury Bonds (KTBs), Treasury Bills (T-bills), National Housing Bonds (NHBs) Type 1, and Foreign Exchange Stabilization Fund Bonds (FX SFBs). Among them, KTBs are the key means to finance public expenditures, and are served as a benchmark 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 2021, Trading volume as of 2021)
** The share of KTB to the total outstanding amount of gov't bond: 37.8%, The shrae of KTBs to the total trading volume of government bond: 69.5%

KTBs are currently issued as fixed-rate bonds with 2, 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. After the government announced its introduction in 2020, KTBs with 2-year maturity

1) Author : Jisoo, Kim. Deputy Director, Government Bond Policy Division at the Ministry of Economy and Finance

began to be issued in February 2021 to overcome the lack of short-term maturities. 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 communicates with market participants to reflect their opinions in related policies.

KTBs account for approximately 70% of the total bond trading in the secondary market and serve as a pricing benchmark. Trading of KTB-related instruments including KTB futures, Repo (Repurchase agreements), and ETF (Exchange-Traded Funds) has also become active, having a positive impact on the market supply and demand as well as the efficiency of the market.

02 Legal Basis[2)]

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 basis 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 scope 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."

2) Author : Jisoo, Kim. Deputy Director, Government Bond Policy Division at the Ministry of Economy and Finance

The State Bond Act[3], the general law on the issuance and redemption of government bonds, sets forth basic matters concerning state bonds. Public debt issuance strictly requires a legal basis as Article 3 of the State Bond Act states 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 "Guidelines for Government Bond-related Tasks" regarding the issuance and redemption of government bonds.

03 Market Development[4]

(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 a standardized and organized 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.

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

4) Author : Jisoo, Kim. Deputy Director, Government Bond Policy Division at the Ministry of Economy and Finance

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 had committed to underwrite the full issue, the syndicate participants sometimes had to hold the bonds to maturity or sell-off in the secondary market at higher yields. This practice of mandatory underwriting hindered bonds from being fairly priced in the market 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 bonds were consolidated into one. All clauses that provided the legal 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 Korea Treasury Bonds), the secondary market exclusive for government bonds, was established at the Korea 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 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. The KTB Market after the Asian Financial Crisis

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 (2009-2019)

A. Measures to Stabilize the Government Bond Market

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[5]. 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 offers 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 issuance following supplementary budgets, and the potential demand gap due to changes in global economic conditions.

B. Introduction of the Korean-Style Auction Method

The Differential Pricing Auction was introduced in September 2009, which combined a Dutch auction[6] and a conventional auction[7]. In the Differential Pricing Auction, bid rates were aligned in ascending order and divided into groups at an interval of 3 or 4 basis points[8], and all successful bidders were awarded the highest winning rate within that group. The bid-to-cover ratio for KTBs, which was around 100% in early 2009, has risen to a high level of around 300% since the introduction of the Differential Pricing Auction. However, as interest rate volatility has increased significantly since the COVID-19 crisis, it has temporarily shifted to a Dutch auction method since March 2021 to reduce risks for underwriters.

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5) 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.

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

7) 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 to July 2000).

8) The winning range is 5bp for 3-year to 30-year KTBs.

C. Increase in Average Time to Maturity

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 of long-term bonds[9] 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 one year for 20-year and 30-year KTBs to increase the liquidity of long-term KTBs.

<Table 1-1> Average Time to Maturity of KTBs (as of the end of year)

	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21
Average Time-to-Maturity (year)	5.96	6.50	7.11	7.62	8.30	9.06	10.03	10.64	11.31	11.67

D. Qualitative and Quantitative Growth of Foreign Investment

Foreign holdings of KTBs, which were only KRW 4.2 trillion (2.0% of listed amount outstanding of government bonds) in 2006, substantially increased, reaching KRW 56.9 trillion (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-heaven 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 46 in 2021. In addition, since August 2017, 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 investment.

9) Yearly issuance share of super-long KTBs (+20-year): ('13)20.1 → ('14)21.6 → ('15)21.1 → ('16)25.3 → ('17)30.1 → ('18)35.4 → ('19)35.9 → ('20) 42.1 → ('21) 34.4

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.

(4) After the COVID-19 (Present-)

In responding to the COVID-19 pandemic that hit the world in 2020, the Korean government increased its Treasury bonds issuance at the fastest pace on record, reaching KRW 174.5 trillion, an increase of 72 percent compared with 2019, KRW 101.7 trillion worth of the actual issuance. In 2021, the annual issuance limit for KTBs reached KRW 186.3 trillion, maintaining the trend of increasing issuance. Given the concerns over slowing growth as Korea is entering the mature economic stage and changes in the demographic structure such as low birth rates and aging population, issuance of KTBs is expected to rise continuously. Against this backdrop, the Korean government announced the "Measures to enhance the capacity of the Treasury bond market" in October 2020, which was established to reorganize and reinforce the framework of the government bond market in the wake of an increase of KTBs issuance. This year, it is seeking to leap into an advanced Treasury bond market through the "roadmap for mid- to long-term development of the Treasury bond market," while proceeding with follow-up measures without a hitch.

<Table 1-2> 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

Date	Events
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 Treasury bond futures option market
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
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)

Date	Events
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
Oct. 2020	Announced the measures to enhance the capacity of the Treasury bond market
Jan. 2021	Launched the KTB Research Advisory Panel
Feb. 2021	Issued 2-year KTB

04 Types of Government Bonds[10)]

(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 the national budget. While 21 different types of government bonds have been issued since then, the government currently issues four types: Korea Treasury Bonds (KTBs), Treasury Bills (T-bills), Foreign Exchange Stabilization Fund Bonds (FX SFBs), and National Housing Bonds (NHBs) 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 then. Currently playing a representative role in the domestic bond market, they provide benchmark rates for the Korean capital market.

Treasury bills (T-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 (FX SFBs) 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 FX SFBs 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.

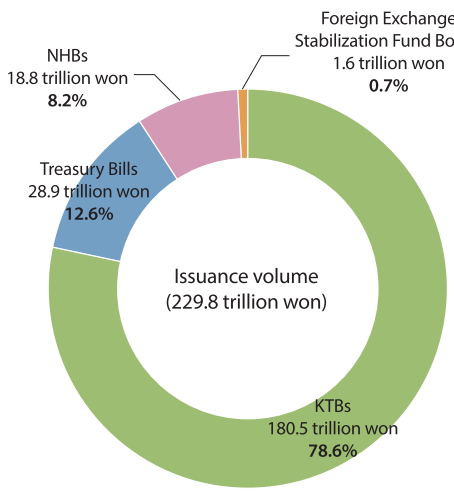
10) Author: Jisoo, Kim. Deputy Director, Government Bond Policy Division at the Ministry of Economy and Finance

<Table 1-3> Types of Government Bonds

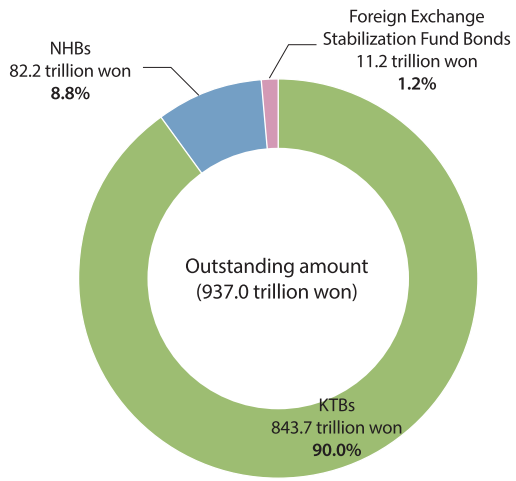
	Purpose of Issuance	Issuance Method	Maturity	Coupon rate
KTB	To finance the government	Competitive auction	2, 3, 5, 10, 20, 30 and 50-year	Set at auction
Treasury Bill	To cover temporary shortfalls in budget	Competitive auction	Within one year	0%
Foreign Exchange Stabilization Fund Bonds	To create a 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	5-year	1.00%

* 50-year KTBs were launched using a syndication in October 2016, and have been issued on a bimonthly basis since 2019.

[Figure 1-2] Issuance Volume and Outstanding by Type



* As of 2020

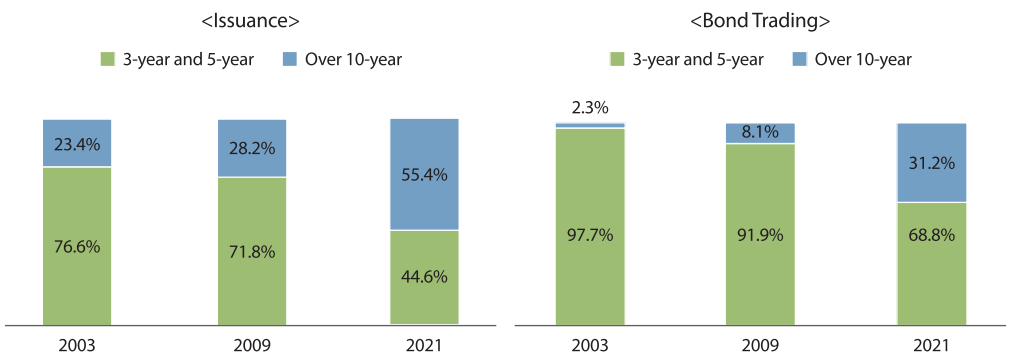


* As of 2020, outstanding amount of treasury bills : 0

(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: 2, 3, 5, 10, 20, 30 and 50 years. Among them, 2-year KTB, which is a short-term treasury, is issued every three months, while 3- and 5-year KTBs as well as 10-year benchmark KTBs[11] are newly issued every six months. 20- and 30-year KTBs are newly issued every one year.

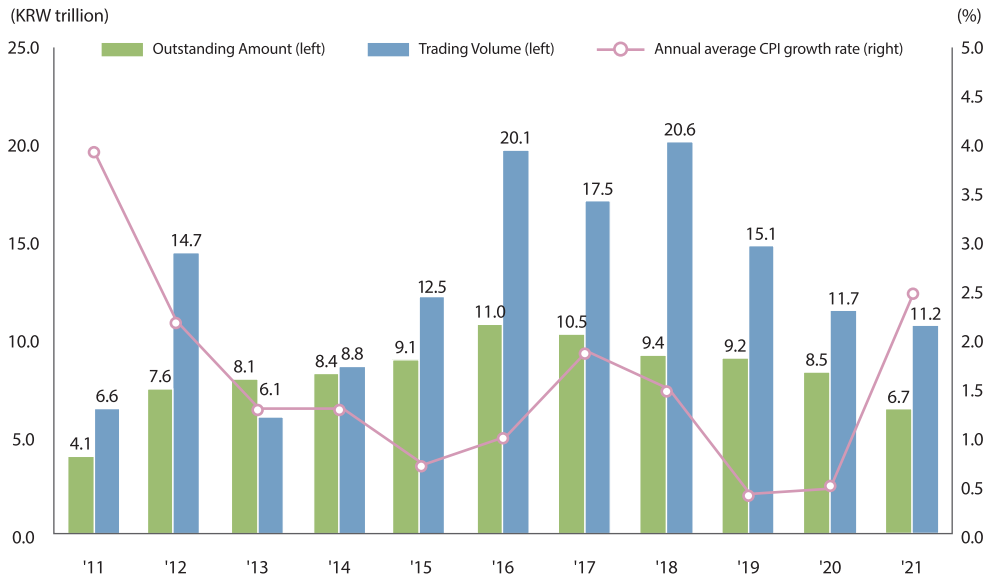
[Figure 1-3] The Share of Issuance and Trading



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 public 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. Starting this year, the government converted to a competitive auction to invigorate the KTBi market in an efforts to revitalize KTBis.

11) Changes in a maturity of the benchmark bond: 3-year KTB → 5-year KTB (May 2004) → 10-year KTB (January 2013)

[Figure 1-4] KTBi Outstanding and Trading Volume>



The Introduction of 2-year KTB Issuance

As a part of the Measures to Enhance the Capability of the Bond Market, the Ministry of Economy and Finance announced the introduction of 2-year KTB issuance in October 2020. The newly issued bond is aimed to lessen the burden on the market from the impact of supply surge and to set the efficient benchmark short-term interest rate.

In response to the COVID-19 pandemic, KTBs issuance amount in 2020 was rapidly increased by 70% more than the previous year. This raises concerns over market supply and demand mainly for medium- and long-term maturity bonds. As the gap between short-term yields and long-term yields (10-year KTB versus. 3-year KTB) was the highest since 2014, there was a need to lessen the market burden. This brought the introduction of 2-year KTB issuance.

The Ministry announced 2021 KTB Issuance Plan including its plans to issue 2-year KTBs in December 2020. According to the plan, 2-year KTBs worth approximately 15 trillion won is issued annually through competitive bidding, its issuance being adjusted to market conditions. From February in 2021, 2-year KTBs are monthly issued and newly issued in March, June, September and December every year – a three-month fungible issuance. Now, conventional KTBs are regularly issued with seven different maturities: 2, 3, 5, 10, 20, 30 and 50 years.

Korea's bond market showed positive signs after the announcement of 2-year KTBs. The market expected a new 2-year KTB to lessen the burden on the market from medium- and long-term bonds, and to enhance the government's ability to manage KTB issuance and reduce borrowing costs.


INFOMAX

연합인포맥스

INFOMAX 다운로드

[데스크 칼럼]국채2년 발행 승자독식은 없다...기재부와 한은의 콜라보

한창현 기자 | 승인 2020.10.22 10:37 | 댓글 0

(서울=연합인포맥스) 국고채 단기물 발행은 국채당국인 기획재정부의 숙원 사업이나 다름없다. 국고채가 만기 3년 이상의 중·장기물을 위주라 효율적으로 수급 관리를 하려면 단기물이 필요했다.

기재부는 과거에도 수차례 단기 국고채 발행을 검토했으나 만기 2년 이내인 통화안정증권(통안채)의 존재로 여의치 않았다. 통안채를 발행하는 한국은행이 강력하게 반대해왔다는 얘기도 있지만, 당시에는 굳이 단기 국고채를 찍어야 할 이유가 크지 않았다고 보는 게 더 정확하다.

국고채 2년물 발행 결정을 두고 기재부가 승자이고, 한은이 일격을 맞았다고 보는 시각도 이런 점에서 적절치 않다. 기재부의 정책 타이밍과 추진력, 한은의 결단이 가져온 공동 성과물이다.

많이 본 뉴스

1 美 금리 우려 완화에 주가 급등...국채 혼조...
2 금리 진정에도 불안한 마음
3 브레이크 없는 금융열차
4 [데스크 칼럼] 11월까지 집단면역...자본시장...

50-year KTB Issuance

Amid low rates and greater interest in ultra-long bonds[12] globally in 2016, South 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 was considering the issuance of a new ultra-long bond, it collected opinions and consultation papers from market participants. 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 KTBs. Most of the participants came to common understanding that the issuance of the bonds is timely given 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 KTBs worth KRW 1.1 Trillion was successfully issued on October 11, 2016, at a rate of 1.574% (up by 0.04% of 10-year KTBs). In four years after the government begun to issue 30-year KTBs in September 2012, KTBs has been 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 (yield: 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 KRW 2.1 trillion, and in 2019, did eight times worth of KRW 3.2 trillion. From February 2020, 50-year KTBs have been issued every other month.

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

Foreign Exchange Stabilization Fund Bond

Despite growing market uncertainties over global inflation and a shift in monetary policy in major economies, the Korean government successfully issued 1.3 billion USD worth of Foreign Exchange Stabilization Fund Bonds on October 7, 2021. 500 million USD and 700 million EUR were issued in dual tranche format, with tenors of 10 years and 5 years. The sales reaffirmed the global investors' strong confidence in the Korean economy.

The most important achievement in 2021 is that issuance was made with the lowest spread ever. The spread was cut from 50bp to 25bp for USD and from 35bp to 13bp for EUR. Thanks to this, despite the rise in reference rates such as U.S. government bonds, the rates combining reference rates and the spread were the second-lowest in history. In particular, EUR-denominated bonds were issued at negative interest rates for the second consecutive years.

The government's detailed explanation on swift and strong recovery of the Korean economy and its national strategies to become a pace-setting economy at the non-face-to-face briefing session attended by nearly 50 foreign investors was the driving force behind the success. The Deputy Minister for International Affairs of the MOEF also met major European asset managers in Paris on the occasion of attending the OECD Ministerial Council Meeting. In addition, issuance of EUR-denominated green bonds for the first time as an Asian government laid the ground for drawing keen attention from investors.

Many foreign media and investors expressed astonishment at Korea's successful issuance of Foreign Exchange Stabilization Fund Bonds in spite of market instabilities. They evaluated it as a "textbook case" beyond expectations, and there was also a comment that issuance of EUR-denominated green bond was "overwhelming."

The issuance of Foreign Exchange Stabilization Bonds at the lowest spread ever is expected to contribute to pushing down international debt financing costs for Korean borrowers in the private sector by providing a lower benchmark secondary rate. Issuance of EUR-denominated green bonds is also meaningful in that it set a precedent for currency diversification to raise international funds and for expanding the use of the ESG market.

05 Government Bond Investors[13)]

(1) Overview

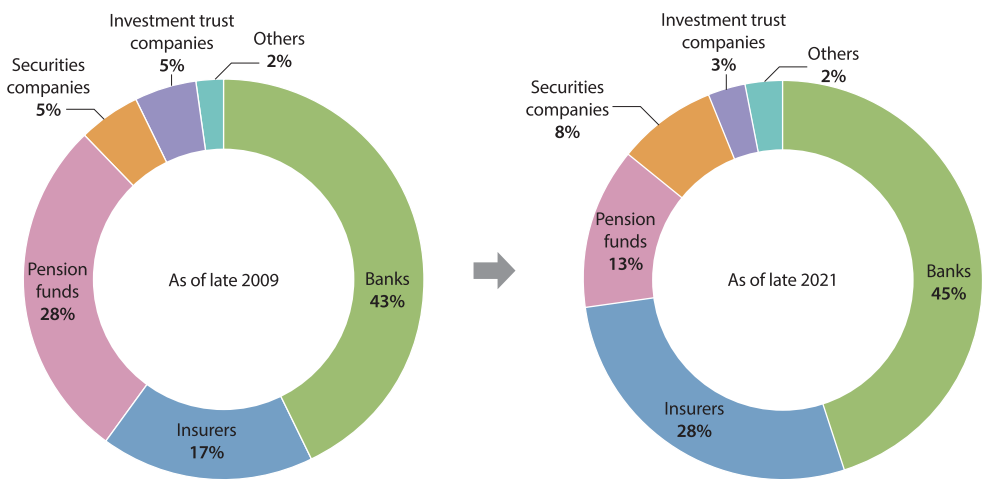
Investors in the government bond market are classified into domestic or foreign investors by nationality, and financial institutions (ie. banks, insurance companies, and pension funds) or non-financial institutions (ex. non-financial companies and retail investors) by investment institution type. Among the main investors, banks traditionally take up the largest share in KTB holdings. Institutional investors are key investors, meaning that the share of retail investors is fairly small.

<Table 1-4> Major Investors in KTBs

(unit : KRW trillion)

Classification	Banks	Insurers	Pension funds	Securities companies	Investment trust companies	Others	Total
Holdings	377.9	106.2	236.3	67.0	29.5	26.7	843.7

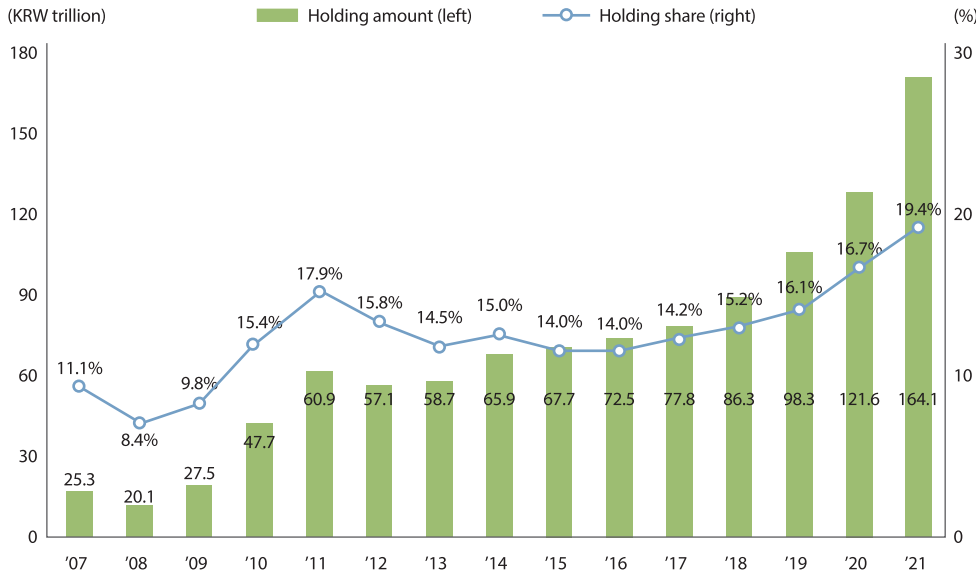
[Figure 1-5] KTB Holdings



13) Author: Jisoo, Kim. Deputy Director, Government Bond Policy Division at the Ministry of Economy and Finance

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 164.1 trillion as of the end of 2021, equivalent to 19.4% of the total outstanding.

[Figure 1-6] KTB Holdings by Foreign Investors



(2) Investor Diversification

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.

The Relationship 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:

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

a= Periodic (six months) coupon payment (ex. 3-year maturity)
r= YTM (one year)
A= Bond's par or face value

Bond prices and yields act like a seesaw. The formula show the following relationship:

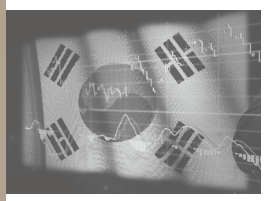
Bond Values and the Passage of Time[14)]

		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%)

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

Ministry of Economy and Finance

Korea Treasury Bonds 2021



part 02

2021 KTB Market

1. Global and Domestic Economic Environment
2. Global and Domestic Financial Market Trends
3. 2021 KTB Market Review (Annual/Monthly)
4. Major Policies
5. Foreign Investment Trends

Ministry of Economy and Finance

Korea Treasury Bonds 2021

01 Global and Domestic Economic Environment[15)]

In 2021, the Korean economy showed rapid recovery from the pandemic crisis despite high uncertainties, including the spread of COVID-19 variants and high inflation caused by supply chain disruptions.

With resumption of economic activities following increased vaccination rates and the U.S. stimulus package, the global economic recovery began in earnest since the beginning of the year. Although pace of recovery briefly slowed down with the spread of Delta and Omicron variants and supply chain bottlenecks in the third quarter, major economies, including the U.S. (5.7%) and the eurozone (5.2%) emerged from negative growth in the fourth quarter. On the other hand, China demonstrated slowdown of growth at the end of the year due to concerns over the real estate sector arose from the Evergrande crisis and power shortages. However, with the fastest economic rebound from the COVID-19 crisis in the first half of 2021, China hit 8.1% of high growth rate. The International Monetary Fund (IMF) forecasts that will reach 5.9%.

Meanwhile, concerns over global inflation mounted with increased demand resulting from economic recovery and supply bottlenecks caused by the prolonged pandemic situation. The international oil price (based on Dubai crude) recorded an increase of 64.1% year-on-year, hitting $69 per barrel, while the consumer price in advanced countries estimated by the IMF recorded 2.8%, far exceeding the average of 1.3% in the past five years. Particularly, in the United States, consumer inflation was high at 6.8% in December and 4.3% on an annual basis, affected by wage inflation resulting from low labor participation rate, In the face of such an unprecedentedly high inflation, the U.S. started to take measures for monetary policy normalization by initiating tapering in November.

As for the domestic economy, Korea demonstrated the fastest economic recovery among G20 members by boosting domestic demand mainly on damaged sectors, activating investment and resolving export-related difficulties. While stimulating domestic demand by providing subsidies for win-win consumption and for the public, special tax deductions and consumption vouchers, the Korean government also revitalized corporate investment by supporting investment projects worth KRW 100 trillion, with expansion of tax and financial support.

15) Author: Jisoo, Kim. Deputy Director, Government Bond Policy Division at the Ministry of Economy and Finance

With such active fiscal and financial support by the government, Korea became the first country to recover its pre-crisis growth rate among major developed countries in the first quarter of 2021, firmly maintaining its rank of top 10 economies in the world. In particular, as exports and trade have reached an all-time high, Korea has become the world's 8th largest trading power. As the international community also evaluated the resilience of its economy as an exemplary case of overcoming the crisis, Korea has preserved its solid international credibility.

In addition to the economic recovery, the Korean government focused on laying the groundwork to shift itself into a pace-setting economy. While placing its priority on fostering next-generation growth engine, the government reinforced its capacity for preemptive responses to prepare for potential structural transformation in the future. While promoting the Korean New Deal without a hitch the government also expanded policy support for emerging BIG 3 industries, including system semiconductors, bio-health and electric vehicles, taking them as new key industries. As a result, hydrogen vehicles and semiconductors produced in Korea achieved the largest and second-largest share in the global market.

<Table 2-1> Key Indicators for the Real Economy

(unit : %)

	2019	2020	2021				
			Annual	1/4	2/4	3/4	4/4
Real GDP	2.2	Δ0.9	4	1.9	6	4	4.1
- Private consumption	2.1	Δ5.0	3.6	1.2	3.7	3.3	6.3
- Facility investment	Δ6.6	7.1	8.3	12.4	12.8	4.2	4.1
- Construction investment	Δ1.7	Δ0.4	Δ1.5	Δ1.8	Δ1.2	Δ1.2	Δ1.7
Employment (10,000 persons)	30.1	Δ21.8	36.9	Δ114.1	185.3	173.1	197.8
Export (MoM)	Δ10.4	Δ5.5	25.7	12.5	421.1	26.5	24.6
Import (MoM)	Δ6.0	Δ7.1	31.5	12.4	37.6	37.5	39.4
Consumer price	0.4	0.5	2.5	1.4	2.5	2.5	3.5

02 Global and Domestic Market Trends

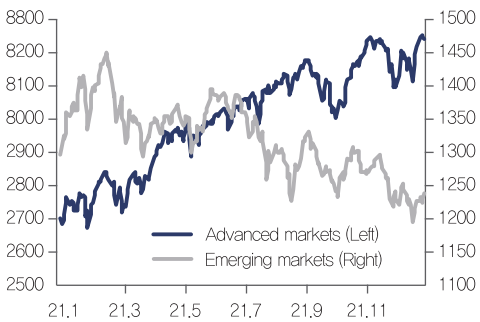
(1) Global Financial Markets

Despite diverse downside factors, such as Omicron and Delta variants, rising inflation and discussions for normalizing monetary policy among major economies, global financial markets maintained its soundness in 2021 assisted by recovery of the real economy and abundant liquidity.

In 2021, major economies, including Europe and the United States, gradually eased their prevention and control measures against COVID-19 with increase in vaccination rates, while economic activities and confidence of economic players that had been shrunk also improved at a swift pace. At the same time, accommodative monetary policy stance was maintained after 2020. As the U.S. Federal Reserve and ECB adhered to zero interest rate and tapering was only initiated in November, liquidity was injected to the market throughout the year. Against such a backdrop, the Financial Condition Index (Goldman Sachs) was remained at the lowest level in history since early 2021.

Under the favorable environment, MSCI World Index rose by 19% in 2021. Temporary adjustment was once made due to concerns over the spread of Delta and emergence of Omicron variants in the second half of the year, but upward tendency was maintained in general. However, as differentiation emerged between advanced and emerging economies, index for emerging countries fell by 4.6%, while advanced economies had more than 20% of rise throughout the year. Since the second half of 2021, in particular, reinforcement of regulation and default concerns over the real estate sector in China as well as discussions on monetary policy normalization affected sluggishness of emerging economies.

MSCI for Advanced & Emerging Markets



Stock Price Increase in Major Economies

	Jan. 1	Dec. 31	Fluctuation(%)
U.S.	30606.5	36338.3	18.7
Eurozone	3552.6	4298.4	21
UK	6460.5	7384.5	14.3
Japan	27444.2	28791.7	4.9
China	3473.1	3639.8	4.8
Hong Kong	27231.1	23397.7	△14.1
South Korea	2873.5	2977.7	3.6

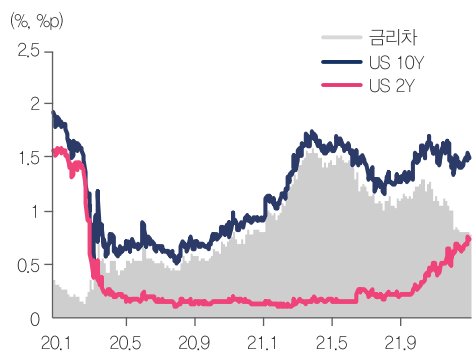
Meanwhile, KTB yields rose drastically in 2021 with concerns over inflation and monetary policy normalization. As for the U.S, both short- and long-term government bond yields rose by nearly 60bp, while the UK and Germany also showed increase of their government bond rate.

* Increase in government bond yields 2021 (bp): (U.S. 10Y) 59.7 (U.S. 2Y) 61.1 (Germany 10Y) 39.0 (UK 10Y) 77.4

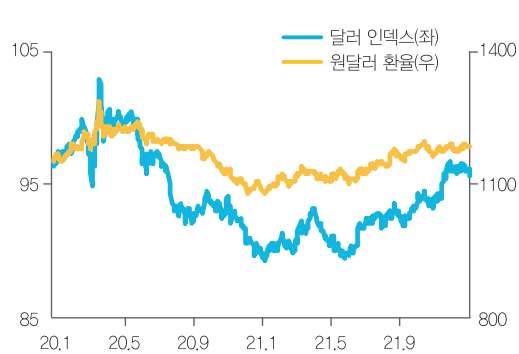
After rising sharply in the first half based on growing inflation concerns, yields on 10-year U.S. government bonds calmed down again thanks to the Fed's communication with the market. However, it turned upward again in the second half of the year as high inflation indicators exceeding market expectations were continuously announced and the Fed gradually revised its initial stance that inflation is transitory. Short-term government bond rates, which are greatly affected by monetary policy, began to rise in earnest after September. After its first official comment on tapering at the FOMC in July, the Fed started discussion on monetary policy normalization in earnets, suggesting the possibility of starting tapering within the year at the September FOMC.

Coupled with the U.S. government bond yields, the U.S. dollar remained strong. The U.S. Dollar Index, which was below 90 in early 2021, rose 6.4% to 95.7 at the end of the year, and KRW-USD exchange rate rose from 1,086 won to 1,189 won per dollar at the beginning of the year, devaluating Korean Won by 8.6% .

U.S. Government Bond Yields (10Y&2Y)



U.S. Dollar Index/KRW-USD Exchange Rate



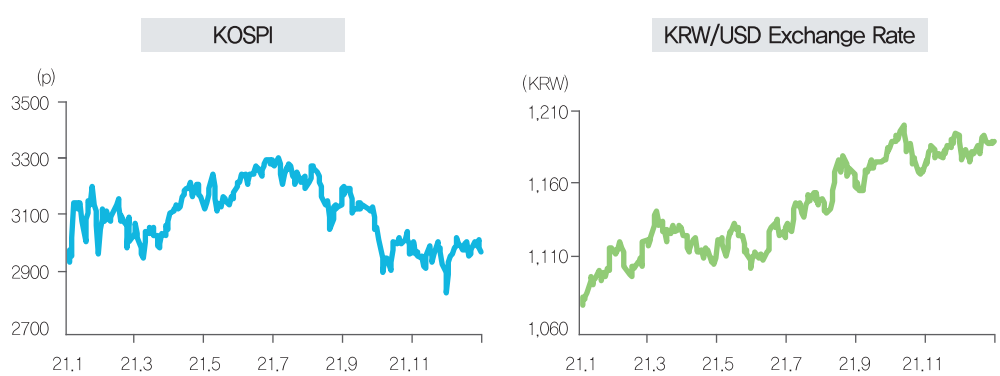
(2) Domestic Financial Markets

Domestic financial markets, which had been quite stable during the first half of 2021, showed unprecedented volatility as they approached the end of the year with a trend of normalizing monetary policy in the second half.

The domestic stock market was generally maintained at highs in the first half, while it remained relatively at lows in the latter half of 2021. The KOSPI, which entered the "era of the KOSPI 3,000" led by policy responses to COVID-19 and abundant liquidity, declined in the second half of the year in reaction to normalization of monetary policy at home and abroad and closed at 2,977.7pt, rose by 3.6% from the end of 2020. Based on strong corporate performance and expansion of individual investors' participation in the stock market, the KOSPI, which surpassed 3,000pt for the first time on Jan. 7, reached its highest point of 3,305pt on July 6. Following decline in reaction to concerns over global inflation in the second half, hikes in the domestic base rate as well as normalization of global monetary policy, the KOSPI drifted sideways thereafter.

The KRW/USD exchange rate fluctuated during the first half of the year and then rose in the second half. During the first half of 2021, a weak-dollar environment was created based on anticipation of economic recovery in major countries with expansion of vaccine supply. Under the circumstances, the exchange rate fluctuated in the range of KRW 1,110 to 1,130 per dollar based on increased overseas investment by Koreans. In the second half, however, the exchange rate rose in earnest as concerns over default in the Chinese real estate sector and the spread of Delta and Omicron variants shrunk risk preference sentiment among investors, and initiation of the U.S. tapering created a strong-dollar environment.

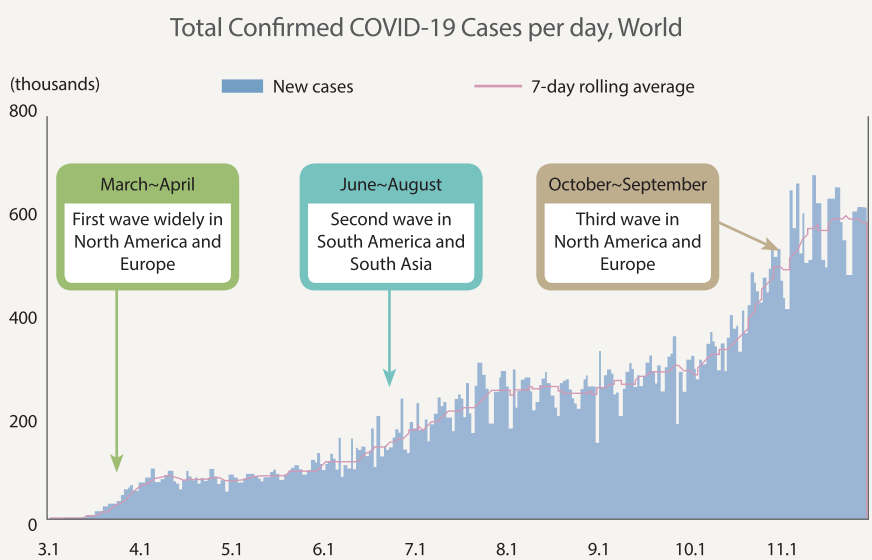
[Figure 2-1] KOSPI & Exchange Rate in 2021



COVID-19 Pandemic

The new coronavirus disease that was first identified in Wuhan city, China has received an official name: "COVID-19." The patients with COVID-19 have had a wide range of symptoms – ranging from mild to severe illness of fever, feeble, and cough. The case fatality rate (CFR) of COVID-19 (3.5%) has been reported to be much lower than that of SARS (9.6%) and MERS (34~35%). COVID-19 has lower fatality rates but extremely higher transmission rates. Older people and people with chronic conditions are at higher risk of suffering from severe complications if they are diagnosed with COVID-19.

The World Health Organization (WHO) on March 11, 2020 has declared the novel coronavirus outbreak a global pandemic. The first wave of the COVID-19 pandemic crashed across U.S. and Europe in March and April and then, was slowed down. But, the second wave started in June to August, and resurgence rose again in October to November. As of the end of 2020, approximately 80 million people are cumulatively infected in the world, and, in South Korea, over 62 thousand infections are confirmed. The vaccine fron-runners include those developed by Pfizer, Moderna, and AstraZenaca-Oxford. And, the U.K. was the first western country to approve the vaccine from Pfizer and begun roll-out on December 9.



Most governments worldwide have responded with strategic monetary and fiscal policies. South Korea draw up fourth supplementary budget to help citizens financially amid the COVID-19 pandemic. This was the first time in fifty-nine years that the Korean government has drawn up four rounds of extra budgets in one year, since 1961. Along with the expansionary fiscal policy, the BOK made two interest rate cuts in March and in May, from 1.25% to 0.50%. Also, the central bank introduced quantitative easing and conducted its asset purchases seven times, buying KRW 11 trillion of government bonds.

The U.S. and major countries in Europe also implemented a package of unprecedented policies in response to the pandemic. The U.S. Department of the Treasury launched four coronavirus relief bills, totaling nearly $3 trillion including unemployment benefits, cash grants for households, and emergency financial support for the airline industry. The Federal Reserve made two interest rate cuts to near zero. Most countries in Europe also approved extra budgets and EU leaders agreed on a €750 billion recovery fund to help repair the immediate economic and social damage. And, the ECB's €1.35 trillion Pandemic Emergency Purchase Programme[16] (PEPP) has propped up the economy.

Major policies in response to COVID-19

	Fiscal Policy	Financial Policy
South Korea	• Four extra budgets • Financial support package (worth of KRW 100 trillion)	• Rate cut: 1.25% → 0.50% • Bond-buying, unlimited RP purchases
U.S.	• Four emergency budget bills	• Rate cuts close to zero • Currency swap agreement with 14 countries
UK	• Furlough scheme (pay 80% of wages for those not working coronavirus crisis)	• Rate cuts: 0.75% → 0.10% • COVID Corporate Financing Facility
Germany	• Job retention scheme • Solidarity fund (up to €40 billion)	• Larger amount of loans for self-employed and corporates • €400 billion in loan guarantees
France	• Unemployment benefits • Monthly emergency grants to all self-employed and small businesses (€1 billion per month)	• €300 billion in loan guarantees

16) The purchase of eurozone governments' and corporates' bonds by the ECB.

03 2021 KTB Market Review (Annual/Monthly)

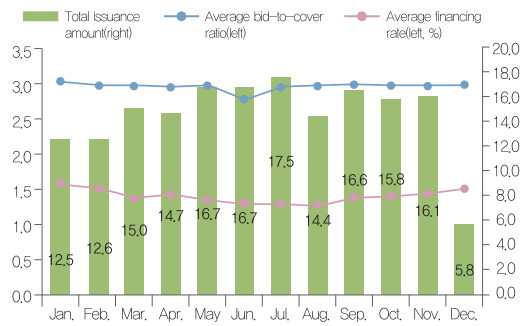
(1) Annual Review of the KTB Market in 2021

Amid rising tides of monetary policy normalization at home and abroad, KTB market played a critical role in supporting expansionary fiscal policy to overcome the COVID-19 crisis in 2021. The Korean government issued KTBs worth KRW 180.5 trillion, which is a significant rise compare to the annual average of KRW 100 trillion prior to 2019 and an increase of KRW 6 trillion from the previous year (174.5 trillion won).

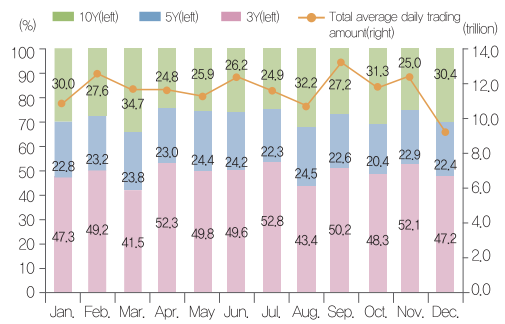
The government maintained stable bid-to-cover ratio (283%) and funding rate (1.79%) at the previous year's level while stably absorbing issuance amounts through policy improvements such as introduction of 2-year KTB and non-competitive bids option V. In addition, despite global uncertainties, the average daily transaction volume of KTBs was quite active, recording KRW 10.3 trillion.

In particular, not only domestic investors, including insurance companies, but also foreign investors showed growing investments in domestic bonds. While we experienced influx of KRW 26.5 trillion of foreign investing funds in 2020, foreign flow into KTBs was an increase in KRW 63.9 trillion, we saw that net investment size and holdings by foreigners hit a record high – KRW 214.0 trillion as of year-end outstanding. This may be induced by relatively higher KTB yields than fundamentals and arbitrage opportunities.

[Figure 2-2] KTB Issuance in 2021



[Figure 2-3] KTB Trading in 2021



2021 was a more difficult year than ever for the KTB market due to volatile market conditions incurred by concerns over global inflation, domestic and international trend of normalizing monetary policy as well as supply and demand imbalances of KTBs.

Specifically, in the first half of the year, KTB yields were coupled with global interest rate hikes based on expectations for global economic recovery and rising inflation expectations, while volatility increased significantly with forecasts about supplementary budgeting. However, yields on KTBs declined soon after the government took timely market stabilization measures, such as the introduction of Dutch auction, a temporary expansion of non-competitive bid options limits and the BOK's outright purchase of KTBs in March. The news that additional deficit-covering KTBs will not be issued for the second supplementary budget also contributed to stabilization.

The second half of 2021 presented increase in KTB yields again. With the U.S. starting tapering in November, concerns over monetary policy rose significantly amid a sharp contraction in investor sentiment caused by hikes in domestic benchmark interest rates in August and November and massive sale of foreign investors. In response, the Korean government urgently responded by implementing emergency buybacks on November 5, while reducing issuance of KTBs by worth KRW 5.8 trillion using tax revenue surplus.

Consequently, the market closed with the yields on 3-year KTB at 1.798%, rose by 82.2bp from the end of the previous year. Yields on 10-year KTB recorded 2.250%, which was more than 53.7bp from the end of the previous year. The 30-year KTB closed with 2.310% of yields, up 48.7bp, based on solid real demand from insurance companies.

[Figure 2-4] KTB Yields in 2021

[Figure 2-5] KTB Yields in 2021 by Maturity

((Unit: %))

(Unit: %)	Late '21	Late '22	YoY (bp)	Highest of the year	Lowest of the year
2Y KTB	–	1.675	–	1.825	1.645
3Y	0.976	1.799	+82.3bp	2.108	0.936
5Y	1.335	2.011	+67.6bp	2.405	1.281
10Y	1.713	2.25	+53.7bp	2.575	1.691
20Y	1.824	2.328	+50.4bp	2.523	1.79
30Y	1.823	2.31	+48.7bp	2.493	1.802
50Y	1.823	2.307	+48.4bp	2.493	1.802

(2) Monthly Review of KTB Market in 2021

A. First Half of 2021

In January, KTBs worth KRW 15.552 trillion were issued including KRW 300 billion for redemption. January showed increase in KTB yields, resulting from rising global interest rates and concerns over a potential mismatch in supply and demand of government bonds. With the election of Joe Biden as president of the United States, fiscal stimulus program worth 1.9 trillion USD was implemented, leading surge of global interest rates with expectations on economic recovery. KTB yields were also on the rise mainly with mid- to long-term ones, based on concerns over potential imbalances of KTB supply and demand that were arose with discussions on the loss compensation and the 4th emergency relief funds relating to the COVID-19 crisis. As a result, yields on the 3-year KTB at the end of the month fell by 0.5bp, while yields on the 10-year and 30-year KTBs rose by 5.5bp and 8.4bp, respectively.

In February, KTBs worth KRW 17.652 trillion were issued including KRW 300 billion for redemption. KTB yields in February significantly increased with surge of global yields and possibility of supplementary budgeting. As distribution of COVID-19 vaccines began in earnest and President Biden's passage of the large-scale stimulus package were projected, expectations on economic recovery emerged mainly from the U.S. and Europe, while inflation expectation also rose in the U.S.. As a result, amid a surge in the U.S. interest rates, KTB yields soared as the market sentiment remained vigilant against possible allocation of the supplementary budget to provide the 4th COVID-19 emergency relief funds. In response, on February 26th, the BOK announced a plan for outright purchase of KTBs worth KRW 5 to 7 trillion. At the end of February, yields on 3-year KTB rose by 4.9bp, while 10-year and 30-year KTB yields also showed increase of 19.2bp and 14.8bp, respectively.

In March, KTBs worth KRW 17.186 trillion were issued including KRW 7.217 trillion for redemption. KTB yields in March sharply rose with global yields increase based on expectations on large-scale stimulus programs and concerns over possible mismatch in KTB supply and demand. However, the rising scale was greatly reduced with the government’s market stabilization measures. As President Biden signed the large-scale stimulus package on March 11, global yields sharply rose with expectations for economic recovery and inflation concerns. KTB yields also soared in line with the global yields surge, but preemptive intervention of the government and the BOK greatly eased fluctuations of yields. First, the BOK implemented the outright purchase of KRW 2 trillion worth of KTBs, while announcing

plans to reduce issuance of monetary stabilization bond with 1-year and 2-year maturities. The Ministry of Economy and Finance immediately took actions to stabilize the market through verbal intervention with the introduction of a Dutch auction method, temporary expansion of non-competitive bids and issuance of 30-year KTB. Accordingly, investors' confidence, which had shrunk mainly with short-term KTBs, quickly recovered in the market. At the end of March, KTB yields rose, including 3-year KTB by 11.3bp, 10-year KTB by 9.7bp and 30-year KTB by 9.5bp.

In April, KTBs worth KRW 18.167 trillion were issued including KRW 200 billion for redemption. Despite resurgence of COVID-19, KTB yields in April increased in line with expansionary fiscal policies at home and abroad. The Biden administration announced a 2.25 trillion USD worth of infrastructure investment plan, raising concerns over potential mismatch in government bonds supply and demand. Yields on the U.S. treasury bonds, which had been on the rise, slightly declined due to pre-pricing led by surged yields at the beginning of the year and the influx of low-priced purchasing trend. However, while being affected by the rise of global yields, the KTB market closed with upward trend as KTBs supply and demand imbalances were caused by continued discussions on the COVID-19 emergency relief funds. While yields on 3-year KTB slightly rose by 0.8bp at the end of the month, 10-year KTB yields increased by 7.1bp and the 30-year KTB yields rose by 10.5bp.

In May, KTBs worth KRW 19.147 trillion were issued including KRW 300 billion for redemption. Although concerns over global inflation were eased, KTB yields in May rose mainly with short-term bonds, based on potential early base rate hikes in Korea. In the U.S., concerns over a delay in economic recovery spreaded due to sluggish labor market indicators, while inflation expectations also dropped. As a result, while global yields fell, KTB yields rose slightly as the Monetary Policy Board presented its economic outlook on May 27th which led increased possibility of early base rate hikes. Meanwhile, the BOK's economic growth forecast presented at the Monetary Policy Board in May was raised to 4.0% from 3.0%, which was expected in April, while prices were raised from 1.3% to 1.8%. At the end of the month, yields on 3-year KTB recorded relatively high increase of 8.6bp. 10-year and 30-year KTB yields rose by 5.1bp and 3.7bp, respectively.

In June, KTBs worth KRW 18.345 trillion were issued including KRW 20.232 trillion for redemption at maturity worth KRW 19.932 trillion and conversion offers worth KRW 300 billion. The KTB market was mixed in June with surged yields on short-term KTBs and stabilized mid- to long-term KTBs. As of mid- to long-term KTBs, yields were decreased due

to concerns over economic recovery slowdown arisen from sluggish labor market indicators in the non-agricultural sector and Finance Minister's comment on supplementary budgeting. The news that the 2nd supplementary budget would not include additional KTB issuance to cover deficit eased pressure on supply and demand balances of KTBs. Nevertheless, short-term KTBs showed decrease in yields as the governor of the BOK emphasized the possibility of raising the base rate within the year and the need to normalize monetary policy at the briefing session on prices. Yields on 3-year KTB rose by 22.1bp at the end of the month, while 10-year KTB yields fell by 8.7bp and 30-year KTB yields dropped by 9.6bp, leading flattening of the yield curve.

<Table 2-2> KTB Yields in the First Half of 2021

		January	February	March	April	May	June
2-year	Yield (%)	-	-	0.911	0.948	0.995	1.300
	MOM (bp)	-	-	-	+3.7	+4.7	+30.5
3-year	Yield (%)	0.971	1.02	1.133	1.141	1.227	1.448
	MOM (bp)	△0.5	+4.9	+11.3	+0.8	+8.6	+22.1
5-year	Yield (%)	1.32	1.499	1.601	1.63	1.739	1.739
	MOM (bp)	△1.5	+17.9	+10.2	+2.9	+10.9	+0.0
10-year	Yield (%)	1.768	1.96	2.057	2.128	2.179	2.092
	MOM (bp)	+5.5	+19.2	+9.7	+7.1	+5.1	△8.7
20-year	Yield (%)	1.899	2.044	2.169	2.251	2.294	2.199
	MOM (bp)	+7.5	+14.5	+12.5	+8.2	+4.3	△9.5
30-year	Yield (%)	1.907	2.055	2.15	2.255	2.292	2.196
	MOM (bp)	+8.4	+14.8	+9.5	+10.5	+3.7	△9.6

* As of the end of the month

B. Second Half of 2021

In July, KTBs worth KRW 17.955 trillion were issued including KRW 2.3 trillion for buybacks worth KRW 2 trillion and conversion offers worth KRW 300 billion. KTB yields dropped sharply in July with stronger resurgence of COVID-19 and large amount of issuance mainly on mid- to long-term KTBs. As Delta variant spreads worldwide, global yields fell sharply resulting from people's preference for safe assets and concerns over an economic slowdown. Coupled with such trends, KTB yields plunged, especially on mid- to long-term bonds with the news that the authority would proceed with early redemption separately from redemption at maturity and net redemption in August. However, as for short-term KTBs, the decline was limited because of cautiousness on possible early base rate hikes aimed at resolving financial imbalances including real estate issues. At the end of August, yields on 3-year KTBs fell by 3.1bp, while 10-year KTB yields dropped by 21.8bp and 30-year KTB fell by 23.8bp.

In August, KTBs worth KRW 15.987 trillion were issued including KRW 3.200 trillion for buybacks worth KRW 3 trillion and conversion offers worth KRW 200 billion. KTB yields in August remained steady with a downward tendency amid trading volume was reduced by wait-and-see stance for August 26, as well as people's preference for safe assets based on the re-proliferation of COVID-19 and hikes in the benchmark interest rate. KTB yields continued to decrease as large-scale purchases of futures by foreigners were maintained amid constant preference for safe assets. However, yields on KTBs rose sharply as the Monetary Policy Board decided to raise the benchmark interest rate on the August 26. In a response, however, the government preemptively implemented a net redemption worth of KRW 1 trillion on August 25, which reduced volatility. Consequently, the KTB market closed with steadiness in a downward tendency. Yields on 3-year KTB showed 2.2bp decline, 10-year KTB yields rose by 3.8bp, and 30-year KTB rose by 0.7bp.

In September, KTBs worth KRW 11.467 trillion were issued including KRW 12.430 trillion for redemption at maturity worth KRW 9.130 trillion, buybacks worth KRW 3 trillion and conversion offers worth KRW 300 billion. In line with rising global yields and heightened concerns over further raise of the benchmark interest rate, yields on KTB soared in September. Global yields rose significantly with inflation concerns, comments on tapering at the FOMC in September as well as revision of dot plots (early rate hike anticipated). In line with such trends, domestic yields continued to soar as more than two times of possible base rate hikes were priced in as authority expressed its willingness to correct financial imbalances. In addition, as foreigners sold KTB futures on a large scale, purchase sentiment shrank significantly, and

yields at the end of the month surpassed their highest point of the year. Yields on 3-year KTB increased by 19.8bp, while 10-year KTB rose by 32.5bp, and 30-year KTB rose by 25.3bp.

In October, KTBs worth KRW 12.790 trillion were issued including KRW 2.601 trillion for buybacks worth KRW 2.2 trillion and conversion offers worth KRW 401 billion. KTB yields surged in October based on cautiousness on possibile early normalization of monetary policy at home and abroad, large-scale selling of KTBs by foreigners and worsening financial conditions of domestic investment institutions. Global yields rose with concerns over inflation and potential tightening of monetary policy, but KTB yields showed excessive volatility compared with major countries. On October 12, the Monetary Policy Board decided to freeze the benchmark interest rate at 0.75%, but hinted at a signal that it could raise the benchmark rate and maintain the upward trend in November to resolve cumulative financial imbalance such as real estate issues. Accordingly, investor confidence in KTBs has greatly shrunk. In addition, the investment environment worsened as foreigners maintained their selling of futures for the longest period ever. Through the KTB International Conference on October 26 and the Financial Strategy Committee on October 28, the authority delivered a message for market stabilization that it would reduce issuance for the rest of the year and implement emergency buybacks, if necessary. As a result, volatility in yields was eased to a certain degree, but KTB yields surged again at the end of the month due to soaring global interest rates including that of Australia. At the end of October, yields on 3-year KTB rose by 51.0bp, recording 2.103%. 10-year KTB yields were 2.575% with 33.8bp increase, while 30-year KTB yields were 2.493% with increase of 27.2bp.

In November, KTBs worth KRW 10.443 trillion were issued including KRW 4.3 trillion for buybacks worth KRW 4 trillion and conversion offers worth KRW 300 billion. KTB yields in this month showed sharp decrease caused by the recovery of investor confidence and inflow of low-priced purchases resulting from the government's market stabilization measures, such as emergency buybacks. As yields on KTB soared in October, the government held an emergency meeting on November 2 to announce an emergency buyback plan on KRW 2 trillion worth of KTBs. After immediate implementation on November 5, KTB yields fell as low-priced purchasing trend flowed in at the beginning of the month based on recovered confidence of investors. After then, fluctuation was shown with concerns over tightened global monetary policy and economic slowdown. Although the Monetary Policy Board raised the base rate on November 25, KTB yields plunged due to the comment of the BOK governor on monetary easing. The governor mentioned that concerns over rising benchmark interest rate is excessively priced in the market interest rate, and that even if the U.S. preemptively raises interest rates

next year, the ripple effect in Korea would be limited. Yields on 3-year KTB fell by 30.4bp, while 10-year KTB yields dropped by 36.2bp.

In December, KTBs worth KRW 5.8 trillion was issued including KRW 10.217 trillion for redemption at maturity worth KRW 9.527 trillion and buybacks worth KRW 690 billion. With the market being in wait and see stance, trading volume remained low at the end of the year. However, cautiousness on the KTB issuance plan for the next year raised yields mainly on mid- and long-term ones. Yields on KTBs, which had fluctuated repeatedly with concerns over the spread of Omicron variant and normalization of monetary policy, rose at the end of the month as preference for risky assets recovered to a certain degree, along with the news that the fatality rate from Omicron seem to be lower than that of Delta variant. In particular, yields on medium and long-term KTBs slightly rose with the news that the proportion of short-term KTBs would be reduced, while that of long-term bonds will increase according to KTB issuance plan for 2022.

<Table 2-3> KTB Yields in the Second Half of 2021>

		July	August	September	October	November	December
2-year	Yield (%)	1.255	1.249	1.444	1.832	1.669	1.675
	MOM (bp)	△4.5	△0.6	+19.5	+38.8	△16.3	+0.6
3-year	Yield (%)	1.417	1.395	1.593	2.103	1.799	1.798
	MOM (bp)	△3.1	△2.2	+19.8	+51.0	△30.4	△0.1
5-year	Yield (%)	1.638	1.651	1.929	2.405	2.008	2.011
	MOM (bp)	△10.1	+1.3	+27.8	+47.6	△39.7	+0.3
10-year	Yield (%)	1.874	1.912	2.237	2.575	2.213	2.250
	MOM (bp)	△21.8	+3.8	+32.5	+33.8	△36.2	+3.7
20-year	Yield (%)	1.953	1.98	2.244	2.523	2.270	2.328
	MOM (bp)	△24.6	+2.7	+26.4	+27.9	△25.3	+5.8
30-year	Yield (%)	1.958	1.965	2.221	2.493	2.226	2.310
	MOM (bp)	△23.8	+0.7	+25.6	+27.2	△26.7	+8.4

* As of the end of the month

04 Major Policies

(1) Effective Issuance of KTBs

In 2021, the Korean government issued KTBs worth KRW 180.5 trillion. It was an increase of KRW 6.0 trillion compare to the issuance limit of 2020 (KRW 174.5 trillion), which was significantly higher than the past. The amount of net increase (KRW 120.6 trillion) used to cover budget deficit increased by KRW 5.3 trillion from the previous year, and the redemption amount (KRW 59.9 trillion) including refinancing (redemption at maturity) and buy-backs also increased by KRW 0.7 trillion from the previous year.

<Table 2-4> KTB Issuance

(unit : KRW trillion)

	2016	2017	2018	2019	2020	2021	
						Plan	Actual issuance
Gross Issuance	101.1	100.8	97.4	101.7	174.5	186.3	180.5
Net Increase	31.8	29.8	20.3	44.5	115.3	123.1	120.6
Redemption	69.3	71.0	77.1	57.2	59.2	63.2	59.9

The government put in multifaceted efforts for stable issuance of the largest volume of KTBs in history.

A. The Introduction of 2-year KTB Issuance

The Ministry of Economy and Finance promoted the introduction of 2-year KTB issuance in October 2020. The newly issued bond is aimed to lessen the burden on the market from the impact of supply surge and to set the efficient benchmark short-term interest rate.

Starting with its first issuance in February 2021, the government initiated regular issuance of 2-year KTB on a monthly basis. The annual issuance of 2-year KTB in 2021 was KRW 12.5 trillion, accounting for 6.9% of the total issuance, and the bid-to-cover ratio recorded 309.1%, leading to its stable settlement in the market.

B. Reducing KTB issuance utilizing tax revenue surplus

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 flexibly adjusted the issuance volume taking into account needs for funds implementation, market conditions and tax income.

In response to interest rates surge in October, the government decided to reduce the issuance of KTBs to minimize potential burden of the market incurred by supply and demand mismatch. By utilizing tax revenue surplus worth KRW 2.5 trillion and reducing issuance of KTBs worth KRW 3.3 trillion, the government reduced issuance between November and December by KRW 5.8 trillion compared to the initial plan.

C. Expanding Incentives for PDs

To issue KTBs in a stable manner, the Ministry of Economy and Finance increased non-competitive bid option II and applied temporarily for the second to third quarters of 2021. New method of non-competitive auction, so-called Post Auction Option IV[17] was also introduced. This temporary measure raised a total amount of non-competitive bidding to KRW 27.8 trillion, an increase in KRW 1.4 trillion from the previous year. In addition, more non-competitive bid options has contributed to shaping competitive market conditions for bidding, which helps bid-to-cover ratios reach the level of the previous year, approximately 283%.

To improve PD evaluation system, the Ministry placed more weight on underwriting obligations. As part of it, the Ministry revised the Regulations on KTB Issuance and PD Operation and gave additional points for underwriting (38 points out of 100 → 43 points). The revised regulation relaxed PD's obligations of purchasing and conversion, trading and retention in a way of lowering evaluation scores. In addition, funding capacity of PDs was supplemented by expanding the target of financial support from top 5 PDs to PD ranked 6th to 10th places.

17) A non-competitive underwriting system that allows additional purchase with certain issuance rate that was set considering market yields. Volume of KTBs subject to additional purchase is determined in consideration of issuance amount (competitive auction and non-competitive bids option II and III) compared to monthly target of issuance.

(2) Stable Management of the KTB Market

A. Emergency buybacks

In October 2020, the government established an emergency buyback system as a basis for efficient responding to domestic and global shocks through measures to enhance the capacity of the KTB market. The system was first implemented in August and November 2021 in response to increased volatility in interest rates based on normalization of monetary policy.

As the Monetary Policy Board's first rate hike (0.5% → 0.75%) was expected in August (Aug. 26), the government implemented an emergency buyback of KRW 1 trillion both on August 25 and 31, before and after the Board meeting. In addition, as interest rates soared due to concerns over monetary policy tightening at home and abroad in October, an emergency buyback worth KRW 2 trillion was implemented in a timely manner (Nov. 5). The emergency buybacks worth total of KRW 4 trillion in 2021 greatly eased interest rate volatility by minimizing supply and demand imbalances.

B. Policy Cooperation with BOK for Outright Purchase of KTBs

Cooperation with BOK was promoted to stabilize the market as interest rates soared at the beginning of the year due to surging global interest rates and possibility of the first supplementary budgeting for the 4th pandemic relief funds. On February 26, BOK announced the outright purchase plan for KTBs worth KRW 5-7 trillion in the first half of 2021. Accordingly, when interest rate volatility greatly expanded, BOK purchased KTBs of KRW 6 trillion on a total of four occasions[18].

In the second half of the year, policy cooperation with BOK was continued, making every effort to stabilize the market, as the governor of BOK mentioned that outright purchases of KTBs will be implemented in a timely manner to stabilize the market.

18) (Mar.9) KRW 2 trillion, (Apr.28) KRW 1 trillion, (Jun.28) KRW 1 trillion

(3) Improvement of the KTB Market Infrastructure

A. Establishment and Operation of the KTB Research Advisory Panel

With the prediction that importance of KTBs as means of financing will continue to increase under the expansionary fiscal stance, the government determined that professional support base is essential in various aspects, such as issuance, demand, and distribution of KTBs. Against such a backdrop, in January 2021, the KTB Research Advisory Panel involving specialized research institutes such as KDI, Korea Institute of Finance and the Korea Capital Market Institute was launched.

The KTB Research Advisory Panel has been operated on a two-track basis, consisting of regular review and intensive research. First, for regular review, domestic and foreign government bond market trends have been reviewed through monthly meetings and issues related to the KTB market have been analyzed. The Korea Center for International Finance and market participants also have joined a close review of the government bond market. On the other hand, in terms of intensive research, three strategies[19] for strategic KTB management were established, and core objectives[20] for about next three years have been set up. To achieve these key objectives, the KTB Research Advisory Panel plans to select and carry out key research projects on an annual basis. In 2021, researches have launched under the relevant themes, for instance, analysis of the appropriate maturity structure of KTBs and establishment of issuance models; review of demand conditions from domestic institutions and foreign investors; and building of term structure models on yields.

B. Promoting Establishment of the KTB Management System

As necessities for strategic management of government bonds rise with the increase in their issuance volume in the future, the government has promoted to establish the KTB management system. The system consists of three pillars: ❶ Strengthening of market monitoring functions by establishing an integrated DB ❷ Utilizing the system for strategic issuance management by installing the KTB issuance model, and ❸ an operation of the early warning system utilizing real-time data to detect signs of crisis and take timely market stabilization measures.

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19) ❶ Effective issuance strategy, ❷ Solid demand base, ❸ Stable market management

20) Core objectives per each strategy: ❶ Establishing a mid- to long-term issuance strategy in consideration of the appropriate maturity structure; ❷ Expanding the demand base including foreigners and PDs; and ❸ Minimizing volatility in the KTB market

05 Foreign Investment Trends[21)]

Despite persistent external uncertainties including COVID-19 pandemic, foreign investment into South Korean bonds remained stable with growing holdings.

Although the outstanding of Korean Won-denominated bonds held by foreign investors maintained the KRW 100 trillion level in mid-2013, it slightly decreased as the foreign institutional funds that sold their holdings in 2016 due to portfolio adjustments. However, since 2017 in which the holdings rebound to the KRW 100 trillion line, capital inflows continue rising, hitting record highs every year.

In particular, 2021 was recorded as the year when foreign bond investment with the highest intensity ever maintained for a long duration. On a monthly basis, net foreign inflows lasted for 12 consecutive months from January to December, recording the longest duration of inflows in nearly 13 years since August 2006 to June 2008 (23 consecutive months). Although net investment by foreigners tends to slow down in the fourth quarter of the year due to book closing, 2021 showed unusual trend of continued inflows in the fourth quarter.

On an annual basis, a total of KRW 63.9 trillion in net foreign investment flowed in 2021, which is more than doubling KRW 26.5 trillion in 2020, the largest increase of all time.

Thanks to such strong inflows of bond funds, Korean Won-denominated bonds held by foreigners exceeded KRW 200 trillion in August 2021 for the first time since Korea has opened the bond investment market to foreigners in 1994. It has been 8 years and 4 months since it surpassed KRW 100 trillion in 2013.

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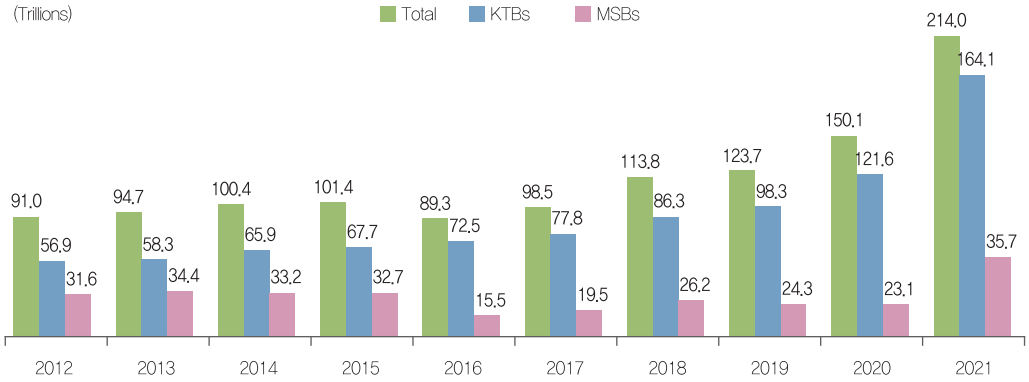
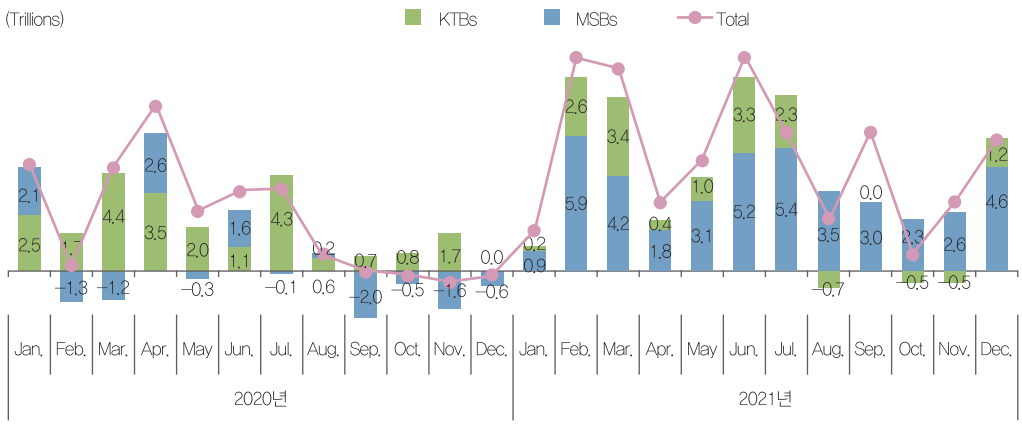
[Figure 2-6] Bond holdings by Foreign Investors



[Figure 2-7] Net Foreign Inflows in 2020 and 2021

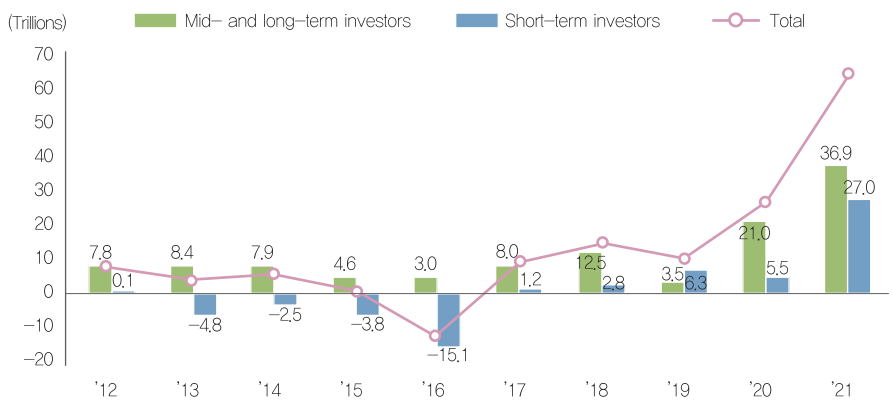


The solid influx of foreign bond funds is based on stable fundamentals of the Korean economy, fiscal soundness and high yields on government bonds, considering Korea's national credit rating. Institutional maturity of the Korean bond market, high liquidity and strong confidence in growth potential of the Korean economy are also the factors that solidify the position of Korean Won-denominated bonds as safe assets.

Such solid influx of foreign bond funds played an important role in raising government funds and stabilizing the financial market, enabling stable issuance of government bonds in responding to COVID-19.

By investor type, mid- and long-term investors (foreign central banks, sovereign wealth funds, international organizations, etc.) and short-term investors (investment banks, funds, etc.) all flowed in with the largest scale ever. Compared to the past when it foreign investment was made by a small number of institutions, steady inflow from more diverse institutions shows that the base of investment in Korean Won-denominated bond has been further strengthened.

[Figure 2-8] Net Foreign Inflows by Investor Type[22)]



22) Mid- and long-term investors: Public investors, such as central banks, sovereign wealth funds an international organizations
Short-term investors: Private investors, such as investment banks and funds

Chapter 2

Issuance and Trading of KTBs

Ministry of Economy and Finance

Korea Treasury Bonds 2021

part 03

Primary Market

Ministry of Economy and Finance

Korea Treasury Bonds 2021

01 Overview[23)]

Korea Treasury Bonds (KTBs) are issued in terms of 2[24)], 3, 5, 10, 20, 30, and 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 consumption price index. The inflation-linked KTB is issued in terms of 10 years.

KTB auctions are held on a regular basis to maximize investor's predictability. 2-year KTB auction is held on the second Tuesday of every month; 3-year on the first Monday of every month; 30-year KTB on the first Tuesday; 5-year KTB on the fourth Monday; 10-year KTB on the third Monday; 20-year KTB on the fourth Tuesday; 30-year KTB on the first Monday; and 50-year KTB on the second Friday of every month. KTBis are issued on the third Friday of every other month (even months).[25)]

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 2021, will all be June 10, 2021. In other words, their first interest payment will be made after six months of the issue date, which is December 10, 2021.

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, the 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 on the last Thursday) of every month. It includes new issuance, buy-backs, conversion offers, auction dates, issuance volume, and etc.

The Bank of Korea (BOK) 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

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23) Author: Seongmin, Choi. Senior Manager, Government Bond Policy Division at the Ministry of Economy and Finance

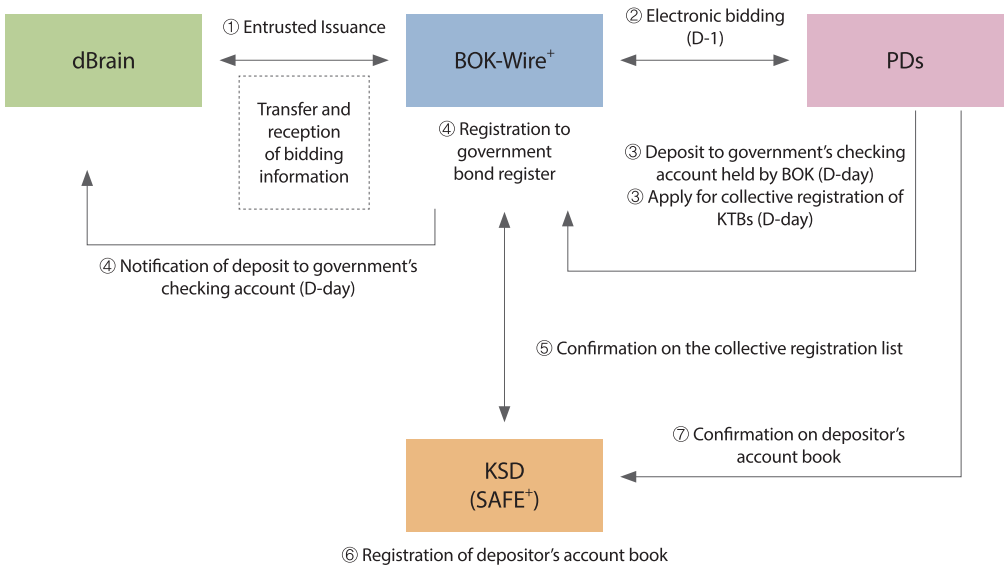
24) 2-year KTB has newly been introduced since 2021.

25) Considering introduction of 2-year KTB and demand and supply conditions of the government fund, the new auction calendar has taken effect beginning in 2021.

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 (excluding KTBis) in the primary market are competitive bidding participated by only PDs and PPDs[26]. With the minimum bid amount being KRW 1 billion, PDs can only bid in amounts multiples of KRW 1 billion. Unlike U.S. 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



26) The government previously issued KTBis with non-competitive bids options, but from 2021, KTBis also began to be issued through competitive auctions as conventional KTBs have been.

02 Issuance Method[27)]

(1) Competitive Auction

In the past, when the government bond market was underdeveloped, the authority 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[28)] in July 1999. 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. The winners often incurred losses, eventually pushing down bid-to-cover ratio. As a result, the differential price auction method was introduced in June 2009, which was a mixture of the two main methods. In a differential-price auction, the accepted bid yield is determined by categorizing all bid yields into groups at intervals of three to four basis points in descending order, and by selecting the highest bid yield in each group[29)]. Such method helps PDs to bid reasonable yields and reduce their underwriting burden.

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27) Author: Seongmin, Choi. Senior Manager, Government Bond Policy Division at the Ministry of Economy and Finance

28) (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.

29) To encourage PDs to participate in biddings, the Korean government expanded the interval by one basis point (3-year to 5-year KTBs: 2 → 3bp, 10-year to 30-year KTBs: 3 → 4bp) in April 2017. Meanwhile, the government temporarily expanded the winning range to five basis points for all maturities to enhance the PDs' underwriting capacity. And, in 2021, the government plans to revise the Regulations on KTB Issuance and PD Operation, and keep the range remained at five basis points for all maturities.

Meanwhile, to support aggressive fiscal policies including COVID-19 response, the issuance volume of KTBs was greatly increased compared to 2019 (KRW 84.6 trillion was added to KRW 101.7 trillion in 2019). The resulting risen KTB yields and expanded market volatility were expected to dampen the underwriting capabilities of PDs. In response, from March 2021, Dutch auction method was reintroduced to induce active bidding of PDs and to alleviate the possibility of market instability.

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

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Bid-to-cover ratio (%)	304.7	386.0	464.9	412.1	409.1	372.7	383.3	333.6	295.2	297.6	294.8	282.3

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

Method of Determining Successful Bidding Yield

(Issue amount: KRW 80 billion)

PD	Bidding conditions	Cut-off yield		
		Dutch	Conventional	Differential-Price (Ex.5bp)
A	2.955%, 20 billion won	All 3.055%	2.955%	2.955%
B	3.000%, 20 billion won		3.000%	3.005%
C	3.005%, 20 billion won		3.005%	
D	3.020%, 10 billion won		3.020%	3.055%
E	3.055%, 10 billion won		3.055%	
F	3.070%, 20 billion won	Failed bid	Failed bid	Failed bid

Under a differential price auction, for example, the highest cut-off yield is 3.055% (of PD E), the bid yields are divided into groups of "3.055~3.010," "3.005~2.960%," and "2.955~2.910%." Each group's highest bid yield – 3.055%, 3.005% and 2.955%- becomes the successful bidding group.

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

(2) Retail Investors: Non-competitive Bids Option Ⅰ

Retail investors can purchase KTBs from PDs after opening an account at the financial institutions (PDs). 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, no more than 20% of the offered amount in the auction excluding 50-year KTBs is allocated first. Unlike PDs, retail investors are not eligible to bid yields bur purchase at the highest winning rate set at a competitive auction.Delivery of KTBs and payment of accepted amount are made on the following day of the auction date.[30)]

(3) Post Auction Option: Non-competitive Bids Option Ⅱ

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[31)]. Unlike in a competitive auction where PDs bid low yields to purchase treasury bonds, PDs may underwrite KTBs at the yield already determined.

Only PDs that underwrote KTBs through competitive auctions are eligible to participate in non-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 25% for the top five PDs, 20% for 6th to 10th best-performing PDs, 15% for the 11th to 15th best-performing PDs, and 10% 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 in the their monthly evaluation.

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30) Meanwhile, retail investors can easily trade KTBs, likewise stock trading, through the bond market opened by KRX or HTS and telephone call of the securities firm they use.

31) (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 three business days following the auction date.

(4) Post Auction Option: Non-competitive Bids Option Ⅲ

To promote STRIPS in the KTB market, the government grants rights to purchase STRIPS for PDs specializing in a STRIP program. STRIPS-specialized PDs take exclusive responsibility of making prices of STRIPS, and they have to meet their obligations of separating interest and principals for their purchases over the next month. PDs that have obtained the right to purchase these KTB STRIPS can make purchases up to KRW 20 billion on the third business day, and the option is granted according to the outcomes of monthly evaluation conducted in the previous month. KTB STRIPS are regularly supplied for KRW 208 billion for 3-year and 5-year KTBs, for KRW 258 billion for 10-year and 30-year KTBs, and for KRW 160 billion for 20-year KTBs.

(5) Post Auction Option: Non-competitive Bids Option Ⅳ

In 2021, the government introduced non-competitive bids option IV. This bond offering method supplements option II and III to minimize the volatility that might be caused with issuance volume as PD can exercise their rights depending upon interest rates. Non-competitive bids option IV allows the government to underwrite additional issuance volume to the amount that falls short of the current month's plan at a certain interest rate.

Option IV is conducted on the fourth Friday of the bidding month, while volume and types for issuance are announced through the issuance plan on the third Friday of the same month. The issuance volume is determined given actual issuance amounts (including lump sum competitive actions and option II and III) to the monthly target. The total amount of non-competitive options is to be managed within 20% of the total issuance. Taking into account the impact on the market interest rates, bonds for issuance will be mainly short-term KTBs such as 2-year, 3-year, and 5-year, but may be medium- and long-term KTBs if necessary. Yields are announced on the auction considering market yields on the day and PD incentives.

03 Fungible Issue[32)]

The fungible issue system, in which new KTBs issued within a specified period are regarded as the same KTB issue, was introduced in 200.

Currently, 3-year KTBs are newly issued in June and December each year. For example, after being issued on June 10, 2021 through an auction held on June 7, 2021, they are issued again on July 5, August 9, September 6, October 12, and November 8, 2021 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.

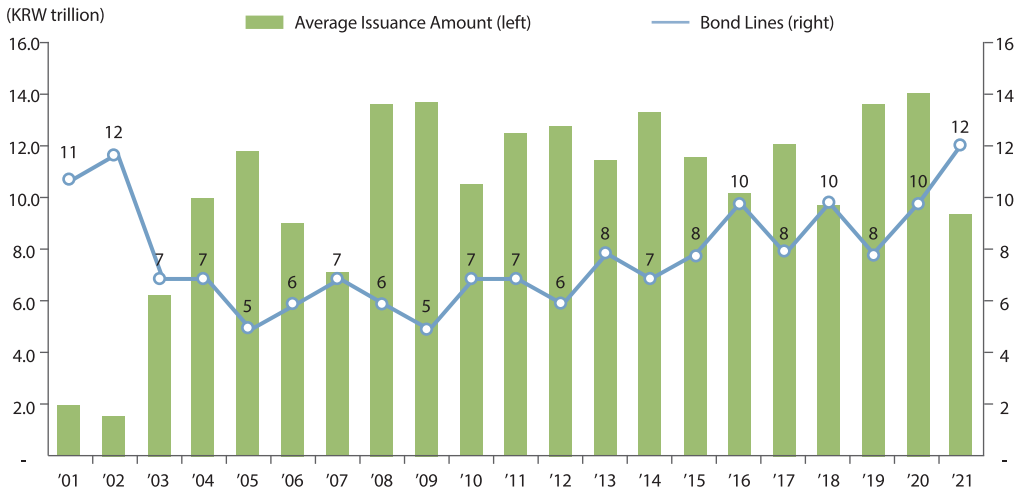
The fungible issue system is designed to enhance the liquidity, so that the government's funding expenses can be reduced and credible benchmark rates can be formed. In general, the increase in issuance volume of a single bond type leads to growing liquidity, which in turn, leads to lower rates.

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.

As a result, the Korean government launched the fungible issue with KTBs that were to be issued beginning May 2000 (fungible issue period of three months). The average issuance volume of each bond type continuously increase to KRW 12.2 trillion (average of recent five years) from KRW 1 trillion in 2000.

32) Author: Seongmin, Choi. Senior Manager, Government Bond Policy Division at the Ministry of Economy and Finance

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

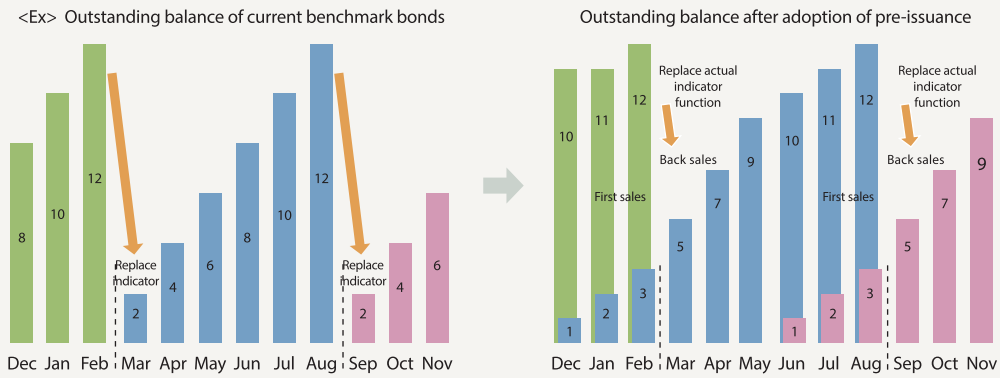


<Table 3-2> Fungible Issue of KTBs

Maturity	Number of annual new issuance	Month	Fungible issue term
2-year	Four times a]year	March, June, September, December	Three months (March to May, June, to August, September to November, December to February of the next year)
3-year	Twice a year	June, December	Six months (June to November, December to May of the next year)
5-year		March, September	Six months (March to August, September to February of the next year)
10-year		June, December	Six months (June to November, December to May of the next year)
20-year	Once a year	September	One year (September to August of the next year)
30-year		March	One year (March to February of the next year)
50-year	Every other year	September	Two years (September to August of the following two years)
Inflation-linked		June	Two years (June to May of the following two years)

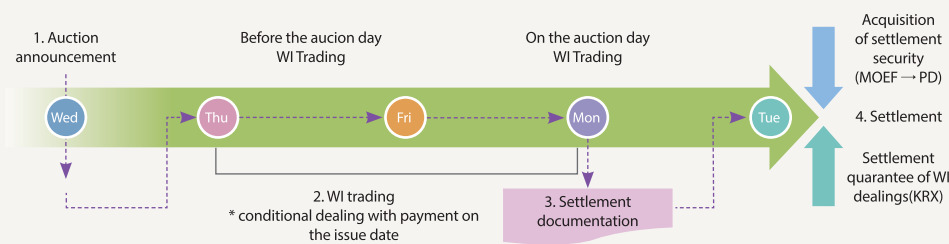
Pre-issuance and When Issued Transaction

In order to address the liquidity problem that occurs from replacing the benchmark bonds, pre-issuance was put in place in January 2015. The existing benchmark and to-be benchmark bonds are issued at the same time one or two months before to-be benchmark bonds are newly issued. 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

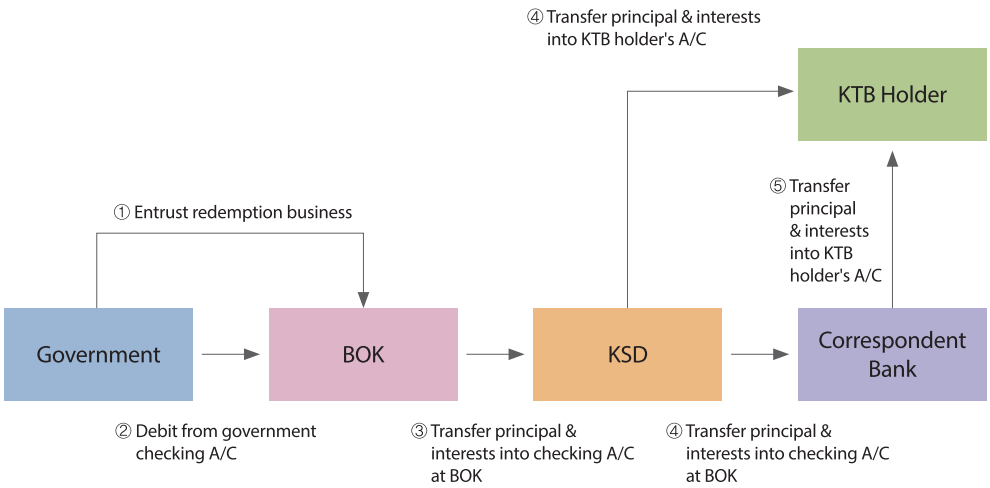


04 Redemption

(1) KTB Redemption

Through the redemption at maturity, the principal is redeemed in a lump sum upon maturity of the bond. The Bank of Korea (BOK) makes deposits to Korea Securities Depository (KSD) transfers principal and interest to the deposit account of the institution that holds the KTBs.

[Figure 3-3] KTB Redemption Process



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 Ministry of Economy and Finance buys back unmatured marketable securities from KTB holders. There are two types of buy-backs depending on where their resources come from. In general, the borrowing costs for buy-backs are funded by newly issuing KTBs, which does not cause KTB outstanding to be reduced. The other method is to be funded by the fiscal surplus from tax, which is called 'net buy-backs.'

The main purpose of buy-backs is to spread out maturities throughout the year and each quarter. When maturities are concentrated on a certain point in time, the government is forced to issue larger KTBs. The growth of debt issuance raises market yields, which may consequently distort the market. Thus, buy-backs enables decreasing refinancing risks by reducing heavy concentration of certain maturities.

The redemption before maturity may be carried out via KTB reverse bidding held for PDs and are underwrote directly from KTB holders when the Ministry of Economy and Finance deems it necessary.

The bidding limit per PD is 30% of the expected purchase amount, and the minimum amount for each issue is KRW 1 billion (par value), with incremental increase in multiples of KRW 1 billion. The yield is determined through Dutch auction method, which is the same as the competitive auction.

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

(Unit: KRW trillion)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Amount	19.4	22.3	12.0	5.6	5.2	12.1	11.3	17.6	27.1	20.2	12.0	11.2

(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 increase in multiples of KRW 1 billion. The yield is determined through Dutch 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 exchange market[33].

<Table 3-4> Conversion Offer Volume by Year

(Unit: KRW trillion)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Amount	2.9	4.8	2.0	2.9	3.1	4.6	4.2	1.7	2.2	1.6	2.1	3.3

33) (Article 24 of the Regulations on KTB Issuance and PD Operation) The yield is the arithmetic mean of market prices in the exchange market at 9:30 am, 10:00 am, and 10:20 am on the auction day.

05 Investor's Guide

(1)Retail Investors in KTB Auctions[34)]

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 up to 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 not more than 20% of the offering amount 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 issued 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.

34) Author: Dohee, Kim. Senior Manager, Government Bond Policy Division at the Ministry of Economy and Finance

Procedure of Retail Investors' Participation in KTB Auctions

e.g.) 10-yr KTB, auction date: Monday January 18, 2020

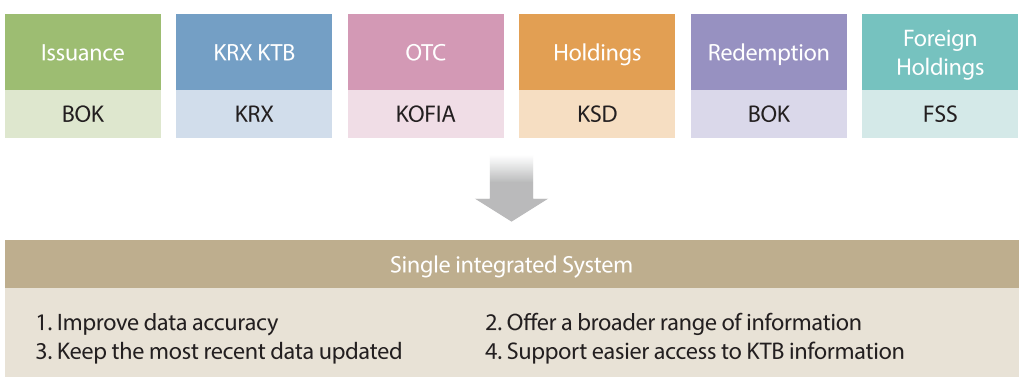
Notice (3 days before auction) Wednesday, January 13, 2021	• Public notice of the auction on the BOK website (3days in advance) (or inquiries can be made to the bond division of PD institutions)
⬇	
Opening brokerage account	• Open an account at a PD institution before the auction; existing account can 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 18, 2021	• 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 19, 2021	• 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.

(2)KTB Information[35)]

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 BOK and Korea Exchange, while information on the secondary market was provided by Korea Financial Investment Association, Korea Securities Depository and 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.

[Figure 3-4] KTB Information System



35) Author: Jisoo, Kim. Deputy Director, Government Bond Policy Division at the Ministry of Economy and Finance

part 04

Secondary Market

Ministry of Economy and Finance

Korea Treasury Bonds 2021

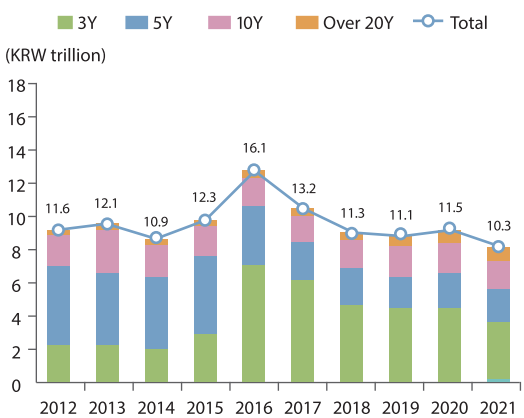
01 Overview[36)]

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.

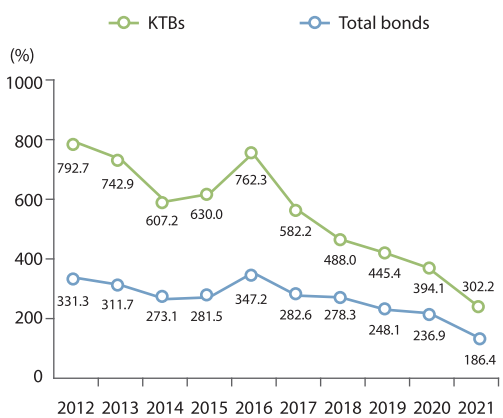
The secondary market provides opportunities for bondholders to profit from selling bonds. It also promotes fair price formation of bonds, increases their value as collateral, affects the price of bonds in the primary market, and the like. Hence, development of the secondary market is crucial for the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

In the secondary market, bonds with higher liquidity, 3-year to 10-year KTBs, have been actively traded. As of 2021, KTBs account for approximately 48.3% (KRW 2,569.2 trillion) of the overall trading volume in the secondary market and are serving as the pricing benchmark.

[Figure 4-1] Average Daily Trading Volume by Maturity



[Figure 4-2] Turnover Ratio*



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

36) Author: Kwonil, Kim. Senior Manager, Korea Exchange (KRX)

02 Types of Secondary Market[37)]

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 (KRX KTB) or OTC. The KRX KTB is an auction market, and the OTC is a network of brokers and dealers who negotiate the sales of securities among them.

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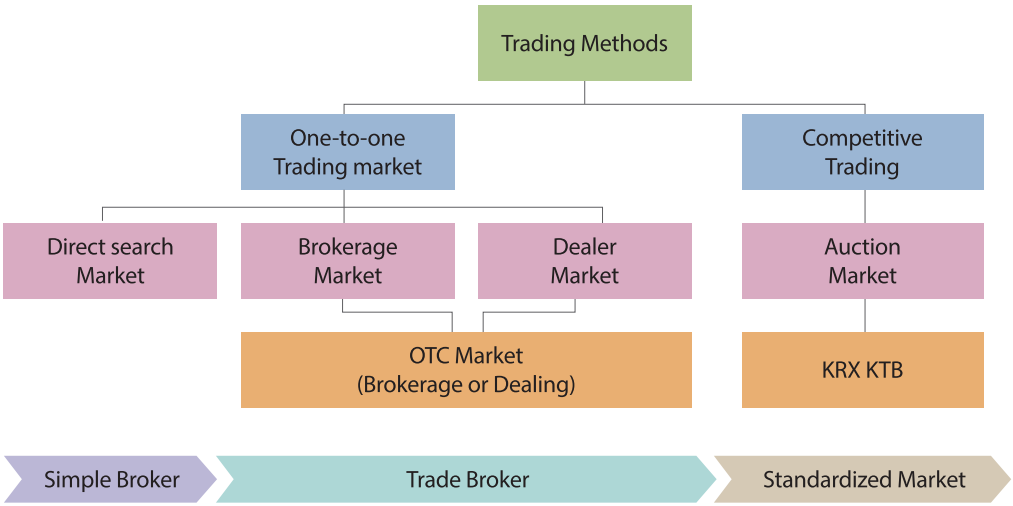
37) Author: Kwonil, Kim. Senior Manager, Korea Exchange (KRX)

[Figure 4-3] Secondary Market



03 KRX Trading System for KTB (KRX KTB)[38)]

(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. The 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 the KRX KRB, continuously offering bid-ask prices for KTBs, market participants who wish to trade can buy and sell bonds.

38) Author: Kwonil, Kim. Senior Manager, Korea Exchange (KRX)

(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 the KRX.

Dealers can participate by installing a trading program offered by the 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 the exchange market trading. The trading unit is in multiples of a par value of KRW 1 billion.

In addition, as of August 2020, the Korean government has implemented a relief program. Under the program, if dealers face unexpected loss due to trading mistakes, the mistaken trading amount (exceeding the yield return completed±3%) is paid back through negotiations between the trading parties.

<Table 4-1> KRX KTB System

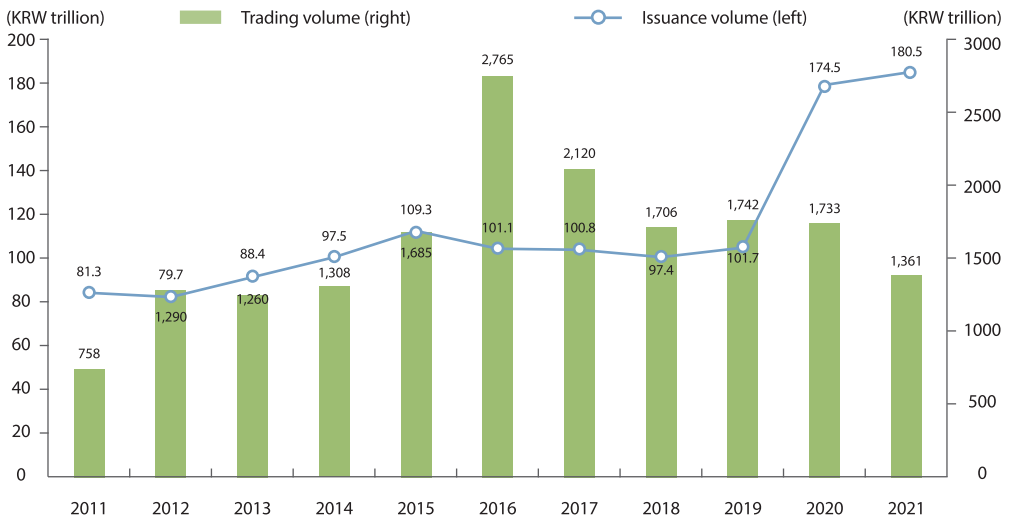
	Details
Trading hours	9:00 – 15:30
Bonds eligible for trading	KTB, MSB, DIFB
Trading unit	Multiples of a par value of KRW 1 billion
Quotation method	Price quote (Time-to-maturity < 2Y : KRW 0.1, < 10Y : KRW 0.5, > 10Y : KRW 1)
Trading execution method	Individual auction with multiple price
Participants	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 the KRX KTB market.

With the primary market having expanded, the trading volume on KRX KTB was merely KRW 0.1 trillion in 2001 but rose sharply to KRW 1,741.9 trillion in 2019.

[Figure 4-4] KTB Issuance Volume 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 the 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, the KRX KTB is considered to have not only reduced trading costs but also increased market transparency.

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

(Unit: KRW)

	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21
3Y KTB	1.1	1.2	1.2	1.1	0.8	0.6	0.6	0.6	0.7	0.7
5Y KTB	1.1	1.3	1.1	1.1	1.1	0.8	0.9	1.0	1.2	1.3
10Y KTB	2.1	2.7	1.9	2.0	2.0	1.8	1.8	1.8	2.2	2.1
20Y KTB	8.2	9.6	8.0	8.5	7.7	7.9	8.1	8.3	9.4	8.2
30Y KTB	64.1	22.9	11.2	12.8	13.3	10.5	9.3	10.0	9.1	7.6
Total	3.1	3.7	3.1	5.1	5.0	4.3	4.1	4.3	4.5	4.0

*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 the 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 (2, 3, 5, 10, 20, 30-year, and inflation-linked KTBs). In addition, PDs provide the on-site market information (demand, market trends and conditions, and 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[39)]

(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 KRX KTB 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 the OTC market, since there are numerous members 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) OTC Market Trading

In the OTC market, KTBs account for 44.7% (as of 2021) of all bond trading and are used as benchmark bonds. MSBs (25.1%), and financial bonds (13.7%) are also actively traded. Trading volume of corporate bonds, which accounted for more than half of the secondary market before the 1997 Asian financial crisis, fell to 6.8% following the growth of the KTB market and the active liability management by corporations.

39) Author: Kwonil, Kim. Senior Manager, Korea Exchange (KRX)

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

(Unit: KRW trillion)

	2017		2018		2019		2020		2021	
	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%
Government bonds	2,267.5	50.2	2,307.3	48.4	2,236.6	48.4	2,504.3	46.1	2,569.2	48.3
KTBs	2,125.9	47.1	2,123.4	44.6	1,963.8	42.5	2,261.7	41.7	2,378.5	44.7
Municipal bonds	10.3	0.2	9.3	0.2	11.6	0.3	17.1	0.3	16.3	0.3
Special bonds	245.7	5.4	221.1	4.6	226.0	4.9	298.7	5.5	306.0	5.8
MSBs	1,123.9	24.9	1,189.8	25.0	936.5	20.3	1,026.3	18.9	730.0	13.7
Financial bonds	707.0	15.7	832.5	17.5	930.2	20.1	1,266.8	23.3	1,333.4	25.1
Corporate bonds	160.7	3.6	203.1	4.3	281.1	6.1	316.2	5.8	360.7	6.8
Total	4,515.0	100	4,763.1	100	4,621.9	100	5,429.4	100	5,315.7	100

*Source: KOFIA (BIS), KOSCOM (CHECK)

(3) Method 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 Regulation 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

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, the KOFIA prescribes a report of transaction details by counterparties to the KOFIA within 15 minutes of the trade being concluded; the 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 the 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 shorted to within five minutes in 2001, but was revised to within fifteen minutes in 2002. As of now, it remains fifteen minutes. The "15-minute rule" has not only enhanced market transparency, but also reduced the cost of seeking out price-related information.

B. Bond Quotation System (BQS)

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, the KOFIA introduced the Bond Quotation System (BQS) in which securities companies report quotation information in the OTC market to the 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, the KOFIA introduced the BQS in December 2017. the 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, the 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, the 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 11:30 and 16:00 each working day, and disclosed at 12 noon and 16:30 of 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(2Y) KTB(3Y) KTB(5Y) KTB(10Y) KTB(20Y) KTB(30Y) KTB(50Y)	4years and 6months~5years and 1month 10months~1year 1year and 9months~2years 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(1Y)	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

D. K-Bond: An Online Bond Trading System

The KOFIA launched K-Bond, an online bond trading system, in September 2017. The K-Bond enables financial investment firms and market participants to discover quotes, and supports trade negotiations[40].

40) FreeBond, the first bond trading system introduced in 2010, was upgraded to K-Bond.

The K-Bond comprises two main components: an instant messenger system (including chat rooms) and the Trading Board (T-Bond). 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 3m400 individuals were active users, based on the daily average trading volume of about KRW 20 trillion.

part 05

Primary Dealer System

Ministry of Economy and Finance

Korea Treasury Bonds 2021

01 Overview[41)]

Primary Dealers (PDs) have the exclusive right to participate in the primary KTB market. Instead, they have obligations to work as market-makers and provide liquidity in the secondary market. PDs are designated by the Minister of Economy and Fiance among institutions authorized for investment and trading in government bonds, considering certain requirements, such as performance of KTB transaction and financial soundness.

The PD system, widely adopted by OECD countries, is designed not only to stabilize successful absorption of treasuries by the market but also to strengthen communication between market participants and the authority. According to a survey in February 2017, 33 out of 34 OECD member countries are operating the PD system.

In Korea, the government shifted from the syndication to PD system in 1999. Korea's government bond market grew both qualitatively and quantitatively since the introduction, and the PD system played a significant role. As of December 2021, there were 18 active PDs.

02 Background[42)]

The most ideal state a bond market would be when KTBs play a benchmark role in the entire bond market. However, this was not the case before the 1997 Asian financial crisis as the KTB market was little developed in terms of size and 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

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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.

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 of PD System[43)]

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

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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.

In addition, 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 the first quarter of 2021, the Ministry of Economy and Finance will introduce Fast Track promotion, promoting best PPDs to PDs on the basis of two-quarter performance, instead of four quarters. The Ministry expects this measure to give early promotion opportunities to best PPDs to encourage competition between PDs and PPDs and, thus, to broaden the base of underwriting KTBs.

<Table 5-1> List of PDs and PPDs (As of December 2021)

		Institutions
PD (18)	Banks (7)	Kookmin Bank, Industrial Bank of Korea, National Agricultural Cooperative Federation, Korea Development Bank, Hana Bank, Standard Chartered Bank Korea Limited, Credit Agricole Bank (Seoul branch)
	Securities companies (11)	Kyobo Securities, Daishin Securities, DB Securities, Mertiz Securities, Mirae Asset Daewoo, Samsung Securities, Shinhan Investment Cor., Korea Investment & Securities, KB Securities, NH Investment & Securities, Kiwoom Securities
PPD (3)	Banks (1)	BNP PARIBAS
	Securities companies (2)	Yuanta Securities, Eugene Investment,

04 PD Designation[44)]

PDs not only underwrite KTBs; they also have implications as "policy participants," meaning they have to continuously communicate with the authority. 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 permit 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, 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.

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<Table 5-2> 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[45] (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[46]

PPDs can be elevated to PDs if their performances in meeting their obligations, including offering bid-ask prices, KTB trading, and 10-year KTB futures trading, are outstanding. In more detail, PPDs are entitled to become PDs if they gain more than 140 points in the evaluation of annual performance[47]. In addition, under the fast-track promotion system, outperforming PPDs are entitled to early promote to PDs if they gain more than 90 points in the evaluation of second quarter performance. 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 Minister who will take into consideration the KTB market conditions, the number of PDs, and so forth.

45) No less than KRW 4 trillion for PPDs (but KRW 500 billion for foreign bank branches).

46) No less than KRW 4 trillion for PPDs No less than KRW 4 trillion for PPDs

47) In case of PD → PPD → PD, no less than 70 points for two consecutive quarters.

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 5-3> Staffing and Work Experience Standards

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 5-4> 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[48)]

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.

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 30-year 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.
- STRIPS and 10-year KTB futures: no less than 110% of the average trading volume of either banks or securities companies
- 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:** PDs are to take at least 5% of the total volume in buybacks. (But exceptional measures can be announced. It will be up to the Finance Minister who will take into consideration the KTB market conditions.)

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<Table 5-5> Quarterly PD Assessment Scores (in effect since January 2021)

Obligatory assessment items	Scoring	Scoring method
KTB underwriting (Article 30)	43 points - 2Y KTBs : 2 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 × 43/42	• 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
KTB purchase · conversion (Article 35)	KTB purchase and conversion : 4 points * If there is no KTB purchase and conversion : underwriting score × 2/43	
Offering of bid-ask prices (Article 31)	32 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	
Trading in the secondary market (Article 32)	8 points	
Trading volume for STRIPS (Article 32, 2)	1 points	
Trading volume for 10Y KTB futures (Article 33)	1 points	
Holdings (Article 34)	8 point	
Trading volume for term Repo between institutions (Article 36)	1 points	
Policy cooperation (Article 37)	4 points	

<Table 5-6> Monthly PD Assessment Scores (in effect since January 2021)

Obligatory assessment items	Scoring	Scoring method
KTB underwriting (Article 30)	43 points - 2Y KTBs : 2 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	• Obligation fulfilled ⇒ perfect score - Monthly perfect score : 86 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
Buy-backs · conversion offers (Article 35)	KTB purchase and conversion : 2 points * If there is no KTB purchase and conversion : underwriting score × 4/36	
Offering of bid-ask prices (Article 31)	32 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	
Trading in the secondary market (Article 32)	8 points - limited to trading performance at KRX KTB	
Trading volume of STRIPS (Article 32, 2)	1 points - limited to trading performance at KRX KTB	

06 PD's Privileges and Incentives[49)]

As PDs carry out their market-making obligations in the domestic bond market, the government grants rights and incentives as rewards to them. Firstly, PDs can exclusively participate in the competitive auctions for KTBs and underwrite up to 30% of the scheduled issue volume. PPDs can also participate but underwrite up to 15%. The purpose of granting rights of exclusive bidding participation 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 (There are currently 16 active STRIP PDs excluding Industrial Bank of Korea) have obtained the right to purchase KTB STRIPS. PDs permitted to strip are eligible to make purchases on the third business day and have to meet their obligations of separating interest and principal for their purchases of KTBs over the next month. The amounts held in stripped are less than 30% of the offered amount in the auction, and the option is granted according to the outcomes of monthly evaluation conducted in the previous month. Middle- and lower-level PDs can benefit as STRIPS are allocated regardless of underwriting KTBs.

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Yet, KTBs which have been issued and non-competitive bids option III could increase volatility of monthly issuance fluctuations. To manage this volatility, non-competitive bids option IV was newly established as a part of the measures to enhance the capacity of the Treasury bond market in 2020. The post-auction option IV makes it possible to underwrite with a relatively lower yield, which is announced on the auction day. As the amount for option IV depends on the actual issuance amount (summation of auctions, non-competitive auctions, and strips) to the planned on a monthly basis, the option IV is expected to reduce monthly issuance fluctuations.

In addition to the aforementioned privileges, a financial support system is being operated to provide low-interest loans to PDs with outstanding performance, using the government's temporary surplus funds and taking their KTBs as collateral. Also, to encourage the active participation, the Ministry will expand the financial support for PDs in terms of recipients and amounts given since 2021[50].

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.

<Table 5-7> Top Five PDs for the First and Second Half 2021

	1H 2021	2H 2021
Securities companies	• Meritz Securities (1st overall) • KB Securities (1st among securities companies) • NH Investment & Securities (2nd among securities companies)	• Meritz Securities (1st overall) • KB Securities (1st among securities companies) • NH Investment & Securities (2nd among securities companies)
Banks	• Credit Agricole Bank (1st among banks) • Kookmin Bank (2nd among banks)	• Credit Agricole Bank (1st among banks) • Kookmin Bank (2nd among banks)

50) (As-is) Best five PDs in a quarterly assessment + one outperforming PD → (To-be) Best 10 PDs in a quarterly assessment

Ministry of Economy and Finance

Korea Treasury Bonds 2021

Chapter 3

Other Major Systems

Ministry of Economy and Finance

Korea Treasury Bonds 2021

part 06

Government Bond Market Infrastructure

Ministry of Economy and Finance

Korea Treasury Bonds 2021

01 Overview[51)]

While domestic bond trade is spurring quantitatively, the nature of it is also becoming more sophisticated, raising importance of an 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.

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(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 6-1> Listing and Delisting Date of KTBs

	Issuance	Non-competitive bidding	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.

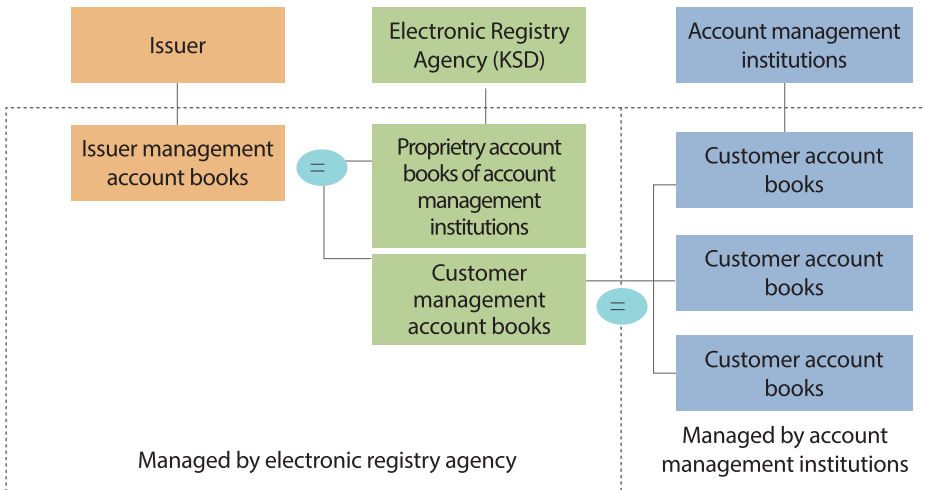
Meanwhile, government bonds, local bonds, and special bonds, continuously issued throughout the year on a certain day of months, are listed in a lump (called "Batch Listing") by the KRX for issuer's convenience on listing requests. Under the batch listing system, issuers set the annual issuance plan 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 transformed 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.

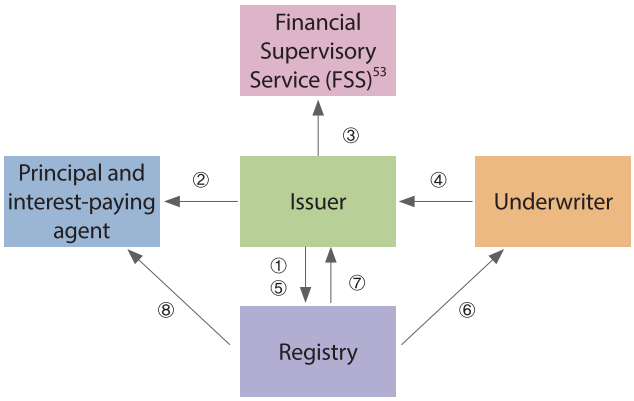
[Figure 6-1] Account Structure of Electronic Securities System



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[52] 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.

52) NHBs are registered through the KSD.

[Figure 6-2] 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)
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.

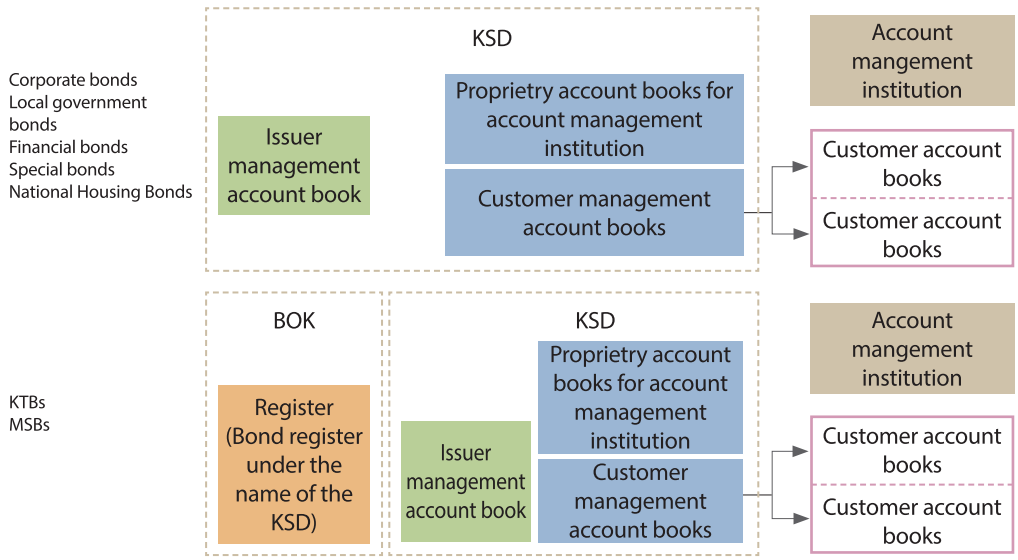
As we mentioned above (1), government bonds and MSBs issuance follows the mass enrollment system where the BOK registers on bond register under the name of the KSD, and then the KSD and account management agency electronically register the bonds under the name of bondholders. In case of other public 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.

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

Securities companies record holdings of marketable securities of clients by making entries to clients' accounts 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 clients' accounts[54)]

[Figure 6-3] Securities Issuance & Electronic Registration



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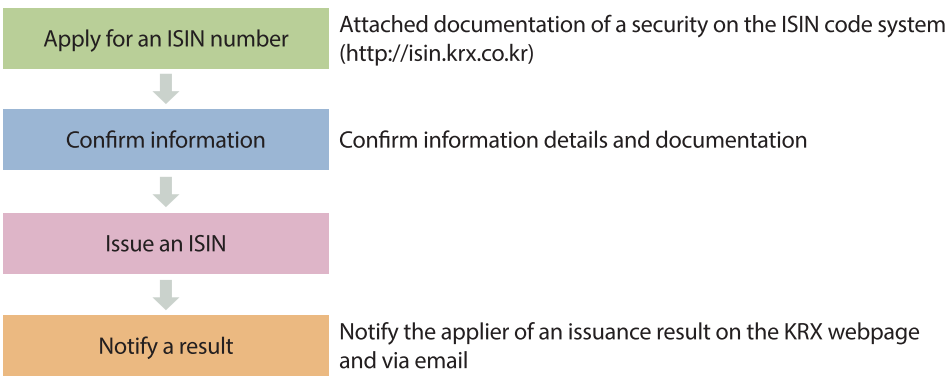
54) Institutional investors participating in the primary and OTC market usually hold their depository accounts of the KSD in their own name.

(3) ISIN Code

The ISIN[55] 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.

[Figure 6-4] 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.

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

<Table 6-2> 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 6-3> 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

04 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 6-4> Settlement Method in KRX KTB and OTC Markets

	Settlement date	Netting method	Central settlement and assurance of settlement	Payment	Securities settlement
KRX KTB	T+1 day[56)]	Multilateral netting	KRX	BOK	KSD
OTC	T~T+30 days	Bilateral netting	-	BOK	KSD

* T : Trading date

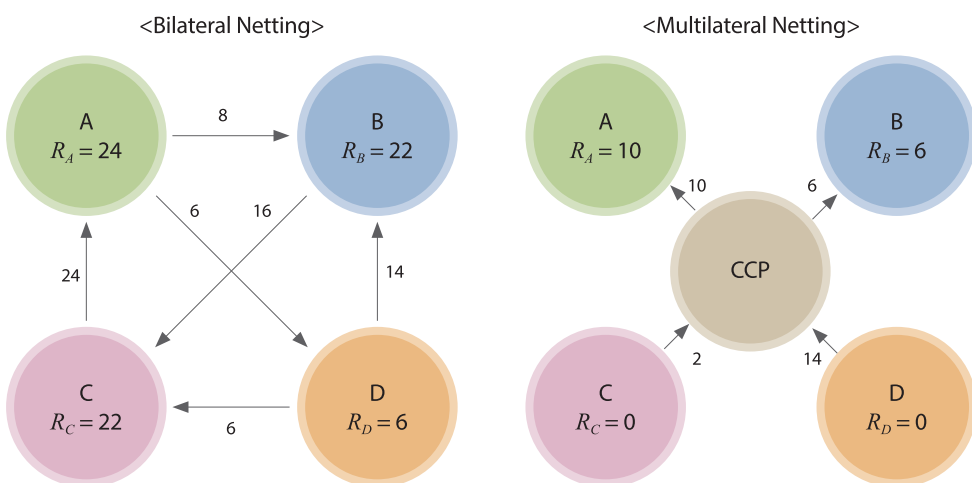
As the OTC market mainly involves trades between individual institutions, there are various settlement dates, and it uses the bilateral netting method. As settlement is not guaranteed by a third party, both trading parties are exposed to a series of potential risks such as payment delay of failure, and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

56) 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.

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, 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[57].

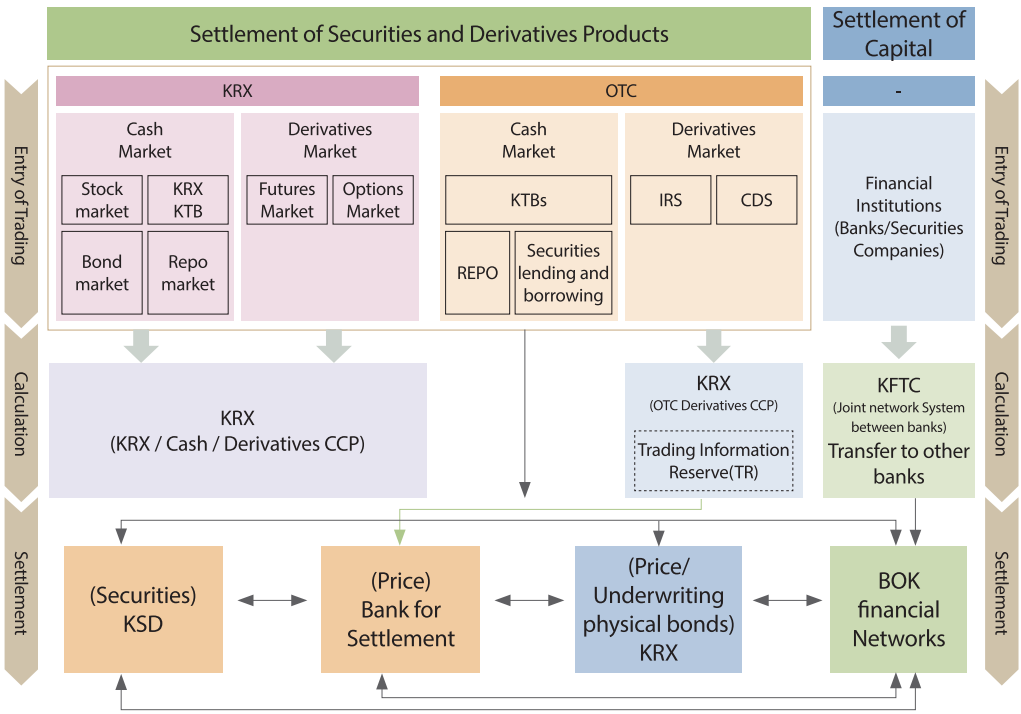
[Figure 6-5] Bilateral Netting and Multilateral Netting



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.

57) In the KRX KTB, the settlement agency is the KRX (CCP) regardless of trading partners.

[Figure 6-6] 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 concentrated in the afternoon and the overdue payment issue were resolved.

05 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 6-5> 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 07

Foreign Investment in KTB

Ministry of Economy and Finance

Korea Treasury Bonds 2021

01 Overview[58)]

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 fiscal soundness and good sovereign ratings, and quick and robust economic recovery since the 2008 global financial crisis. In particular, amid growing concerns over the spread of the coronavirus, there was stronger demand for Korean bonds over the past two years. Foreign investors showed their strong trust in Korean bond market.

<Table 7-1> Bond Market Investment by Foreign Investors

(Unit : KRW trillion)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total	91.0	94.7	100.4	101.4	89.3	98.5	113.8	123.7	150.1	214.0
(%*)	7.0	6.8	6.9	6.5	5.6	5.9	6.6	6.8	7.3	9.6
KTBs	57.1	58.7	65.9	67.9	72.5	77.8	86.3	98.3	121.6	164.1
(%)	15.7	14.5	15.0	13.8	14.0	14.2	15.2	16.1	16.7	19.4
MSBs	31.6	34.4	33.2	32.7	15.5	19.5	26.2	24.3	23.1	35.7
(%)	19.4	20.8	18.7	17.9	9.2	11.4	15.3	14.7	14.5	25.5

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

58) Author: Kyungwoo Ahn. Deputy Director, Government Bond Policy Division at the Ministry of Economy and Finance

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% (KRW 4.2 trillion holdings).

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 2021, foreign holdings reached KRW 164.1 trillion (holdings share: 19.4%), which continued increasing after 2016. The total amount of Korean Won-denominated bonds held by foreigners is KRW 214.0 trillion (holding share: 9.6%). The number of investing countries also increased to 46 in 2020 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, which tend to follow a long-term conservative investing approach, was lower than 10% as of 2007, but has increased. As of the end of 2021, investors with medium- and long-term investment horizon held 67.7%, nearly 70% 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.

02 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 as it was in 2016, 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 investment horizon, such as central banks, and establishing cooperative relationships with them. We have discussed current issues in the financial market and shared market outlook. Also, by improving their trust in Korean bond market, we have made every effort to encourage them to continue investing in Korea.

<Table 7-2> Overview of FIMS

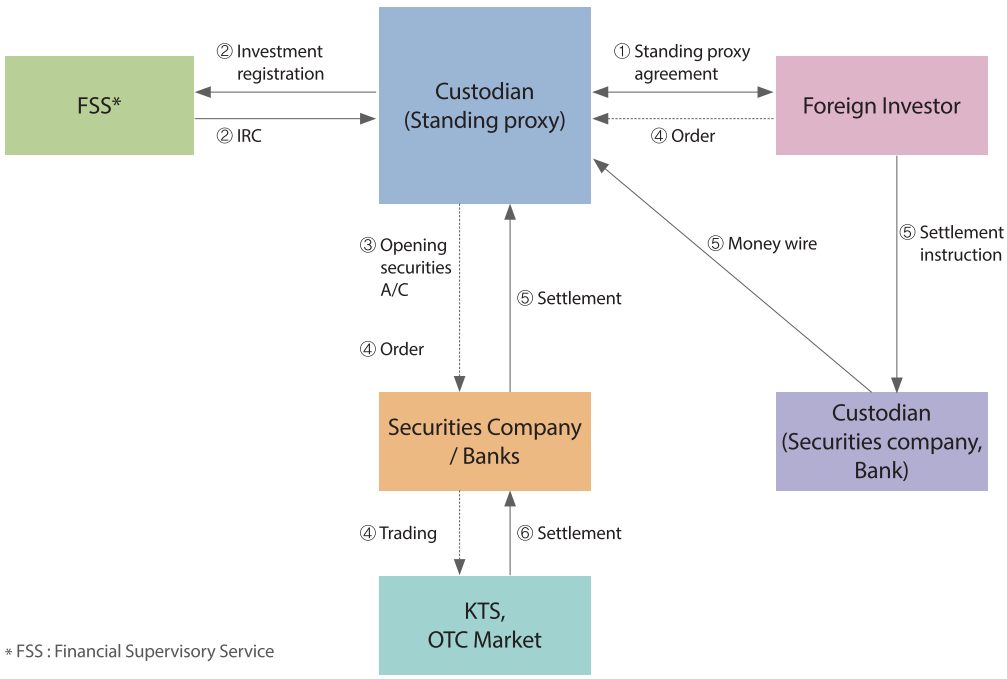
Tasks	Details
Investor management	• Investor registration, account and identification documents
Investment ceiling	• Management of orders and transactions (listed securities, KOSDAQ, bonds) • Management of foreign investment limits
Investment traded	• Daily management of investment funds
Statistics	•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

03 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 7-1] 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). In the KRX KTB market, both funds and securities are settled simultaneously via the KRX. 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

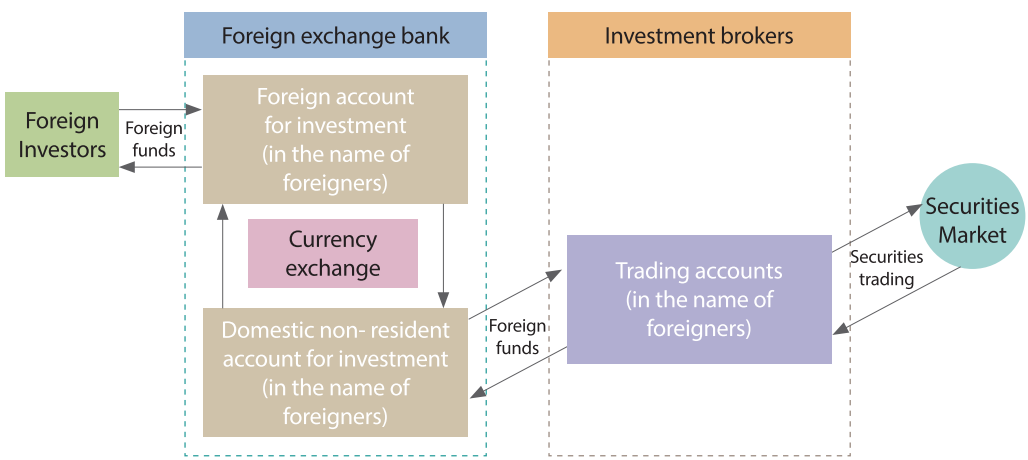
In order to trade securities, foreign investors must open a trading account at a securities company. For payments, they can open a foreign currency account at a foreign exchange bank pursuant to the Foreign Exchange Transactions Regulations, or use investment brokers' accounts.

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 7-2] When Foreigners Open an Account in Their Own Name

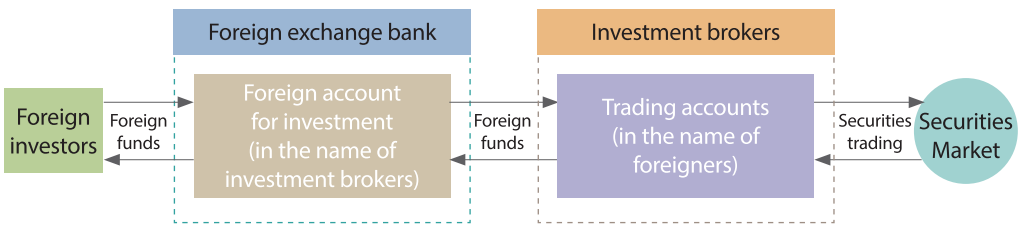


B. When Foreigners Use the Account of an Investment Broker

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 7-3] When Foreigners Invest Through Broker's Account



04 Taxes 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 interest income on bonds is taxed (capital gains are exempt from taxation)[59]. For foreign corporations and non-residents, both interest income on bonds and capital gains are subject to taxation. Non-residents and foreign corporations are subject to taxation on domestic incomes, but the types of taxation vary based on a domestic business location, domestic source income, a tax treaty with Korea and others.

A tax treaty rule prevails over a domestic tax law. For a resident in a country with a tax treaty, it needs to first identify which State has the authority of taxation on the domestic source income. For a non-resident with a domestic business and domestic source income, the non-resident shall pay the tax payable on that taxable income to Korea, as Korea has the authority of taxation. And, a non-resident without a domestic business and domestic source income is subject to separate taxation and withholding tax, but lower tax rate is imposed compared to a limited tax rate under a tax treaty[60].

Meanwhile, 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.

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59) With the revision of the Income Tax Act on introduction of gains from financial investment, capital gains on bonds will categorized into 'gains from financial investment,' and will be taxed pursuant to the new taxation act from 2023.

60) To prevent tax avoidance, in case of suspicious countries involving tax havens, the Korean government has been pursuant to a domestic tax law, not to a tax treaty imposing at the lower rax rate.

(1) Withholding Tax

Interest income for non-residents is subject to income reporting and 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(20% of tax rate but 14% for bonds issued by the government, local governments and domestic corporations).

Interest income on bonds for foreign corporations, which is generated in Korea (domestic source income[61]) 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 exempt from 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[62].

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 applies, whichever is less. 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.

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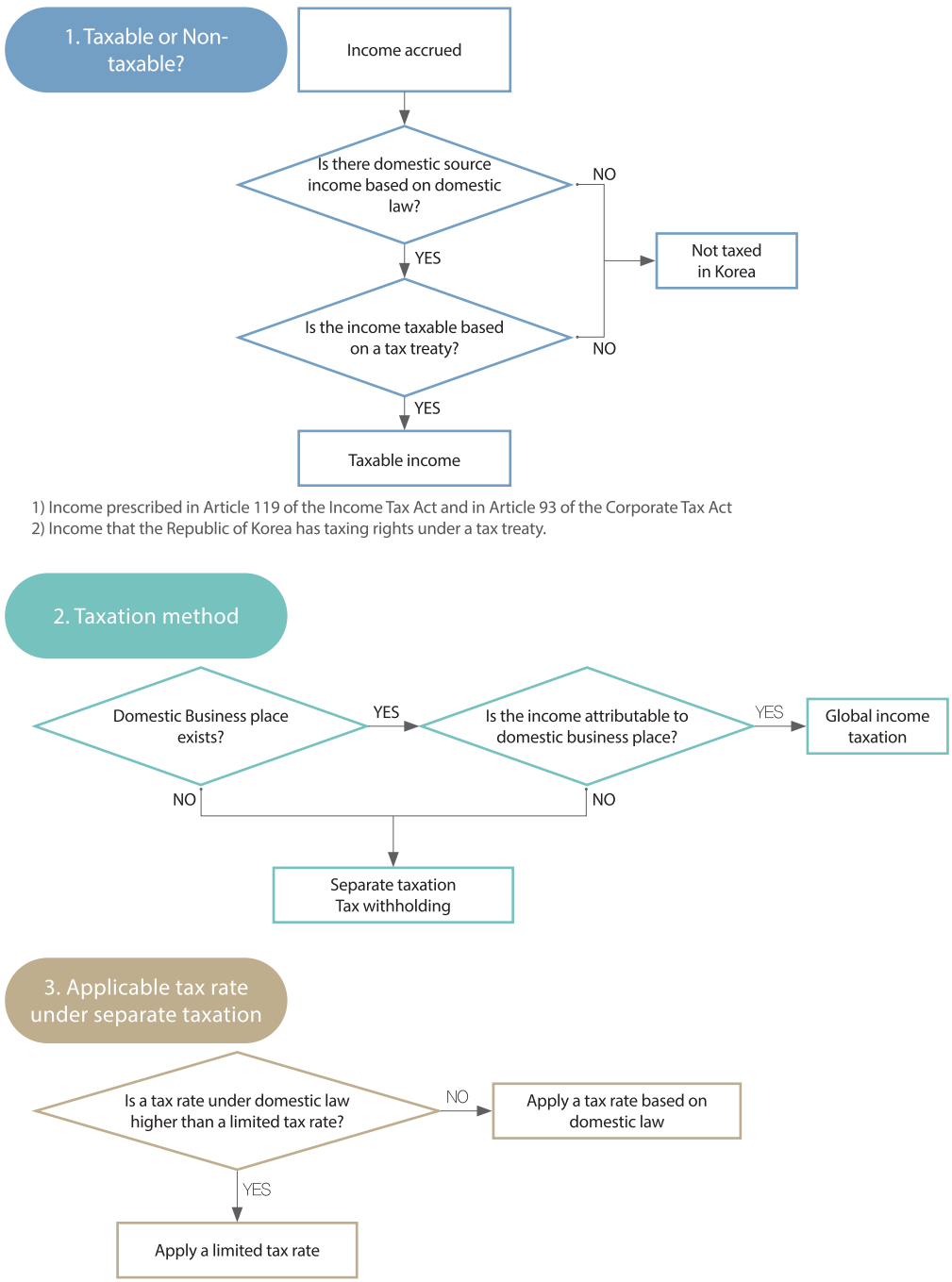
61) The Korean taxation system defines interest paid by a domestic place of business run by residents, domestic corporations, foreign corporations, and non-residents as domestic source interest income. In other words, the tax law of the country where payment of interest is made applies in principla.

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

[Figure 7-4] Income Taxation on the Income of None-residents



1) Income prescribed in Article 119 of the Income Tax Act and in Article 93 of the Corporate Tax Act
2) Income that the Republic of Korea has taxing rights under a tax treaty.

* Source : National Tax Service

05 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 2021, six 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 7-3> 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

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part 08

KTB-related Markets

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01 Overview[63)]

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 investment portfolios. The participants in these markets have different investment purposes compared to those in the KTB market.

KTB-related market will be kept developing both qualitative and quantitative growth, which will in turn contribute to promoting the spot market. The Korean government will make policy efforts to support the KTB-related market.

02 KTB Repurchase Agreement (Repo)[64)]

(1) Repo Transaction

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 of 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.

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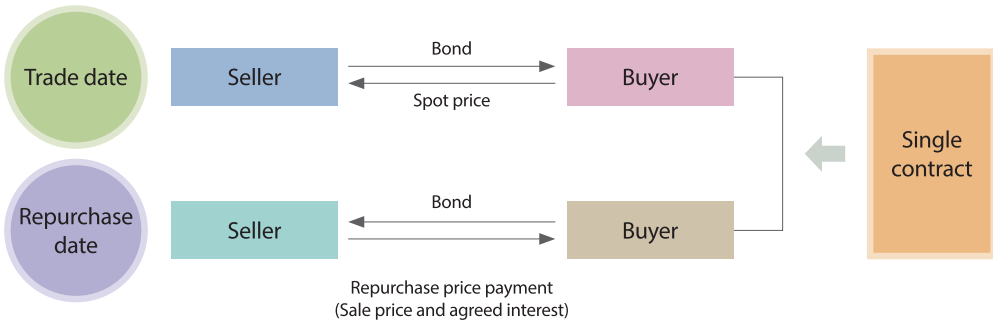
63) Author: Kwonil, Kim. Senior Manager, Korea Exchange (KRX)

64) Author: Kwonil, Kim. Senior Manager, Korea Exchange (KRX)

[Figure 8-1] 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[65)]

(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 (Korea 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[66)] 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 8-1> Average Daily Trading Volume of KTB Futures

Year	3Y KTB futures (Sept. 1999)	10Y KTB futures (Feb. 2008)
2017	91,072	50,028
2018	94,218	62,034
2019	108,651	72,097
2020	121,544	71,220
2021	474,833	68,090

65) Author: Kwonil, Kim. Senior Manager, Korea Exchange (KRX)

66) Trading volume of 10-year KTB futures has been assessed in a regular evaluation of PDs, and the final settlement method was changed (physical delivery → cash settlement).

(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 with means to hedge against such risks, the Korean government introduced 3-year KTB futures in September 1999.

<Table 8-2> Hedge Transaction When Falling Bond Prices (increasing interest rate)

	Spot	Futures
t = 0	KRW 10,000 Long	KRW 10,000 Short
t = T (in three months)	KRW 9,000	Market price : KRW 9,000 Futures price : KRW 10,000
Payoff	△ KRW 1,000	KRW 1,000

Hedge against falling a spot price

The KTB futures market is regarded to have had a 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) Characters 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 future 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)[67], 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.

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.

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

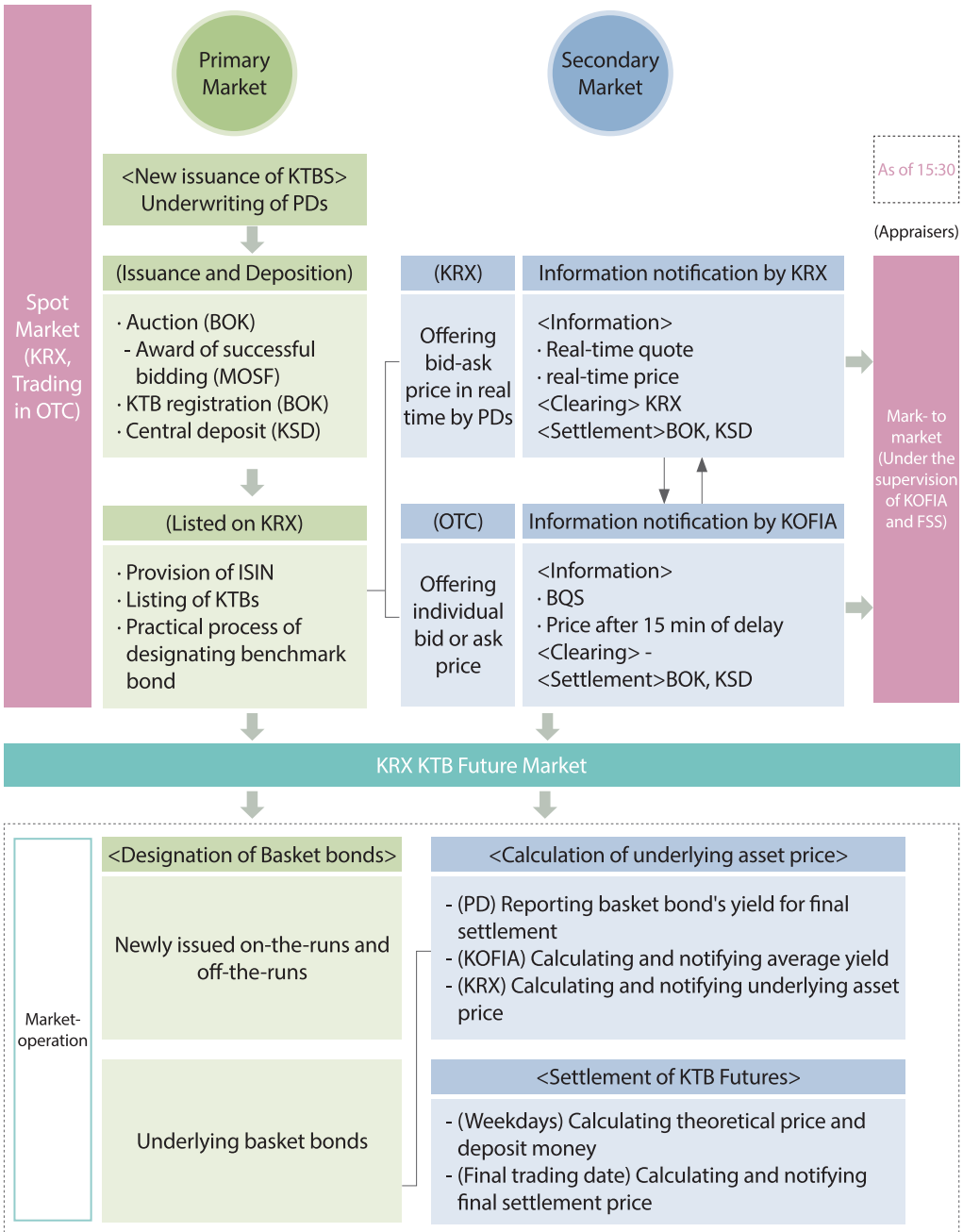
Currently, three bond types are designated for 3-year KTB futures, and two types each for 5-year KTB futures and 10-year KTB futures. The average rate of the basket bonds ultimately decides the settlement yield, so futures basket is called "underlying asset" of KTB futures in general.[68)]

<Table 8-3> 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	0.84%	1.35%	2.34%

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

[Figure 8-2] KTB Spot (Issuance and Trade) and Futures Market

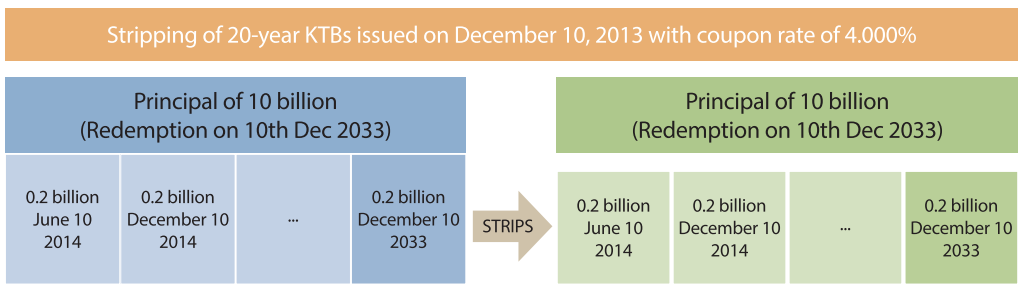


04 STRIPS[69)]

(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.

[Figure 8-3] 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 get benefit for interest earned on tax-deferred.

69) Author: Kwonil, Kim. Senior Manager, Korea Exchange (KRX)

(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 8-4] STRIPS Outstanding and Share

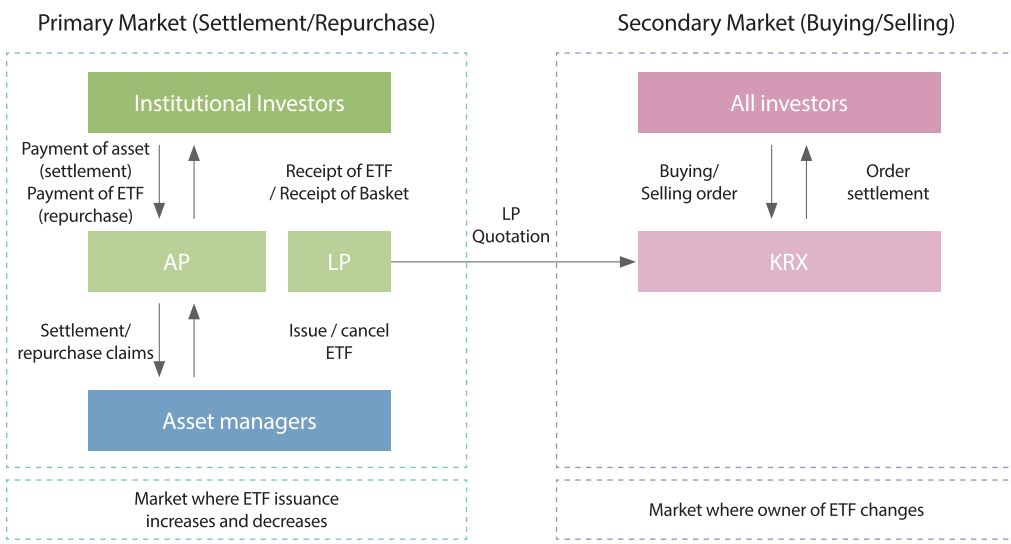
05 KTB ETF (Exchange Traded Fund)[70)]

(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 8-5] ETF Market Structure



70) Author: Kwonil, Kim. Senior Manager, Korea Exchange (KRX)

(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 moves of target index as well as publicly announces 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 8-4> 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 trading volume decline also does not always mean less changes 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.

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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 2021)
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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01 Major KTB Index

1 Yearly Issuance Result

(KRW trillion)

		'14	'15	'16	'17	'18	'19	'20	'21
Outstanding KTBs (% to total outstanding bonds)		438.3	485.1	516.9	546.7	567.0	611.5	726.8	843.7
Issuance amount		(30.1)	(31.2)	(32.4)	(33.0)	(33.0)	(33.6)	(35.5)	(37.8)
	3Y (%)	97.5	109.3	101.1	100.8	97.4	101.7	174.5	180.5
	5Y (%)	-	-	-	-	-	-	-	12.5 (6.9)
	10Y (%)	24.3 (24.9)	26.7 (24.5)	23.8 (23.6)	20.0 (19.9)	19.5 (20.0)	20.6 (20.3)	35.1 (20.1)	36.1 (20.0)
	KTBi (%)	25.5 (26.2)	29.7 (27.2)	24.5 (24.2)	23.9 (23.7)	19.9 (20.4)	18.5 (18.2)	34.0 (19.5)	31.8 (17.6)
	20Y (%)	25.7 (26.3)	27.9 (25.6)	24.7 (24.4)	24.6 (24.4)	22.6 (23.2)	24.9 (24.4)	44.6 (25.6)	36.7 (20.3)
	30Y (%)	0.9 (1.0)	1.8 (1.7)	2.5 (2.5)	2.0 (2.0)	0.9 (1.0)	1.3 (1.2)	1.3 (0.7)	1.1 (0.6)
	50Y (%)	10.8 (11.0)	11.0 (10.0)	10.1 (10.0)	10.0 (9.9)	9.8 (10.0)	7.7 (7.5)	13.0 (7.4)	9.8 (5.4)
Bid to cover ratio(%)		10.3 (10.6)	12.1 (11.1)	14.3 (14.2)	20.1 (19.9)	22.6 (23.2)	25.6 (25.2)	42.4 (24.3)	47.8 (26.5)
Average financing rate(%)		-	-	1.1 (1.1)	0.2 (0.2)	2.1 (2.2)	3.2 (3.2)	4.1 (2.4)	4.6 (2.5)
Average time-to-maturity(year)		409.1	372.7	383.3	333.6	295.2	297.6	294.8	283.0
Redemption (A+B+C)		3.02	2.15	1.62	2.10	2.43	1.68	1.38	1.79
	At maturity (A)	7.11	7.62	8.30	9.06	10.03	10.64	11.31	11.66
	Buy-back (B) (in the year)	59.9	62.4	69.3	71.0	77.1	57.2	59.2	63.6
	Conversion offer (C)	51.6	45.7	53.9	51.7	47.9	35.4	45.1	45.4

		'14	'15	'16	'17	'18	'19	'20	'21
Average rate (%)	2Y	-	-	-	-	-	-	-	1.301
	3Y	2.589	1.794	1.442	1.801	2.099	1.529	0.988	1.392
	5Y	2.836	1.974	1.533	2.001	2.308	1.589	1.233	1.719
	10Y	3.183	2.304	1.749	2.281	2.502	1.700	1.499	2.067
	20Y	3.375	2.478	1.821	2.333	2.477	1.711	1.610	2.135
	30Y	3.460	2.549	1.840	2.337	2.449	1.698	1.615	2.121
Trading amount of KTBs* (% to total bonds)		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)	2,864.0 (59.0)	2,549.7 (61.3)
	2Y	-	-	-	-	-	-	-	39.6
	3Y	607.9	908.1	2,190.8	1,886.1	1,428.9	1,380.9	1,395.8	1,063.9
	5Y	1,349.1	1,480.2	1,082.5	699.9	707.9	593.9	659.8	651.7
	10Y	616.5	557.4	544.4	467.4	503.4	575.4	573.5	551.2
	20Y	58.0	69.3	67.5	60.5	52.9	64.9	83.5	70.7
	30Y	29.4	41.4	55.0	68.7	72.3	105.4	148.4	169.4
	50Y	-	-	-	0.3	1.9	3.3	3.1	3.3
Turnover ratio of KTBs * (Turnover ratio of total bonds, %)		607.2 (273.1)	630.0 (281.5)	762.3 (347.2)	582.2 (282.6)	488.0 (278.3)	445.4 (245.7)	394.1 (236.9)	302.2 (186.4)
Foreign holdings of KTBs** (% to listed outstanding KTBs)		65.9 (15.0)	67.7 (14.0)	72.5 (14.0)	77.8 (14.2)	86.3 (15.6)	98.3 (16.1)	121.6 (16.7)	164.1 (19.4)
PD/PPD holdings of KTBs*** (% to listed outstanding KTBs)		30.9 (7.0)	32.8 (6.8)	33.8 (6.5)	34.3 (6.3)	38.0 (6.7)	37.6 (6.2)	49.7 (6.8)	49.5 (5.9)
KTB holdings by institution		457.5	507.4	541.0	573.8	596.9	644.7	762.2	881.2
	Bank	165.5	165.1	177.8	205.4	229.1	264.1	303.2	385.4
	Pension funds	86.7	99.5	104.5	102.7	99.8	94.1	98.1	107.4
	Insurance company	123.6	143.0	158.3	179.4	182.2	195.8	241.5	257.1
	Securities company	52.4	61.7	61.3	55.3	60.2	57.8	72.8	72.1
	Securities company	20.6	29.9	30.9	21.7	17.8	21.6	26.9	31.3
	Other	8.8	8.2	8.2	9.3	7.7	11.2	19.6	27.9

* As of the end of the month * Source : KRX ** Source : KOSCOM *** Source : KSD

2 Monthly Issuance Result 2021

(KRW trillion)

		Jan	Feb	Mar	Apr	May	Jun
Issuance amount		15.6	17.7	17.2	18.2	19.1	18.3
	2Y	-	1.1	1.3	1.6	1.7	1.5
	(%)	-	(6.1)	(7.4)	(8.6)	(8.7)	(8.3)
	3Y	3.4	3.8	3.2	3.8	4.2	4.2
	(%)	(22.1)	(21.7)	(18.7)	(20.7)	(21.7)	(22.8)
	5Y	3.3	3.9	3.6	2.8	3.3	2.8
	(%)	(21.5)	(22.2)	(20.8)	(15.1)	(17.2)	(15.0)
	10Y	3.8	3.6	3.6	3.8	3.7	4.0
	(%)	(24.7)	(20.2)	(20.8)	(21.1)	(19.4)	(21.8)
	KTBi	0.1	0.1	0.1	0.1	0.1	0.1
	(%)	(0.6)	(0.6)	(0.6)	(0.6)	(0.5)	(0.5)
	20Y	1.3	0.9	1.3	0.8	0.9	0.8
	(%)	(8.4)	(5.1)	(7.8)	(4.2)	(4.5)	(4.4)
	30Y	3.5	3.5	4.1	4.7	5.0	4.6
	(%)	(22.8)	(19.9)	(23.8)	(25.7)	(25.9)	(24.8)
	50Y	-	0.8	-	0.7	0.4	0.4
	(%)	-	(4.3)	-	(3.9)	(2.1)	(2.2)
Bid to cover ratio(%)		292.0	289.6	285.1	283.1	284.5	283.9
Average financing rate(%)		1.5	1.5	1.7	1.7	1.8	1.8
Average time-to-maturity(year)		11.26	11.22	11.26	11.24	11.21	11.46
Redemption (A+B+C)		0.3	0.3	7.2	0.2	0.3	20.2
	At maturity (A)	-	-	6.8	-	-	19.9
	Buy-back (B)	-	-	-	-	-	-
	Conversion offer (C)	0.3	0.3	0.4	0.2	0.3	0.3

		Jul	Aug	Sep	Oct	Nov	Dec	Total
Issuance amount		18.0	16.0	11.5	12.8	10.4	5.8	180.5
	2Y (%)	1.4	1.2	0.9	0.8	0.6	0.5	12.5
		(7.9)	(7.6)	(7.4)	(6.3)	(5.9)	(8.6)	(6.9)
	3Y (%)	3.7	3.4	2.2	2.1	1.3	0.8	36.1
		(20.7)	(21.2)	(19.2)	(16.8)	(12.6)	(13.8)	(20.0)
	5Y (%)	3.3	2.2	2.0	1.9	1.8	1.0	31.8
		(18.6)	(13.8)	(17.4)	(14.9)	(17.3)	(16.4)	(17.6)
	10Y (%)	2.9	3.7	2.3	2.8	1.5	1.0	36.7
		(16.2)	(23.0)	(20.1)	(21.7)	(14.7)	(17.2)	(20.3)
	KTBi (%)	0.1	0.1	0.1	0.1	0.1	-	1.1
		(0.6)	(0.6)	(0.9)	(0.8)	(1.0)	-	(0.6)
	20Y (%))	1.1	0.6	0.5	0.7	0.7	0.3	9.8
		(6.0)	(3.6)	(4.4)	(5.4)	(6.3)	(5.2)	(5.4)
	30Y (%)	5.0	4.4	3.2	4.0	4.0	1.9	47.8
		(27.7)	(27.7)	(27.6)	(31.3)	(38.4)	(32.8)	(26.5)
	50Y (%)	0.4	0.4	0.4	0.4	0.4	0.4	4.6
		(2.4)	(2.5)	(3.1)	(2.9)	(3.8)	(6.0)	(2.5)
Bid to cover ratio(%)		283.8	283.7	283.2	282.8	283.2	283.0	283.0
Average financing rate(%)		1.84	1.73	1.82	2.18	2.26	2.10	1.79
Average time-to-maturity(year)		11.46	11.45	11.55	11.56	11.59	11.66	11.66
Redemption (A+B+C)		2.3	3.2	12.4	2.6	4.3	10.2	63.6
	At maturity (A)	-	-	9.1	-	-	9.5	45.4
	Buy-back (B)	2.0	3.0	3.0	2.2	4.0	0.7	14.9
	Conversion offer (C)	0.3	0.2	0.3	0.4	0.3	-	3.3
Average rate (%)	2Y	1.258	1.252	1.363	1.63	1.765	1.693	1.301
	3Y	1.419	1.411	1.515	1.842	1.953	1.8	1.392
	5Y	1.686	1.653	1.786	2.154	2.174	1.981	1.719
	10Y	1.976	1.905	2.061	2.399	2.355	2.187	2.067
	20Y	2.053	1.968	2.081	2.358	2.356	2.244	2.135
	30Y	2.043	1.959	2.064	2.311	2.321	2.221	2.121

* As of the end of the month * Source : KRX ** Source : KOSCOM *** Source : KSD

		Jan	Feb	Mar	Apr	May	Jun
	2Y			0.932	0.921	0.931	1.148
	3Y	0.975	0.995	1.133	1.138	1.134	1.302
	5Y	1.316	1.348	1.550	1.577	1.647	1.701
	10Y	1.731	1.845	2.040	2.041	2.131	2.103
	20Y	1.838	1.978	2.113	2.151	2.252	2.199
	30Y	1.841	1.985	2.103	2.142	2.248	2.191
Trading amount of KTBs*		211.9	249.5	301.1	264.9	206.9	247.3
	2Y	-	0.7	4.1	3.9	5.6	5.0
	3Y	90.0	107.4	123.5	121.8	90.5	99.9
	5Y	60.0	71.2	81.3	61.9	51.5	66.2
	10Y	45.8	46.9	63.4	53.1	37.5	54.0
	20Y	5.8	6.8	9.3	8.2	5.9	5.5
	30Y	10.2	16.0	19.3	15.6	15.6	16.3
	50Y	-	0.5	-	0.5	0.3	0.2
Turnover ratio of KTBs* (Turnover ratio of total bonds, %)		28.6	32.9	39.1	33.7	25.7	30.8
		(17.4)	(17.7)	(21.6)	(19.6)	(15.5)	(17.9)
Foreign holdings of KTBs** (% to listed outstanding KTBs)		122.5	128.4	132.6	134.4	137.5	142.7
		(16.5)	(16.9)	(17.2)	(17.1)	(17.1)	(17.7)
PD holdings of KTBs*** (% to listed outstanding KTBs)		49.8	54.5	50.1	51.6	58.0	55.6
		(6.7)	(7.2)	(6.5)	(6.6)	(7.2)	(6.9)
KTB holdings by institution***		777.4	794.0	805.7	823.6	843.4	844.8
	Bank	286.9	301.6	316.4	315.4	316.0	343.0
	Pension funds	105.5	106.7	105.5	107.4	109.8	109.9
	Insurance company	246.8	249.7	253.8	255.5	257.7	257.8
	Securities company	81.4	82.1	80.4	86.4	87.8	82.2
	Investment trust company	36.2	31.8	29.3	36.4	42.1	29.6
	Other	20.7	22.2	20.3	22.5	30.1	22.4

		Jul	Aug	Sep	Oct	Nov	Dec	Total
Trading amount of KTBs*		207.5	186.1	179.7	167.1	186.6	141.1	2,549.7
	3Y	6.1	2.6	3.5	3.3	2.3	2.6	39.6
	3Y	78.8	77.0	74.4	65.1	79.4	56.0	1,063.9
	5Y	55.1	48.4	40.3	39.8	44.8	31.3	651.7
	10Y	47.4	36.9	45.8	41.4	41.3	37.6	551.2
	20Y	6.0	4.7	4.4	4.5	4.6	4.9	70.7
	30Y	13.8	16.3	11.0	12.7	13.9	8.5	169.4
	50Y	0.3	0.2	0.3	0.3	0.3	0.2	3.3
Turnover ratio of KTBs *		25.3	22.4	21.6	19.9	22.0	16.7	302.2
(Turnover ratio of total bonds, %)		(15.6)	(13.8)	(13.1)	(12.5)	(14.5)	(12.4)	(186.4)
Foreign holdings of KTBs**		148.1	151.6	154.6	156.9	159.5	164.1	164.1
(% to listed outstanding KTBs)		(18.1)	(18.1)	(18.6)	(18.7)	(18.8)	(19.4)	(19.4)
PD holdings of KTBs***		52.4	55.0	52.1	50.6	50.3	49.5	49.5
(% to listed outstanding KTBs)		(6.4)	(6.6)	(6.3)	(6.0)	(5.9)	(5.9)	(5.9)
KTB holdings by institution		857.2	873.1	869.3	878.9	888.2	881.2	881.2
	Bank	328.1	350.1	350.9	334.5	352.4	385.4	385.4
	Pension funds	114.0	110.4	111.0	111.3	110.7	107.4	107.4
	Insurance company	258.4	259.5	261.8	265.1	264.3	257.1	257.1
	Securities company	86.8	87.1	84.8	88.1	86.8	72.1	72.1
	Investment trust company	42.3	35.2	35.8	47.9	39.7	31.3	31.3
	Other	27.6	30.8	24.9	31.9	34.3	27.9	27.9

* As of the end of the month * Source : KRX ** Source : KOSCOM *** Source : KSD

02 KTBs by Maturity

(KRW trillion)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2Y	Issue amount	0.0	1.1	1.3	1.6	1.7	1.5	1.4	1.2	0.9	0.8	0.6	0.5	12.5
	Winning rate (pre-issuance)	-	- (0.805)	0.995	0.895	0.925 (0.970)	1.090	1.295	1.250 (1.300)	1.320	1.650	1.735 (1.785)	1.770	1.188 (1.066)
	Bid-to-cover ratio (pre-issuance)	-	- (360.9)	271.9	273.8	355.3 (363.4)	317.5	305.7	363.5 (290.0)	276.9	295.0	347.7 (296.7)	282.2	309.1
	Trading amount	-	0.7	4.1	3.9	5.6	5.0	6.1	2.6	3.5	3.3	2.3	2.6	39.6
	Market rate	-	-	0.932	0.921	0.931	1.148	1.258	1.252	1.363	1.630	1.765	1.693	1.301
3Y	Issue amount	3.4	3.8	3.2	3.8	4.2	4.2	3.7	3.4	2.2	2.1	1.3	0.8	36.1
	Winning rate (pre-issuance)	0.980	0.995	1.090	1.145 (1.230)	1.135 (1.205)	1.325	1.470	1.445	1.450	1.790 (1.890)	1.920 (1.930)	1.870	1.279 (1.455)
	Bid-to-cover ratio (pre-issuance)	300.8	313.0	290.2	367.9 (142.5)	277.1 (208.0)	287.2	285.2	291.6	300.1	319.2 (181.3)	330.6 (310.4)	281.1	287.4
	Trading amount	90.0	107.4	123.5	121.8	90.5	99.9	78.8	77.0	74.4	65.1	79.4	56.0	1,063.9
	Market rate	0.975	0.995	1.133	1.138	1.134	1.302	1.419	1.411	1.515	1.842	1.953	1.800	1.392
5Y	Issue amount	3.3	3.9	3.6	2.8	3.3	2.8	3.3	2.2	2.0	1.9	1.8	1.0	31.8
	Winning rate (pre-issuance)	1.340 (1.350)	1.385 (1.405)	1.640	1.570	1.640	1.675	1.700 (1.750)	1.630 (1.645)	1.880	2.220	2.215	1.935	1.698 (1.535)
	Bid-to-cover ratio (pre-issuance)	301.7 (258.5)	319.9 (202.3)	288.6	291.5	305.3	286.8	360.6 (239.7)	332.2 (257.2)	283.4	292.1	299.7	275.4	291.5
	Trading amount	60.0	71.2	81.3	61.9	51.5	66.2	55.1	48.4	40.3	39.8	44.8	31.3	651.7
	Market rate	1.316	1.348	1.550	1.577	1.647	1.701	1.686	1.653	1.786	2.154	2.174	1.981	1.719

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
10Y	Issue amount	3.8	3.6	3.6	3.8	3.7	4.0	2.9	3.7	2.3	2.8	1.5	1.0	36.7
	Winning rate (pre-issuance)	1.710	1.855	2.155	1.990 (2.020)	2.125 (2.155)	2.095	2.020	1.895	2.020	2.410 (2.430)	2.305 (2.305)	2.175	2.014 (2.192)
	Bid-to-cover ratio (pre-issuance)	305.6	302.6	263.0	335.2 (233.5)	326.8 (289.0)	284.0	278.0	268.8	273.6	358.8 (223.4)	357.9 (262.0)	297.4	290.8
	Trading amount	45.8	46.9	63.4	53.1	37.5	54.0	47.4	36.9	45.8	41.4	41.3	37.6	551.2
	Market rate	1.731	1.845	2.040	2.041	2.131	2.103	1.976	1.905	2.061	2.399	2.355	2.187	2.067
20Y	Issue amount	1.3	0.9	1.3	0.8	0.9	0.8	1.1	0.6	0.5	0.7	0.7	0.3	9.8
	Winning rate (pre-issuance)	1.900	2.040	2.075	2.145	2.255	2.140	1.985	1.965 (1.945)	2.210	2.520	2.420	2.180	2.128 (1.945)
	Bid-to-cover ratio (pre-issuance)	299.4	298.5	279.0	315.6	302.6	293.8	317.0	372.3 (306.0)	303.2	309.6	300.3	283.3	303.0
	Trading amount	5.8	6.8	9.3	8.2	5.9	5.5	6.0	4.7	4.4	4.5	4.6	4.9	70.7
	Market rate	1.838	1.978	2.113	2.151	2.252	2.199	2.053	1.968	2.081	2.358	2.356	2.244	2.135
30Y	Issue amount	3.5	3.5	4.1	4.7	5.0	4.6	5.0	4.4	3.2	4.0	4.0	1.9	47.8
	Winning rate (pre-issuance)	1.815	1.928 (1.920)	2.075	2.235	2.270	2.290	2.225	1.950	1.970	2.205	2.435	2.295	2.156 (1.920)
	Bid-to-cover ratio (pre-issuance)	273.9	321.7 (232.5)	266.8	268.0	278.0	265.5	262.0	264.7	272.4	258.0	272.0	283.3	270.5
	Trading amount	10.2	16.0	19.3	15.6	15.6	16.3	13.8	16.3	11.0	12.7	13.9	8.5	169.4
	Market rate	1.841	1.985	2.103	2.142	2.248	2.191	2.043	1.959	2.064	2.311	2.321	2.221	2.121
50Y	Issue amount	0.0	0.8	0.0	0.7	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.6
	Winning rate	-	1.970	-	2.100	2.230	2.165	2.060	1.960	1.990	2.270	2.320	2.220	2.113
	Bid-to-cover ratio	-	106.0	-	153.6	194.3	161.8	195.8	124.3	150.9	177.1	176.3	159.4	155.2
	Trading amount	0.0	0.5	0.0	0.5	0.3	0.2	0.3	0.2	0.3	0.3	0.3	0.2	3.3
	Market rate	1.841	1.984	2.103	2.143	2.249	2.191	2.044	1.959	2.064	2.311	2.320	2.220	2.121

* 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	'14	'15	'16	'17	'18	'19	'20	'21
2Y (%)	-	-	-	-	-	-	-	12.5 (1.5)
3Y (%)	58.5 (13.3)	64.1 (13.2)	62.1 (12.0)	51.1 (9.3)	47.2 (8.3)	47.4 (7.8)	62.7 (8.6)	82.3 (9.8)
5Y (%)	103.0 (23.5)	110.7 (22.8)	108.0 (20.9)	109.5 (20.0)	104.2 (18.4)	99.3 (16.2)	109.1 (15.0)	117.7 (14.0)
10Y (%)	170.1 (38.8)	179.9 (37.1)	189.0 (36.6)	198.5 (36.3)	195.1 (34.4)	208.4 (34.1)	240.9 (33.1)	257.9 (30.6)
KTBi (%)	8.4 (1.9)	9.1 (1.9)	11.0 (2.1)	10.5 (1.9)	9.4 (1.7)	9.2 (1.5)	8.5 (1.2)	6.7 (0.8)
20Y (%)	77.2 (17.6)	88.1 (18.2)	98.2 (19.0)	108.3 (19.8)	117.5 (20.7)	124.8 (20.4)	136.7 (18.8)	145.3 (17.2)
30Y (%)	21.0 (4.8)	12.1 (11.1)	47.5 (9.2)	67.6 (12.4)	90.2 (15.9)	115.8 (18.9)	158.1 (21.8)	205.9 (24.4)
50Y (%)	-	-	1.1 (0.2)	1.3 (0.2)	3.4 (0.6)	6.7 (1.1)	10.8 (1.5)	15.4 (1.8)
Total	438.3	485.1	516.9	546.7	567.0	611.5	726.8	843.7

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

(Unit : KRW 100 million)

Financial Year / Time to maturity	'14	'15	'16	'17	'18	'19	'20	'21
less than 1Y (%)	516,440 (11.8)	539,037 (11.1)	516,110 (10.0)	478,602 (8.8)	354,030 (6.2)	451,430 (7.4)	454,060 (6.2)	561,885 (6.7)
1Y~3Y (%)	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)	1,296,889 (17.8)	1,589,444 (18.8)
3Y~5Y (%)	725,652 (16.6)	705,100 (14.5)	944,810 (18.3)	856,905 (15.7)	820,309 (14.5)	914,604 (15.0)	1,086,541 (15.0)	1,241,363 (14.7)
5Y~10Y (%)	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)	1,821,789 (25.1)	2,019,053 (23.9)
More than 10Y (%)	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)	2,608,383 (35.9)	3,024,857 (35.9)
Total	4,382,548	4,851,038	5,169,082	5,467,152	5,670,440	6,115,330	7,267,661	8,436,601

04 Redemption Amounts at Maturity by Year (As of the end of 2021)

(Unit : KRW 100 million)

Year	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31
Amounts	561,885	903,774	685,670	640,510	600,852	294,440	345,140	402,523	571,854	405,096

Year	'33	'35	'36	'37	'38	'39	'40	'41	'42	'44
Amount	169,055	119,961	95,630	94,800	82,210	110,640	115,770	24,260	202,180	150,830

Year	'46	'47	'48	'49	'50	'51	'66	'68	'70	Total
Amount	143,870	214,130	229,020	266,800	431,850	420,130	21,840	75,090	56,790	8,436,601

05 Yearly Issuance Amount

(Unit : KRW trillion)

Division		'14	'15	'16	'17	'18	'19	'20	'21
Treasury bonds	Issuance	97.5	109.3	101.1	100.8	97.4	101.7	174.5	180.5
	Redemption	59.9	62.4	69.3	71.0	77.1	57.2	59.2	63.6
	Outstanding	438.3	485.1	516.9	546.7	567.0	611.5	726.8	843.7
Foreign exchange stabilization bonds (foreign currency)	Issuance	2.1	0.5	-	1.2	1.1	1.8	1.7	1.6
	Redemption	2.6	0.6	0.6	-	0.5	1.7	-	0.5
	Outstanding	7.0	7.1	6.7	7.2	8.0	8.3	9.5	11.2
National Housing bonds	Issuance	12.4	16.2	15.9	14.3	15.1	15.4	18.7	18.8
	Redemption	10.9	9.7	11.2	8.9	11.3	12.3	16.2	15.5
	Outstanding	52.8	59.3	63.9	69.4	73.3	76.4	78.9	82.2
Treasury bills	Issuance	38.0	37.5	20.9	7.9	2.0	48.7	45.3	28.9
	Redemption	38.0	37.5	20.9	7.9	2.0	48.7	45.3	28.9
	Outstanding	-	-	-	-	-	-	-	-
Total	Issuance	150.0	163.5	138.0	124.2	115.6	167.6	240.2	229.8
	Redemption	111.4	110.3	102.1	87.8	90.8	119.9	120.8	108.5
	Outstanding	498.0	551.5	587.5	623.3	648.3	696.2	815.2	937.0

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	'14	'15	'16	'17	'18	'19	'20	'21
Gov't bonds (%)	147.9 (26.1)	163.0 (25.7)	138.2 (25.6)	123.1 (22.1)	114.5 (20.4)	165.8 (26.7)	238.5 (30.9)	228.2 (30.6)
KTBs (%)	97.5 (17.2)	109.3 (17.2)	101.1 (18.7)	100.8 (18.1)	97.4 (17.3)	101.7 (16.4)	174.5 (22.6)	180.5 (24.2)
KTBs (%)	4.6 (0.8)	5.8 (0.9)	3.5 (0.6)	3.4 (0.6)	3.3 (0.6)	4.7 (0.8)	7.8 (1.0)	7.2 (1.0)
MSBs (%)	189.9 (33.6)	188.0 (29.6)	161.1 (29.8)	163.7 (29.4)	159.8 (28.4)	142.1 (22.9)	144.1 (18.7)	125.4 (16.8)
Non-financial special bonds (%)	64.0 (11.3)	87.7 (13.8)	58.0 (10.7)	61.1 (11.0)	50.7 (9.0)	55.5 (8.9)	88.5 (11.5)	79.0 (10.6)
financial special bonds (%)	51.1 (9.0)	78.7 (12.4)	80.2 (14.8)	81.3 (14.6)	93.0 (16.5)	92.4 (14.9)	130.5 (16.9)	124.6 (16.7)
Corporate bonds (%)	108.4 (19.2)	111.3 (17.5)	99.9 (18.5)	124.7 (22.4)	141.4 (25.1)	160.7 (25.9)	162.4 (21.0)	182.2 (24.4)
General Corporate bonds (%)	62.4 (11.0)	61.8 (9.7)	50.3 (9.3)	56.5 (10.1)	67.1 (11.9)	72.2 (11.6)	81.4 (10.5)	81.0 (10.9)
Financial Institution bonds (%)	45.7 (8.1)	49.2 (7.8)	49.0 (9.1)	67.5 (12.1)	74.0 (13.2)	88.1 (14.2)	80.0 (10.4)	100.7 (13.5)
Foreign bonds (%)	-	0.2 -	-	-	-	-	-	-
Total	565.7	634.6	540.9	557.4	562.7	621.1	771.8	746.6

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	'14	'15	'16	'17	'18	'19	'20	'21
Gov't bonds (%)	491.0 (33.7)	544.4 (35.0)	582.0 (36.4)	616.1 (37.1)	640.3 (37.2)	688.0 (37.8)	805.7 (39.3)	925.8 (41.5)
KTBs (%)	438.3 (30.1)	485.1 (31.2)	516.9 (32.3)	546.7 (33.0)	567.0 (33.0)	611.5 (33.6)	726.8 (35.5)	843.7 (37.8)
KTBs (%)	19.5 (1.3)	21.2 (1.4)	21.4 (1.3)	21.0 (1.3)	20.8 (1.2)	21.4 (1.2)	24.9 (1.2)	27.9 (1.3)
MSBs (%)	178.0 (12.2)	182.1 (11.7)	168.4 (10.5)	170.9 (10.3)	171.6 (10.0)	165.0 (9.1)	159.3 (7.8)	140.3 (6.3)
Non-financial special bonds (%)	330.8 (22.7)	310.9 (20.0)	315.2 (19.7)	319.6 (19.3)	310.7 (18.1)	310.7 (17.1)	339.5 (16.6)	359.6 (16.1)
financial special bonds (%)	86.6 (6.0)	141.4 (9.0)	149.7 (9.4)	149.5 (9.0)	160.1 (9.3)	169.3 (9.3)	208.2 (10.2)	217.2 (9.7)
Corporate bonds (%)	349.2 (24.0)	357.2 (22.9)	361.4 (22.6)	381.7 (23.0)	416.4 (24.2)	467.9 (25.7)	510.6 (24.9)	558.9 (25.1)
General Corporate bonds (%)	220.9 (15.2)	218.8 (14.1)	211.6 (13.2)	209.9 (12.7)	220.6 (12.8)	244.2 (13.4)	269.9 (13.2)	293.3 (13.2)
Financial Institution bonds (%)	127.7 (8.8)	137.7 (8.8)	149.0 (9.3)	170.6 (10.3)	193.8 (11.3)	221.9 (12.2)	239.4 (11.7)	264.5 (11.9)
Foreign bonds (%)	0.0 (-)	0.2 (0.0)	0.2 (0.0)	0.2 (0.0)	0.2 (0.0)	0.2 (0.0)	0.2 (0.0)	0.2 (0.0)
Total	1,455.1	1,557.3	1,598.1	1,658.9	1,720.1	1,822.3	2,048.3	2,230.0

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	'14	'15	'16	'17	'18	'19	'20	'21
Gov't bonds (%)	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)	3,374.2 (69.5)	2,769.0 (66.6)
KTBs (%)	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)	2,864.0 (59.0)	2,549.8 (61.3)
Municipal bonds (%)	14.2 (0.4)	17.3 (0.4)	13.2 (0.2)	11.9 (0.3)	11.5 (0.2)	12.2 (0.3)	17.8 (0.4)	19.3 (0.5)
Non-financial special bonds (%)	615.8 (15.5)	637.8 (14.6)	570.4 (10.3)	568.7 (12.1)	603.8 (12.6)	481.8 (10.7)	515.1 (10.6)	365.4 (8.8)
Financial special bonds (%)	156.2 (3.9)	138.9 (3.2)	127.3 (2.3)	123.0 (2.6)	110.6 (2.3)	113.1 (2.5)	149.5 (3.1)	153.0 (3.7)
Corporate bonds (%)	121.7 (3.1)	143.4 (3.3)	153.1 (2.8)	153.1 (3.3)	163.4 (3.4)	164.1 (3.6)	295.6 (6.1)	282.9 (6.8)
General Corporate bonds (%)	262.7 (6.6)	234.2 (5.3)	239.3 (4.3)	284.7 (6.1)	357.3 (7.5)	445.1 (9.8)	499.9 (10.3)	567.7 (13.7)
General Corporate bonds (%)	95.4 (2.4)	73.9 (1.7)	79.6 (1.4)	83.0 (1.8)	102.2 (2.1)	141.9 (3.1)	158.5 (7.0)	182.1 (4.4)
Financial Institution bonds (%)	166.4 (4.2)	159.5 (3.6)	159.1 (2.9)	200.7 (4.3)	253.0 (5.3)	301.4 (6.7)	338.1 (7.0)	384.0 (9.2)
Total	3,973.5	4,383.2	5,548.1	4,687.8	4,787.4	4,520.7	4,852.2	4,157.4

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	'14	'15	'16	'17	'18	'19	'20	'21
Gov't bonds	570.8	590.0	763.8	575.6	553.0	480.3	418.8	299.1
KTBs	607.2	630.0	762.3	582.2	488.0	445.4	394.1	302.2
Municipal bonds	73.0	81.8	61.8	56.7	55.1	57.2	71.5	69.1
MSBs	346.0	350.2	338.7	332.9	351.8	292.1	323.5	260.4
Non-financial special bonds	47.2	44.7	40.4	38.5	35.6	36.4	44.0	42.5
Financial special bonds	140.5	101.4	102.3	102.4	102.1	96.9	142.0	130.3
Corporate bonds	75.2	65.6	66.2	74.6	85.8	95.1	97.9	101.6
General Corporate bonds	43.2	33.8	37.6	39.5	46.5	58.1	58.7	62.1
Financial Institution bonds	130.3	115.9	106.8	117.7	130.5	135.8	141.2	145.2
Total	273.1	281.5	347.2	282.6	278.3	248.1	236.9	186.4

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
'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 (%)	985,276 (79.7)	627 (0.0)	0 (0.0)	250,611 (20.3)	1,236,514 (100)
'20 (%)	1,217,542 (81.1)	726 (0.0)	0 (0.0)	282,657 (18.8)	1,500,925 (100)
'21. 1Q (%)	1,354,448 (79.2)	724 (0.0)	0 (0.0)	353,943 (20.7)	1,709,114 (100.0)
'21. 2Q (%)	1,461,755 (77.4)	476 (0.0)	0 (0.0)	427,499 (22.6)	1,889,679 (100.0)
'21. 3Q (%)	1,547,428 (76.0)	505 (0.0)	0 (0.0)	488,203 (24.0)	2,036,135 (100.0)
'21. 4Q (%)	1,640,857 (76.7)	506 (0.0)	0 (0.0)	498,784 (23.3)	2,140,147 (100.0)

* Source : FSS

Korea Treasury Bonds 2021

First edition March 2022

Publisher Ministry of Economy and Finance

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Publication registration No 11-1051000-000417-10

Printing SAMIL Planning