

# Financial Markets: Part II

BUSS254 Investments

Prof. Ji-Woong Chung

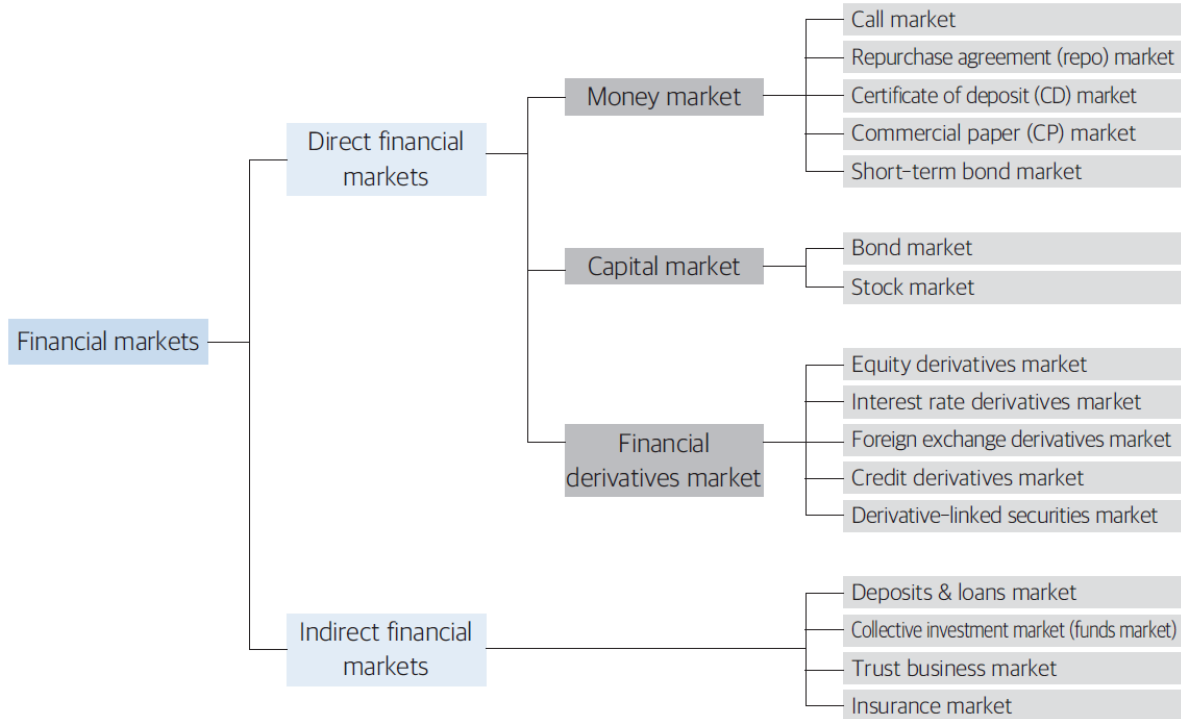
## Lecture Outline

- Money markets: Call, Repo, CD, CP, etc.
- Capital markets: Bond, Equity
- Derivatives markets: Futures, options etc.
- Trading mechanisms
- Investment Companies
- Reading: BKM Ch. 1 and 2, “Financial Markets in Korea” Bank of Korea (2022)

## Capital Markets

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## Financial Instruments



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## Capital Markets

- Money market instruments include short-term, marketable, liquid, low-risk debt securities.
- Capital markets, in contrast, include longer term and riskier securities.
- Securities in the capital market are much more diverse than those found within the money market.
  - Bond market: longer term borrowing or debt instruments, fixed-income capital market
  - Stock market: corporate ownership is traded

## Capital Markets: Size in Korea

Table 13		Capital market size <sup>1)</sup>										Units: trillion won, %
		1990		2000		2010		2020		2021.6		
		Volume	Share	Volume	Share	Volume	Share	Volume	Share	Volume	Share	
	Bonds <sup>2)</sup>	35.0	100.0	423.6	100.0	1,161.2	100.0	2,209.9	100.0	2,338.7	100.0	
	Government bonds	3.1	8.9	73.3	17.3	362.6	31.2	841.1	38.1	925.6	39.6	
	Municipal bonds	1.1	3.0	9.8	2.3	15.8	1.4	24.7	1.1	25.8	1.1	
	Special bonds	2.1	6.1	97.2	22.9	204.2	17.6	218.5	9.9	219.5	9.4	
	Monetary Stabilization Bonds	0	0	66.4	15.7	122.4	10.5	128.1	5.8	118.1	5.0	
	Financial bonds	6.6	18.9	49.1	11.6	217.3	18.7	494.9	22.4	512.3	21.9	
	Corporate bonds	22.1	63.0	127.9	30.2	190.6	16.4	310.6	14.1	335.0	14.3	
	Asset-backed securities	0	0	0	0	48.3	4.2	192.0	8.7	202.4	8.7	
	Stocks <sup>3)</sup>	79.0	100.0	215.2	100.0	1,239.9	100.0	2,366.1	100.0	2,738.4	100.0	
	KOSPI	79.0	100.0	186.2	86.5	1,141.9	92.1	1,980.5	83.7	2,307.6	84.3	
	KOSDAQ	-	-	29.0	13.5	98.0	7.9	385.6	16.3	430.9	15.7	
	Total	114.0	-	638.8	-	2,401.1	-	4,576.0	-	5,077.1	-	

## Bond Market: Types

- **Government & Agency Bonds**

- **U.S. Treasury Bonds** – e.g., **10-Year Treasury Note** (widely used as a benchmark rate).
- **UK Gilts** – e.g., **30-Year Gilt** (long-term government bond).

- **Korea Treasury Bonds (KTBs)** – e.g., **3-Year KTB** (actively traded in Korean markets).
- **Foreign Exchange Stabilization Fund Bonds** – Issued by Korea to **manage FX reserves**.
- **Municipal Bonds**
  - **New York City General Obligation Bonds** – Funds public projects like schools, bridges.
- **Corporate Bonds**
  - **Apple Inc. Bonds** – Issued for corporate expansion and share buybacks.
  - **Samsung Electronics Bonds** – Used for R&D and investment in semiconductor production.
- **Financial Bonds**
  - **JP Morgan Chase Bonds** – Bank-issued bonds for liquidity management.
  - **Korea Development Bank (KDB) Bonds** – Supports industrial development.
- **Special Bonds**
  - **Monetary Stabilization Bonds (MSBs)** – Issued by **Bank of Korea (BOK)** for monetary policy.
  - **KEPCO Bonds** – Issued by **Korea Electric Power Corporation** to finance energy projects.

## **Bond Market: Types**

- **By Market**
  - **Domestic Bonds – Japan Government Bonds (JGBs)** issued in yen.
  - **International Bonds**
    - \* **Eurobonds – Toyota Eurobond** (denominated in USD, issued outside Japan).

\* **Foreign Bonds – Samurai Bonds** (issued in Japan by foreign entities).

- **By Security & Guarantee**

- **Secured Bonds – Mortgage-Backed Securities (MBS)** (e.g., **Fannie Mae Bonds**).
- **Unsecured Bonds – Tesla Senior Unsecured Notes.**
- **Guaranteed Bonds – Korea Deposit Insurance Corporation (KDIC) Bonds.**

- **By Interest Rate & Structure**

- **Fixed-Rate Bonds – 10-Year U.S. Treasury Bond** (pays a fixed yield).
- **Floating-Rate Bonds – SOFR-linked Corporate Bonds.**
- **Zero-Coupon Bonds – STRIPS (Separate Trading of Registered Interest and Principal Securities).**
- **Coupon Bonds – Coca-Cola Corporate Bonds** (pays semi-annual interest).
- **Convertible Bonds – Tesla Convertible Bonds** (convertible into Tesla stock).
- **Bonds with Warrants – Alibaba Bonds with Stock Warrants.**
- **Exchangeable Bonds – LVMH Exchangeable Bonds** (convertible into shares of its subsidiary).

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## **Bond Market: Monetary Stabilization Bonds**

- Issued by BOK to adjust monetary liquidity
- One of the major tools for open market operations
- 91-day (discount), 1-, 2-, and 3-year (coupon)



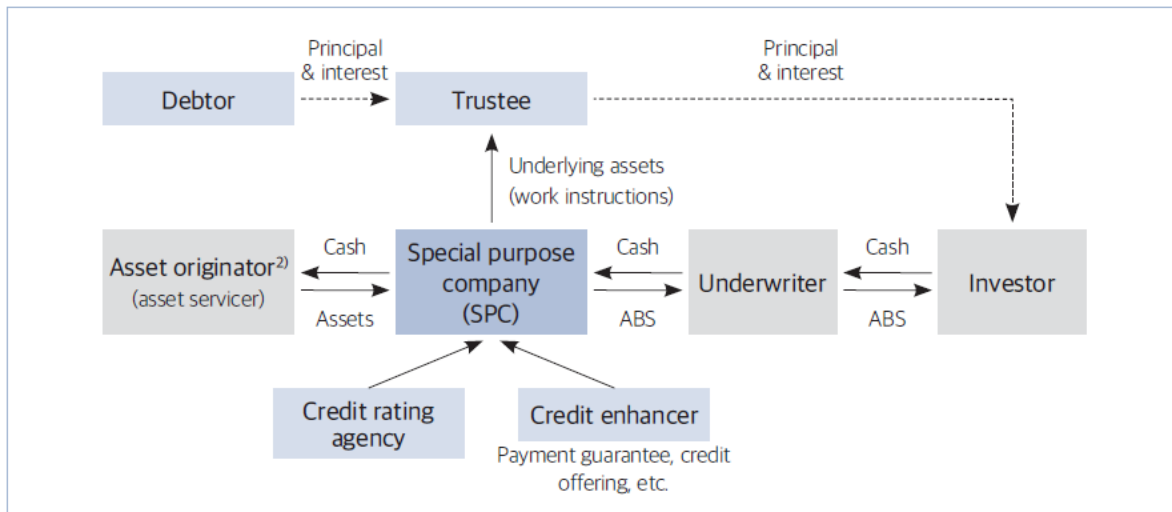
## Bond Market: Asset-Backed Securities

- Securities created by pooling together typically *illiquid* assets and then “securitizing” them into marketable securities.
  - **Underlying Asset Pools:** Common types of assets used to create ABS include:
    - **Mortgages (MBS):** Home loans
    - **Loans (CLO):** Corporate loans
    - **Bonds (CBO):** Corporate bonds
    - **Credit Card Receivables (CARD):** Outstanding balances on credit cards
  - Transfer of ownership of the underlying assets from the asset originator to a special purpose company/vehicle
  - **2008 Financial Crisis Connection:** Complex and poorly understood ABS, particularly those backed by subprime mortgages, played a significant role in the 2008 financial crisis. This highlighted risks associated with ABS, including:
    - **Complexity:** Difficult to assess the true risk of ABS due to their intricate structure.
    - **Opacity:** Lack of transparency in the underlying asset pools.
    - **Incentive Problems:** Originators had weak incentives to properly vet the loans.
-

## Bond Market (cont'd)

Figure 21

Structure of asset securitization<sup>1)</sup>



Note: 1) Solid lines show cash flows in connection with the issuance of ABSs. Dotted lines show the flows where principal and interest are collected after the issuance of an ABS.

2) Asset originator sells the asset to the SPC only on paper, and manages the asset on its own.

- **Securitization Process** involves:
  - **Asset Transfer:** Transferring ownership of the underlying assets from the originator (e.g., a bank) to a Special Purpose Vehicle (SPV) or company.
  - **SPV:** Isolates the assets, bankruptcy remoteness, and allows the SPV to issue new securities backed by those assets.
  - **Creating Securities:** SPV creates and sells new securities (the ABS) to investors. These securities derive their value from the cash flows generated by the underlying assets.

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## Bond Market: Covered Bonds & Foreign Exchange Stabilization Fund Bond

### Covered Bonds

- **Similar to Asset-Backed Securities (ABS)** but with key differences:
  - **Cover pool remains on the issuer's balance sheet** (unlike ABS, where assets are transferred to an SPV).

- Investors have **dual recourse**:
  - \* First, to the issuing financial institution.
  - \* Second, to the **underlying asset pool (cover pool)** in case of default.
- Functions as a **corporate bond** issued by financial institutions, with an **extra layer of protection** for investors.
- **More common in Europe**, especially in **Germany (Pfandbriefe)**, but also in **Denmark, France, and Spain**.

#### Foreign Exchange Stabilization Fund Bonds (FESFBs)

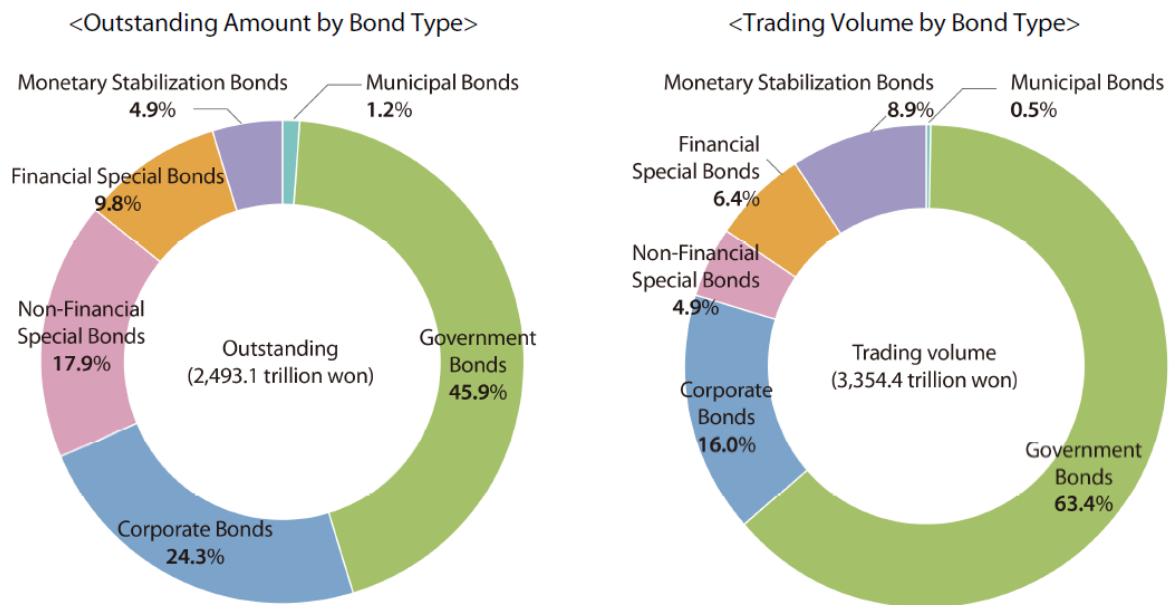
- **Foreign currency-denominated bonds** issued by the **Korean government** in international bond markets.
- **Objectives**:
  - Establishes **benchmark interest rates** for Korean bonds in global markets.
  - **Supports foreign exchange stability** by securing external financing.
  - Helps manage **Korea's foreign exchange reserves** effectively.
- Typically issued in **USD, EUR, or JPY**, providing a reference for Korean corporate and sovereign issuers abroad.

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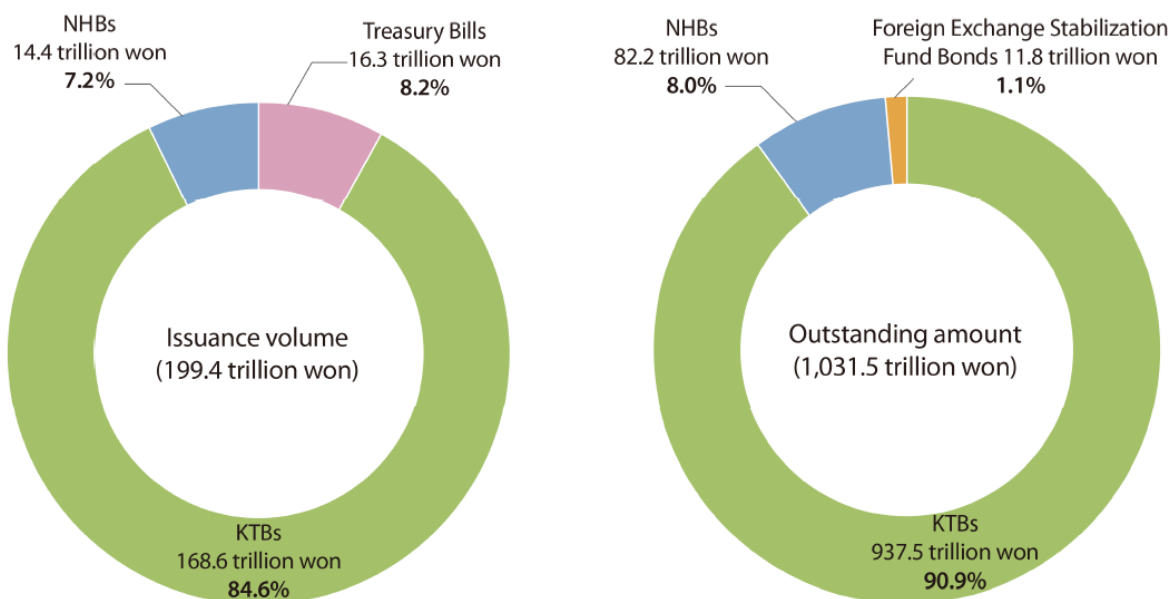


## Bond Market: Statistics in Korea

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



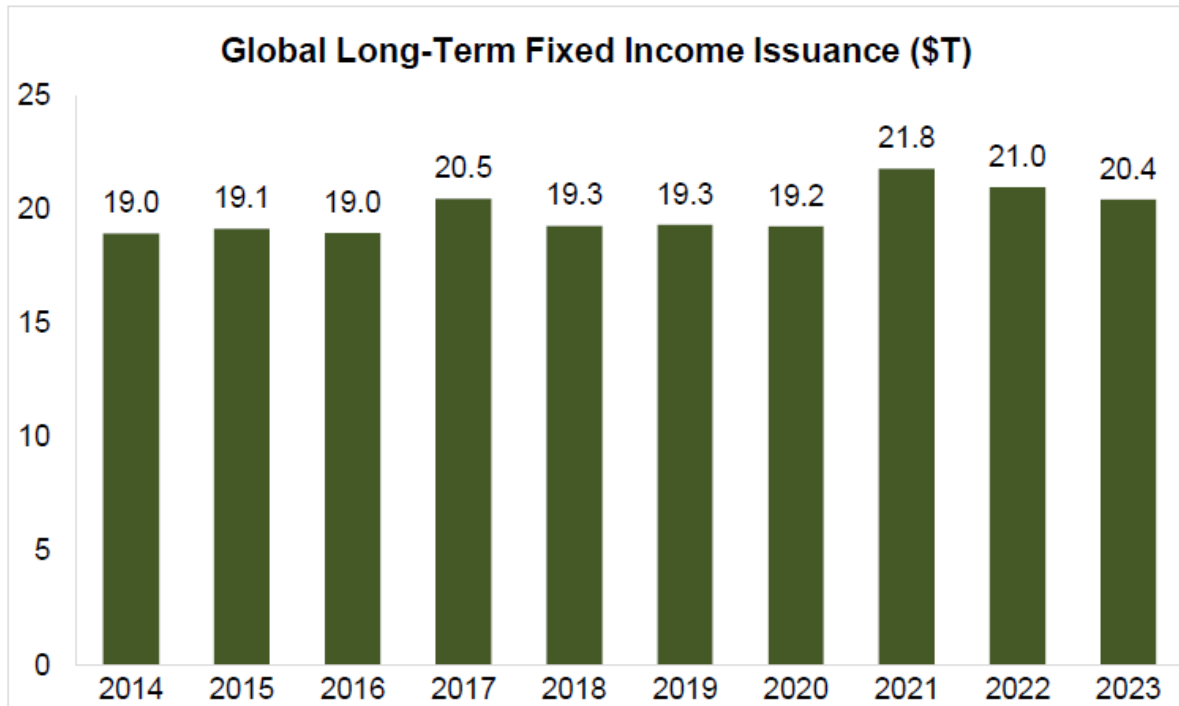
[Figure 1-2] Issuance Volume and Outstanding by Type (as of the end of the 2022)



Source: [Ministry of Economy and Finance](#)

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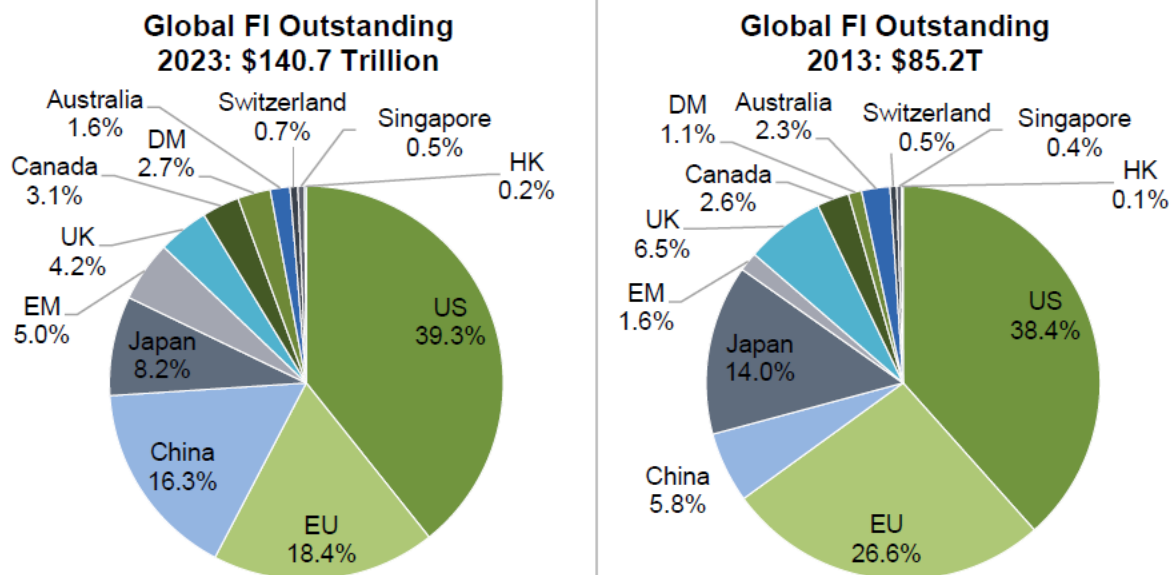
## Bond Markets: Global



Source: Capital Market Factbook - SIFMA, 2024

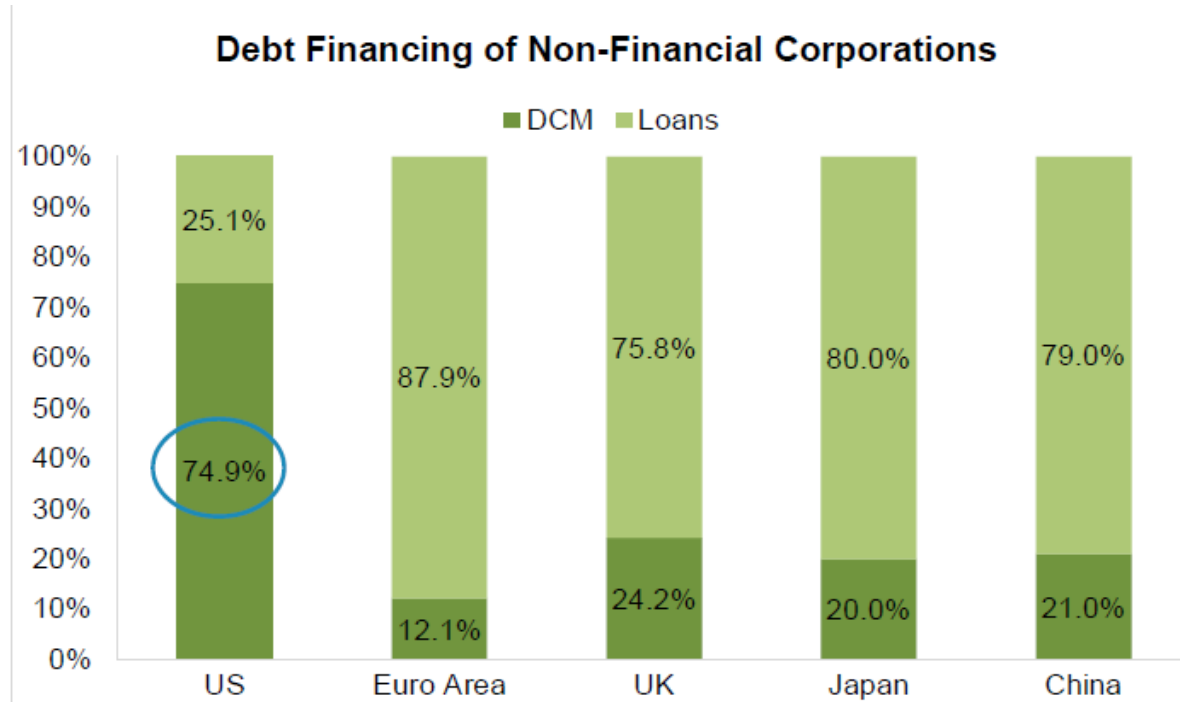
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## Bond Markets: Global (cont'd)



Source: Capital Market Factbook - SIFMA, 2024

## Bond Markets: Global (cont'd)



Source: Capital Market Factbook - SIFMA, 2024

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## Stock Markets

### Types of Stocks

- **Common Stocks**
  - Represent **ownership in a company** with a **claim on earnings and assets**.
  - Shareholders have **voting rights** in corporate decisions.
- **Preferred Stocks**
  - Receive **dividends before common stockholders**.
  - Typically have **limited or no voting rights**.
  - May include **special features**:

- \* **Redeemable Preferred Shares** – Can be converted to **cash at a set price**.
- \* **Convertible Preferred Shares** – Can be converted into **common stock**.
- **Residual Claims in Liquidation**
  - In case of **bankruptcy**, common and preferred stockholders receive **remaining assets only after debt holders are paid**.

### Share Classes & Voting Rights

- Companies can issue **multiple share classes** with **different voting rights or privileges**.
- Used to **preserve control** by founders or key shareholders.
- **Introduced in Korea in November 2023**, allowing companies to issue **dual-class shares**.
  - Example: **Google (Alphabet) Class A, B, and C shares** with varying voting rights.

### Stock Market Trading & Issuance

- **Primary Market (New Issuance)**
  - **Private Placements** – Shares sold to select investors (e.g., institutions, venture capital).
  - **Initial Public Offering (IPO)** – A company's first public stock sale.
  - **Seasoned Equity Offering (SEO)** – Additional stock issuance by a publicly traded company.
- **Secondary Market (Trading)**
  - Stocks are **bought and sold on exchanges or OTC markets**.
  - Major stock exchanges:
    - \* **New York Stock Exchange (NYSE), NASDAQ, Korea Exchange (KRX)**.
    - \* OTC markets handle **smaller or less regulated securities**.

## Stock Markets: Exchanges

### Korea Exchange (KRX)

- **KOSPI (Korea Composite Stock Price Index)**: Established in **1956**, serving as the main board for large-cap companies.
- **KOSDAQ (Korea Securities Dealers Automated Quotations)**: Launched in **1996**, focusing on technology and growth-oriented firms.
- **KONEX (Korea New Exchange)**: Introduced in **2013** to facilitate funding for Small and Medium Enterprises (SMEs).
- **K-OTC (Korea Over-the-Counter Market)**: Started in **2014**, providing a platform for trading **unlisted stocks**.

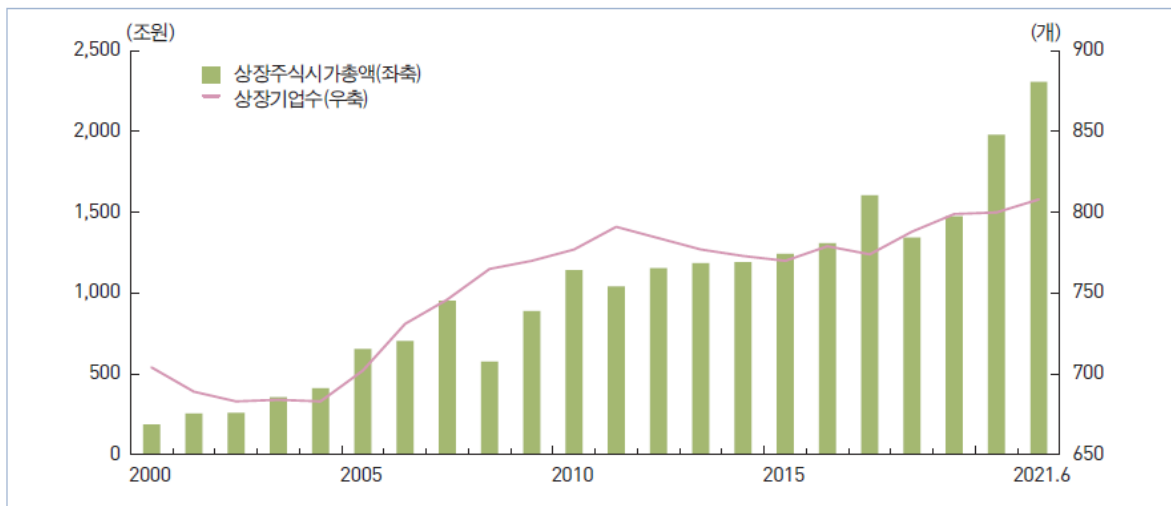
### Nextrade (NXT) – Korea's New Alternative Exchange (2025)

- **Extended Trading Hours**: **8:00 a.m. – 8:00 p.m.** (KRX: 9:00 a.m. – 3:30 p.m.).
  - **Lower Transaction Fees**: **20–40% cheaper** than KRX.
  - **Smart Order Routing (SOR)**: Brokers auto-direct orders for best prices.
  - **New Order Types**: Includes **mid-price orders** and **stop-limit orders**.
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## Stock Markets: Trends

그림 3-34

유가증권시장 시가총액 및 상장기업 수<sup>1)</sup>

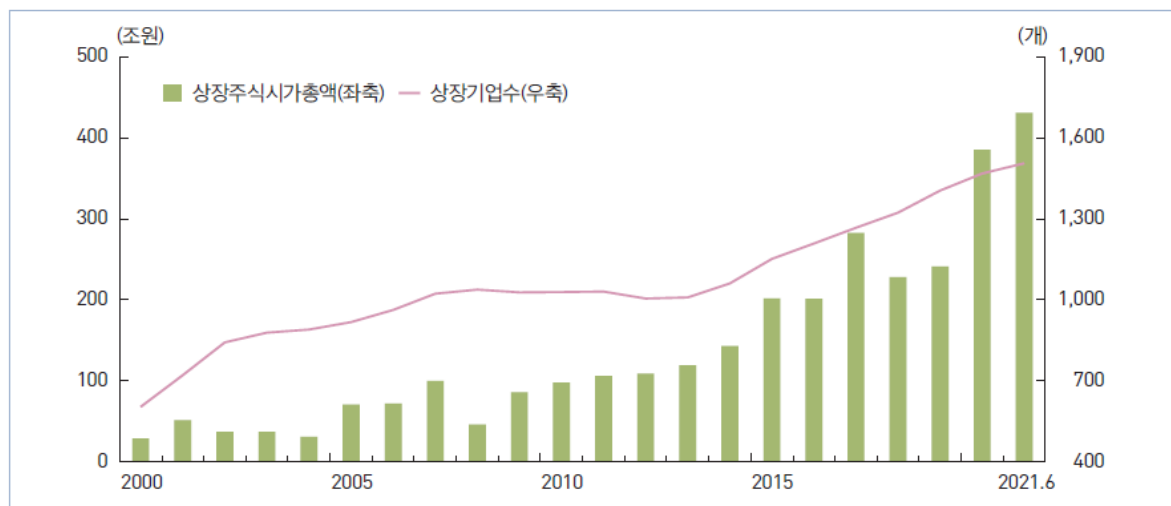


주 : 1) 기말 기준, 2021년은 6월말 기준

자료 : 한국거래소

그림 3-38

코스닥시장 상장주식 시가총액 및 상장기업 수<sup>1)</sup>



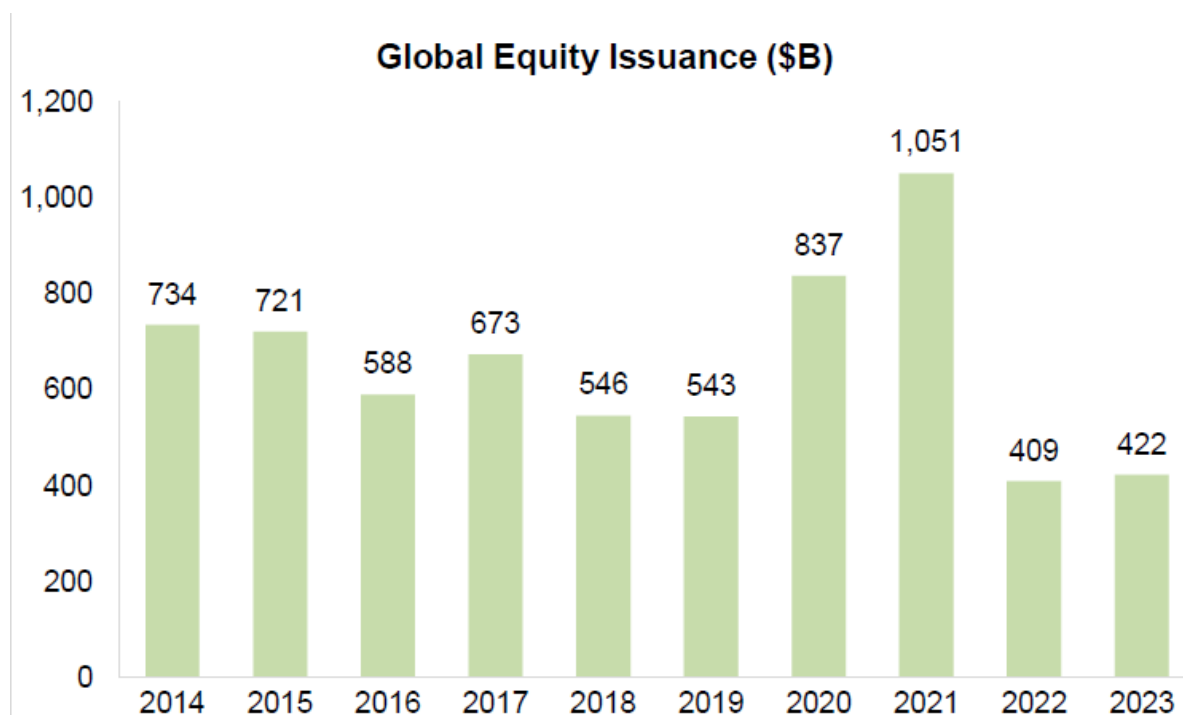
주 : 1) 기말 기준, 2021년은 6월말 기준

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## Stock Markets: Performance

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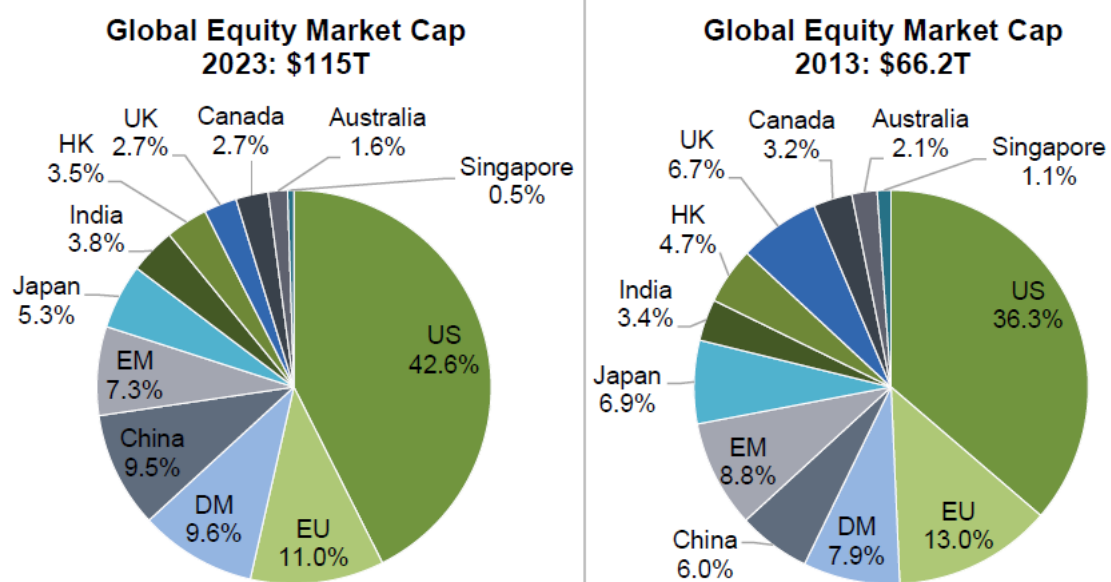
## Stock Markets: Global Issuance



Source: Capital Market Factbook - SIFMA, 2024

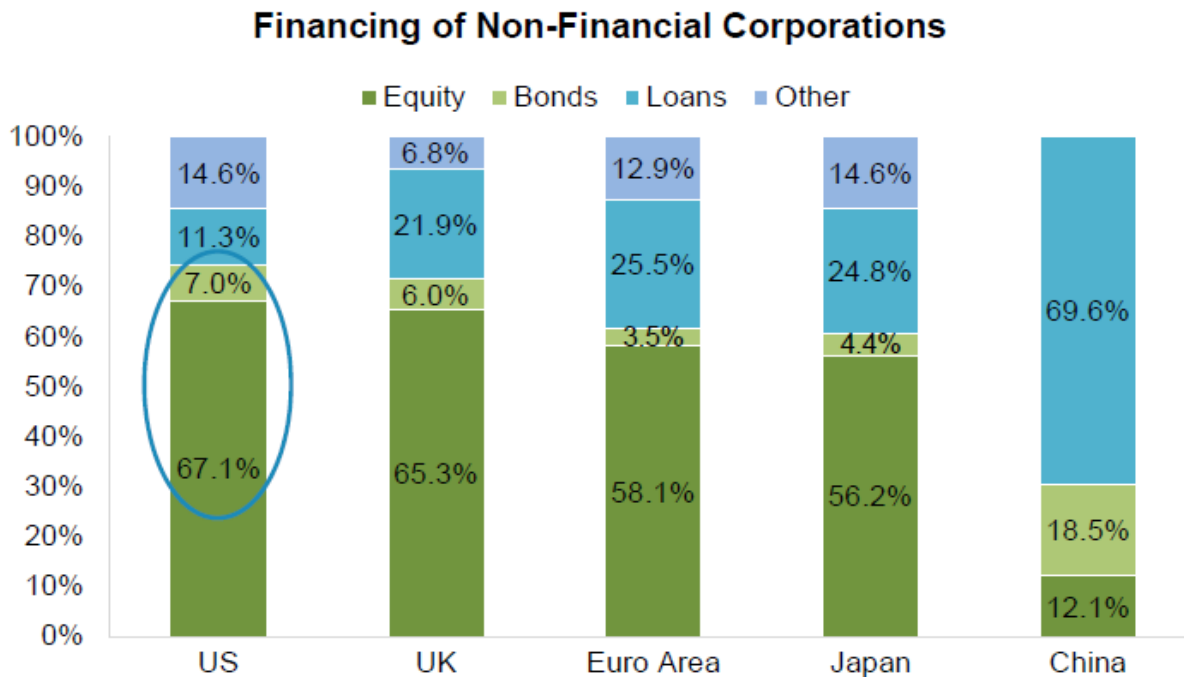


## Stock Markets: Market Capitalization



Source: Capital Market Factbook - SIFMA, 2024

## Stock Markets: Financing by Country



Source: Capital Market Factbook - SIFMA, 2023

## Stock Markets: Cross-listing

- The practice of listing a company's equity shares on one or more foreign exchanges.
- The number of cross-listed firms has grown rapidly, now representing about 10% of publicly traded companies worldwide.
- The primary motivation for cross-listing is to reduce the firm's cost of capital by increasing investor access and improving liquidity.
- Types of Cross-listing
  1. Direct Listing
    - A company lists its shares on a foreign exchange without issuing new equity.
    - Requires compliance with the listing regulations of the foreign exchange.
  2. Depositary Receipts (DRs)
    - A financial instrument representing shares of a foreign company, held in custody by a domestic bank.
    - Enables investors to trade foreign stocks more easily on their home market.

- Types of Depositary Receipts: American Depositary Receipts (ADRs), European Depositary Receipts (EDRs), Global Depositary Receipts (GDRs), Indian Depositary Receipts (IDRs)
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## **Stock Market Indices**

- A hypothetical portfolio representing a segment of the financial market.
  - Used as a barometer of market performance and an investment benchmark.
  - Key Uses of Stock Market Indices:
    - Market performance measurement: Indicates overall stock market trends.
    - Performance benchmarking: Compares the returns of money managers and funds.
    - Passive investment strategies: Forms the basis for index funds, ETFs, and passive portfolio management.
    - Foundation for derivatives: Many futures, options, and swaps are based on stock indices.
  - Types of Stock Market Indices: Indices vary based on:
    - Market representation: Sector-based, regional, size-based indices, etc.
    - Weighting schemes: Market-cap weighted, price-weighted, equal-weighted, etc.
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## **Stock Market Indices (cont'd)**

- Price-Weighted Index
  - Each company's stock is weighted by its price per share, and the index is an average of the share prices of all the companies.
  - Greater weight is given to stocks with higher prices.
  - Initially, this is similar to investing in equal numbers of shares of each stock, but weighting changes over time due to stock splits and price fluctuations.
  - Examples: DJIA, Nikkei 225.
- Market Value-Weighted Index
  - Individual components are weighted according to their relative total market capitalization.

- Most indices use free-floating market capitalization, meaning they consider only shares available for public trading rather than total market capitalization.
- Companies with higher market capitalization receive a higher weighting in the index.
- Investing in proportion to market value (buy-and-hold).
- Examples: S&P 500, NASDAQ, KOSPI, KOSDAQ.
- Equal-Weighted Index
  - Each stock is assigned an equal weight, meaning the index value is the simple arithmetic average of stock returns.
  - Investing equal dollar values in each stock requires continuous rebalancing.
  - Examples: S&P 500 Equal Weight, MSCI Equal Weight.

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### Stock Market Indices: Example

Stock	P1	Q1	P2 (No split)	Q2 (No split)	P2 (Split)	Q2 (Split)
A	10	40	15	40	15	40\$
B	50	80	50	80	25	160\$
C	140	50	150	50	150	50\$

### *Price-Weighted Index*

- **Day 1:**  $(10 + 50 + 140)/3 = 66.67$
- **Day 2 - No split:**  $(15 + 50 + 150)/3 = 71.67$
- **Day 2 - Split:**
  - Find  $d$  such that  $(10 + 25 + 140)/d = 66.67$ , solving for  $d$  gives  $d = 2.625$ .
  - Then,  $(15 + 25 + 150)/2.625 = 72.38$
- $d$  is called the **Dow Divisor**, which is continuously adjusted for corporate actions such as dividend payments and stock splits.
- As of December 2021, the divisor for DJIA is 0.15172752595384.
- With a stock split, the change in the index does **not** represent the actual investment outcome of holding one share of each stock:  $72.38/66.67 = 8.57\% \neq 71.67/66.67 = 7.5\%$

## Stock Market Indices: Example (cont'd)

Stock	P1	Q1	P2 (No split)	Q2 (No split)	P2 (Split)	Q2 (Split)
A	10	40	15	40	15	40\$
B	50	80	50	80	25	160\$
C	140	50	150	50	150	50\$

### *Market Value-Weighted Index*

- **Day 1:**  $(400 + 4,000 + 7,000) = 11,400$
- **Day 2:**  $(600 + 4,000 + 7,500) = 12,100$ 
  - Using **Day 1 as the base year** (e.g., setting it equal to 100)
  - **Day 2 index:**  $12,100/11,400 \times 100 = 106.14$
- If you invest in proportion to market value (i.e., 3.50% in A, 35.07% in B, and 61.40% in C), the return is:  $3.50\% \times (600/400 - 1) + 35.07\% \times (4,000/4,000 - 1) + 61.40\% \times (7,500/7,000 - 1) = 6.14\%$

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## Stock Market Indices (cont'd)

Stock	P1	Q1	P2 (No split)	Q2 (No split)	P2 (Split)	Q2 (Split)
A	10	40	15	40	15	40\$
B	50	80	50	80	25	160\$
C	140	50	150	50	150	50\$

### *Equal-Weighted Index*

- **Day 1:** Base year, set it equal to 100.
- **Day 2:**  $\left(\frac{1}{3} \times \frac{600}{400} + \frac{1}{3} \times \frac{4,000}{4,000} + \frac{1}{3} \times \frac{7,500}{7,000}\right) \times 100 = 119.04$
- If you invest an equal amount (e.g., 700) in each stock, meaning 70 shares of A, 14 shares of B, and 5 shares of C, the return is:  $\frac{1}{3} \times \left(\frac{600}{400} - 1\right) + \frac{1}{3} \times \left(\frac{4,000}{4,000} - 1\right) + \frac{1}{3} \times \left(\frac{7,500}{7,000} - 1\right) = 19.04\%$
- When using **market-value weighting**, large-cap stocks are overweighted.
- When using **equal weighting**, small-cap stocks are overweighted.

## Bond Market Indices

- Bond market indices track the performance of a portfolio of bonds, serving as benchmarks for bond investors.
    - Investors use bond indices to assess interest rate movements, credit risk, and overall bond market performance.
  - Unlike stock indices, which rely on frequently traded prices, bond indices face challenges due to infrequent trading and pricing difficulties.
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## Well-Known Bond Market Indices

- **Bloomberg Barclays Bond Indices:**
    - Covers government, corporate, and municipal bonds across different maturities and risk levels.
    - Examples: Bloomberg U.S. Aggregate Bond Index, Bloomberg Global Aggregate Index.
  - **ICE BofA (Merrill Lynch) Bond Indices:**
    - Tracks corporate and government bonds, commonly used for high-yield and investment-grade bonds.
    - Example: ICE BofA U.S. High Yield Index.
  - **FTSE Russell Bond Indices (Citi):**
    - Offers broad and sector-specific bond benchmarks.
    - Example: FTSE World Government Bond Index (WGBI).
  - **S&P Dow Jones Fixed Income Indices:**
    - Includes indices such as the S&P U.S. Treasury Bond Index and S&P Muni Bond Index.
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## Challenges in Bond Market Indices

- **Infrequent Trading:**

- Unlike stocks, bonds are often traded over-the-counter (OTC) and do not have centralized exchanges.
- Many bonds are bought and held by institutional investors, resulting in fewer transactions.

- **Price Estimation Issues:**

- Since many bonds do not trade daily, index providers estimate bond prices using models, dealer quotes, or matrix pricing.
- Matrix pricing estimates a bond's value based on yields of similar bonds.

- **Return Calculation Complexity:**

- Unlike stocks, bond returns depend on interest payments, price changes, and reinvestment of coupon payments.
  - Many bonds have embedded options (callable, putable), making valuation more complex.
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## How Are Bond Market Indices Computed?

### Step 1: Selection of Bonds

- The index provider selects a set of bonds based on criteria such as:
  - Issuer (government, corporate, municipal)
  - Credit rating (investment grade, high yield)
  - Maturity (short-term, medium-term, long-term)
  - Currency denomination (USD, EUR, JPY, etc.)

### Step 2: Weighting Methodology

- **Market Value-Weighted (Most Common)**
  - Bonds with larger outstanding amounts have greater influence on the index.

- Example: Bloomberg U.S. Aggregate Bond Index.
- **Equal-Weighted**
  - All bonds have the same weight, regardless of their market size.
  - Less common but used in some specialized indices.
- **Duration-Weighted**
  - Adjusts weights based on a bond's sensitivity to interest rate changes.

### Step 3: Price and Yield Estimation

- Since bonds do not always trade daily, prices are estimated using:
  - Last trade prices (if available).
  - Dealer quotes from financial institutions.
  - Matrix pricing (estimating prices based on similar bonds).

### Step 4: Return Calculation

- **Total Return Formula** (includes both price changes and interest income):

$$\text{Total Return} = \frac{P_{\text{end}} - P_{\text{start}} + C}{P_{\text{start}}}$$

where:

- $P_{\text{start}}$  = Bond price at the beginning of the period.
- $P_{\text{end}}$  = Bond price at the end of the period.
- $C$  = Coupon payment received.

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### Example: Bloomberg U.S. Aggregate Bond Index

- **Composition:**
  - Includes U.S. government bonds, mortgage-backed securities, and corporate bonds.
  - Weighted by market capitalization.
- **Performance Calculation Example:**
  - Suppose the index starts at **100**.
  - A corporate bond in the index has:



- \* Initial price: 98
- \* Final price: 100
- \* Coupon payment: 3
- **Total Return Calculation:**

$$\left( \frac{100 - 98 + 3}{98} \right) \times 100 = 5.10\%$$

- If the overall index return averages 5%, the index value would increase from **100** to **105**.

## Derivatives Markets

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### Derivatives Markets

- **Financial contracts whose value is derived from an underlying asset.**
  - Used for **hedging, speculation, and arbitrage.**
  - Traded in two main markets:
    - **Exchange-traded derivatives (ETDs):** Standardized contracts traded on formal exchanges (e.g., CME, KRX).
    - **Over-the-counter (OTC) derivatives:** Customized contracts traded directly between parties; OTC markets are much larger.
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### Types of Derivatives

#### 1. Forwards & Futures:

- An agreement to buy/sell an underlying asset at a specified future date for a pre-determined price.
- **Forwards:** Custom contracts traded OTC.
- **Futures:** Standardized contracts traded on exchanges (e.g., S&P 500 futures, KOSPI 200 futures).

#### 2. Options:

- **Buyers have the right, but not the obligation,** to buy (call option) or sell (put option) an asset at a predetermined price before or at expiration.

- **European options:** Exercisable only at expiration.
- **American options:** Exercisable anytime before expiration.
- **Warrants:** Long-term options issued by a company.

### 3. Swaps:

- Contracts in which two parties **exchange cash flows or financial instruments** over time.
- Common types:
  - **Interest rate swaps:** Exchange of fixed-rate and floating-rate payments.
  - **Currency swaps:** Exchange of payments in different currencies.
  - **Credit default swaps (CDS):** A form of insurance against bond default.

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### Derivatives Market in Korea: Historical Development

Year	Event
<b>May 1996</b>	<b>KOSPI 200 futures</b> introduced, marking the start of Korea's exchange-traded derivatives market.
<b>July 1997</b>	<b>KOSPI 200 options</b> launched, quickly becoming one of the most actively traded derivatives globally.
<b>January 2001</b>	<b>KOSDAQ 50 futures</b> introduced (renamed <b>KOSDAQ 150 futures</b> in 2015).
<b>November 2001</b>	<b>KOSDAQ 50 options</b> launched, providing additional hedging and speculation opportunities.
<b>January 2002</b>	<b>Single stock options</b> introduced, allowing investors to trade options on individual stocks.
<b>May 2008</b>	<b>Single stock futures</b> launched, enabling futures trading on specific company stocks.
<b>March 2018</b>	<b>Mini KOSPI 200 futures</b> introduced (1/5 the size of KOSPI 200 futures contracts).
<b>March 2018</b>	<b>KRX 200 futures</b> introduced as an expanded market index derivative.

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### Additional Insights: Global vs. Korean Derivatives Market

- **KOSPI 200 options** were at one point **the world's most actively traded derivative contract** due to heavy retail investor participation (2000s–Early 2010s).

- Korea's derivatives market has evolved to **reduce excessive speculation** by implementing **trading restrictions and transaction taxes** (2014).
  - **Compared to global derivatives markets:**
    - **U.S. & Europe:** Heavily institutional participation, with a focus on hedging.
    - **Korea & China:** Historically, high retail investor involvement.
    - **Emerging markets:** Increasing adoption of exchange-traded derivatives to develop capital markets.
- 

## **Example: How a Derivative Works**

### **Hedging with KOSPI 200 Futures**

- An institutional investor holds a **₩10 billion portfolio** tracking the **KOSPI 200 index**.
  - They fear a short-term market decline and **short 100 KOSPI 200 futures contracts** to hedge their position.
  - If the KOSPI 200 index drops by **5%**, their stock portfolio loses **₩500 million**, but their **short futures position gains ₩500 million**, offsetting the loss.
  - This strategy allows the investor to protect their portfolio **without selling their stocks**.
-

## Derivatives Markets: Futures

Table 23

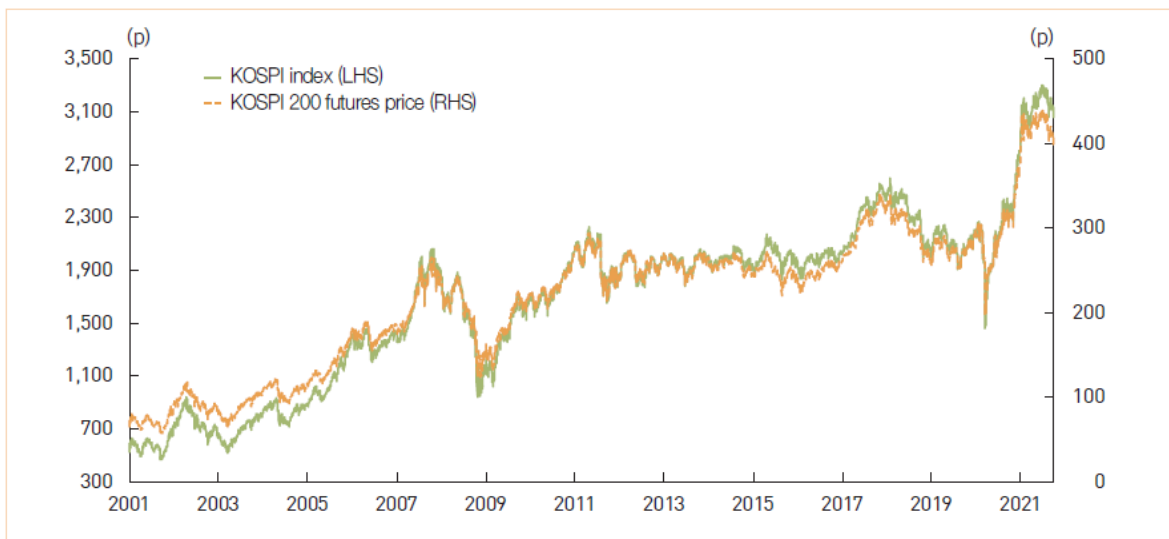
Comparison of KOSPI 200 and KOSDAQ 150 futures markets<sup>1)</sup>

	KOSPI 200 futures	KOSDAQ 150 futures
Contract size	KOSPI 200 futures price in points × KRW 250,000	KOSDAQ 150 futures price in points × KRW 10,000
Contract months	March, June, September, December	
Tick size	0.05 points	0.10 points
Tick value	KRW 12,500 (250,000×0.05)	KRW 1,000 (10,000×0.10)
Trading hours	09:00 to 15:45 (09:00 to 15:20 on last trading day)	
Last trading day	Second Thursday of contract month (or previous business day if a public holiday)	
Settlement method	Cash settlement	
Daily price limit	±8% (first phase), ±15% (second phase), ±20% (third phase) of base price	
Margin	Basic deposit: Different by investor type	
	Initial margin rate: 6.15% Maintenance margin ratio: 4.10%	Initial margin rate: 6.45% Maintenance margin ratio: 4.30%

## Derivatives Markets: KOSPI Futures vs. KOSPI

Figure 26

KOSPI 200 futures prices<sup>1)</sup> and KOSPI



Note: 1) Based on recent month contracts.

Source: Korea Exchange.

## Derivatives Markets: Other Countries

표 4-8

주요국 주가지수선물시장 개요

국 가	기초자산지수	개설시기	거래소
미 국	S&P500	1982년 4월	시카고상업거래소(CME)
영 국	FTSE100	1984년 5월	ICE Futures Europe
일 본	Nikkei225	1988년 9월	오사카거래소(OSE)
프 랑 스	CAC40	1988년 11월	Euronext-Paris
독 일	DAX30	1990년 11월	Eurex

표 4-17

주요국 주가지수옵션시장 개요

국 가	기초자산지수	개설시기	거래소
미 국	S&P100 S&P500	1983년 3월 1983년 7월	시카고옵션거래소(CBOE)
영 국	FTSE100	1984년 5월	Euronext-LIFFE
프 랑 스	CAC40	1988년 11월	Euronext-Paris
일 본	Nikkei225	1989년 6월	오사카거래소(OSE)
독 일	DAX30	1991년 8월	Eurex

## Derivatives Markets: Size

<b>(\$B)</b>	<b>Exchange Traded</b>	<b>Over-the-Counter</b>	<b>Total</b>
2009	67,416.4	603,893.3	671,309.7
2010	62,309.9	601,042.8	663,352.7
2011	53,692.9	647,807.0	701,499.9
2012	49,033.2	635,681.0	684,714.1
2013	57,459.4	710,092.3	767,551.7
2014	57,594.2	627,786.0	685,380.2
2015	63,485.8	492,536.2	556,022.0
2016	67,244.9	482,421.1	549,665.9
2017	80,984.1	531,911.1	612,895.1
2018	94,849.7	544,383.3	639,233.0
2019	95,812.8	558,512.7	654,325.5
2020	65,949.7	582,055.3	648,005.1
2021	80,091.8	598,416.0	678,507.7
2022	80,641.6	617,991.3	698,632.9
2023	87,170.5	667,058.3	754,228.8
Average	70,915.8	593,439.2	664,355.0
Y/Y Change	8.1%	7.9%	8.0%
5Y CAGR	-1.7%	4.1%	3.4%
10Y CAGR	4.3%	-0.6%	-0.2%

Source: Capital Market Factbook - SIFMA, 2024

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## **Derivatives Markets: Interest Rate Derivatives**

### **Interest Rate Futures**

- **CD Futures:** Introduced in **April 1999**, but **delisted in December 2007** due to low trading volumes.
- **3-Year KTB Futures:** Launched in **September 1999**, tracking Korean Treasury Bonds (KTBs).
- **MSB Futures:** Introduced in **December 2002**, but **delisted in February 2011**.

### **Interest Rate Swaps (IRS)**

- A **contract between two parties** to exchange interest payment obligations, typically **fixed-rate vs. floating-rate payments**.
- **Maturity:** Ranges from **3 months to 20 years**, with **1- to 5-year swaps** being the most actively traded.
- Developed as an **OTC market in 1999**, with **significant growth post-2005**, driven by increasing institutional demand.

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## **Derivatives Markets: Currency Derivatives**

### **Currency Swaps**

- A **contract where two parties exchange principal and interest payments** on loans denominated in different currencies.
- Used for **hedging currency risk** and **lowering financing costs**.
- **Maturity:** Typically **3 months to 20 years**, with **1- to 5-year swaps** being the most liquid.
- **First currency swap in Korea:** Conducted **OTC in September 1999**, marking the start of a growing swap market.



## Forward Contracts on Currency

- **Outright Forward:**

- A commitment to exchange a specific amount of currency at a **fixed rate on a future date**.
- Can be **deliverable** (physical exchange of currency) or **non-deliverable (NDF)** (cash-settled based on exchange rate differences).

- **Forward Exchange Swap:**

- A combination of a **spot transaction** and a **forward contract**, allowing investors to roll over foreign exchange exposure efficiently.
  - Commonly used for **corporate hedging and carry trade strategies**.
- 

## Derivatives Markets: Currency Derivatives

Table 30		Volumes of foreign exchange transactions by bank <sup>1)</sup>					Unit: billion dollar
Classification	2015	2016	2017	2018	2019	2020	H1.2021
Outright forwards	8.3	9.6	10.1	11.2	12.0	9.9	11.1
(NDF <sup>2)</sup> )	6.8	8.0	8.3	9.1	10.0	8.0	8.7
Forward exchange swaps	19.2	18.4	19.8	21.8	22.6	21.3	23.1

Notes: 1) Based on daily average trading volumes during the periods

2) Trading between foreign exchange banks in Korea and non-resident foreign investors.

Source: Bank of Korea.

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## Derivatives Markets: Credit Derivatives

### Credit Derivatives

- **Financial instruments that allow the separation and transfer of credit risk** from an underlying asset between a **protection buyer** and a **protection seller**.

- Used for **hedging credit exposure**, **enhancing yields**, and **speculating on credit risk**.
  - Requires **precise definitions** of:
    - **Credit events** (e.g., default, bankruptcy, credit downgrade).
    - **Timing of credit risk transfer**.
- 

## Types of Credit Derivatives

### 1. Credit Default Swap (CDS)

- A contract where the **protection seller** compensates the **protection buyer** if the reference entity experiences a credit event.
- Commonly used to hedge against **default risk** on bonds and loans.

### 2. Total Return Swap (TRS)

- A swap where one party **receives the total return** (price appreciation + interest/coupon payments) of an underlying credit asset, while the other **receives a fixed or floating payment**.
- Transfers **both credit risk and market risk** between counterparties.

### 3. Credit-Linked Notes (CLNs)

- A structured bond where the **principal repayment is contingent on the credit performance** of a reference entity.
- Equivalent to a **bond combined with a short CDS position**.
- Investors take on **credit risk in exchange for higher yields**.

### 4. Synthetic Collateralized Debt Obligation (Synthetic CDO)

- A structured product that pools **CDS contracts instead of actual bonds or loans**.
  - Investors **gain exposure to diversified credit risks** while earning returns based on the underlying CDS premiums.
  - Used for **leveraging credit exposure without direct asset ownership**
-

## Derivatives Markets: CDS and TRS

Figure 30

CDS transaction structure

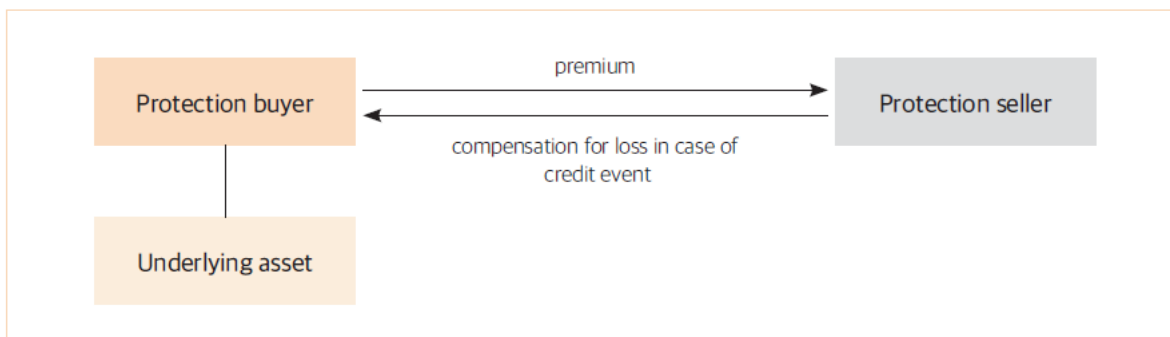
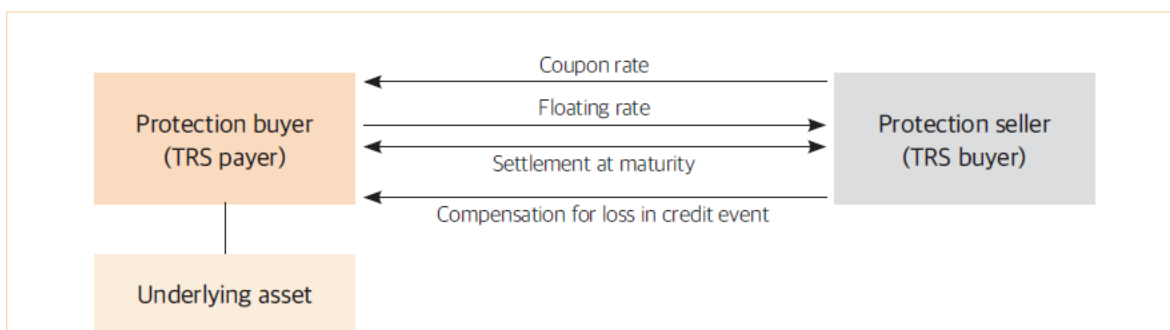


Figure 31

TRS transaction structure



## Derivatives Markets: CLN and CDO

Figure 32

CLN transaction structure

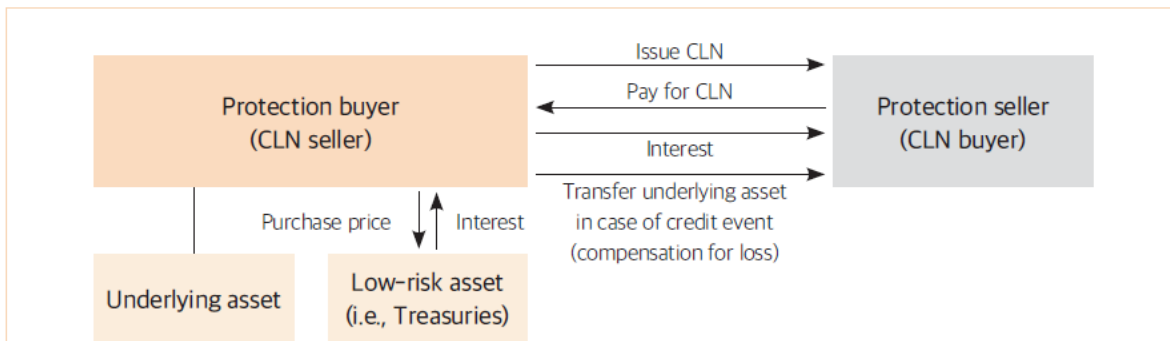
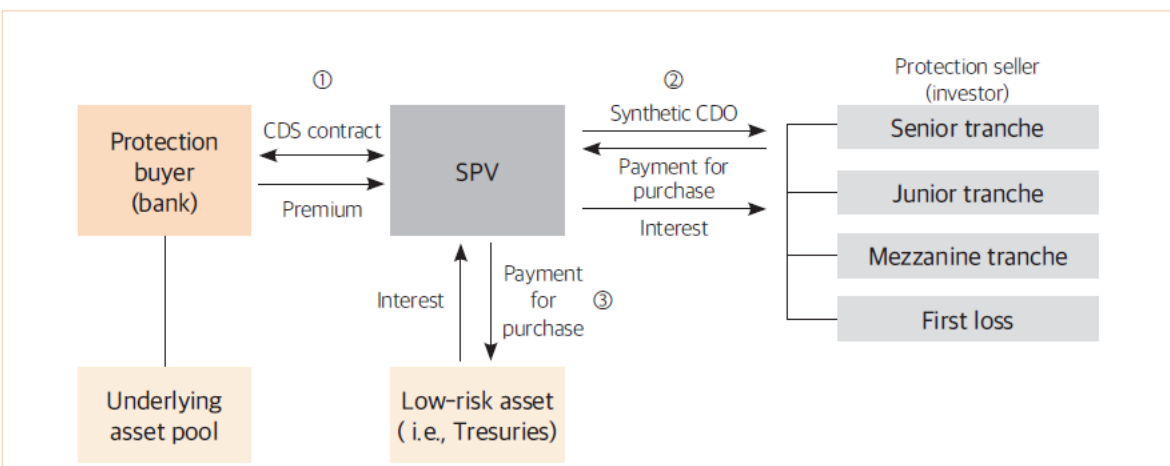


Figure 33

Synthetic CDO transaction structure



## Derivatives Markets: CDS Premium

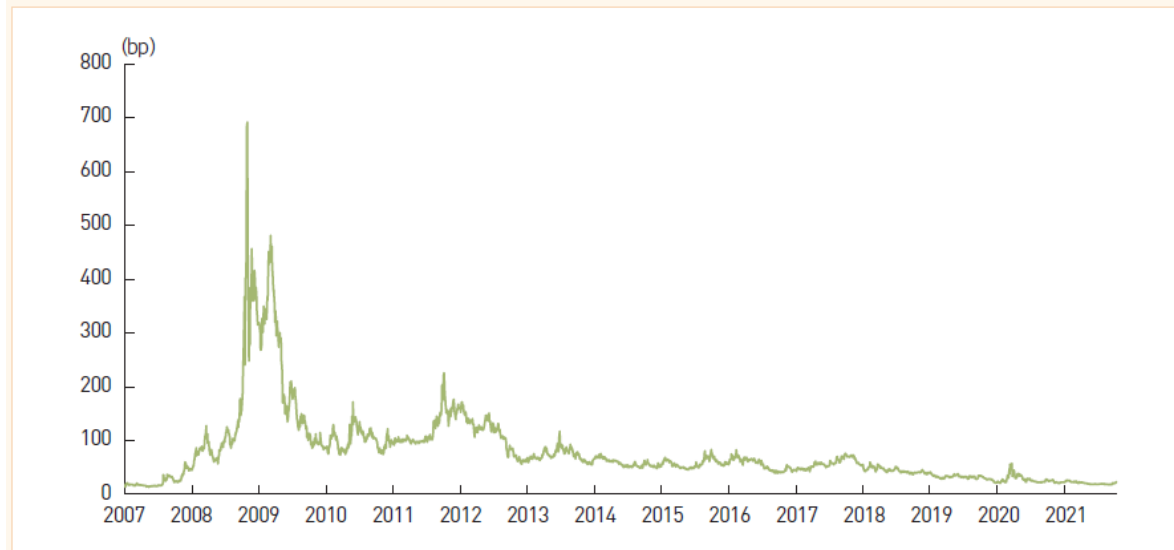
표 4-52		신용파산스왑(CDS) 프리미엄 호가 <sup>1)</sup>			단위 : bp
발행자	신용등급 <sup>2)</sup>	만 기			
		1년	3년	5년	
한 국	Aa2/AA	6.9/11.9	12.7/16.3	20.9/22.1	
일 본	A1/A+	2.3/5.7	8.7/10.7	18.2/19.3	
중 국	A1/A+	10.6/16.3	32.1/35.0	54.6/57.2	
말레이시아	A3/A-	12.8/18.3	36.3/40.4	62.6/65.2	
태 국	Baa1/BBB+	8.7/14.5	23.1/28.1	41.5/44.0	

주 : 1) 2021년 10월 12일 현재 매입/매도 호가(CMA NY 기준)

2) Moody's와 S&P의 신용등급

자료 : Bloomberg

Figure 34 Premium on credit default swaps (CDSs) of foreign exchange equalization bonds<sup>1)</sup>



Note: 1) Five-year term foreign exchange equalization bonds (based on CMA NY).

Source: Bloomberg.

## Derivatives Markets: Size

Table 31		Volume of credit derivative transactions <sup>1)</sup>						Unit: billion dollar
		2008	2010	2012	2014	2016	2018	2020
TRS		3.7	0.7	0.6	5.7	0.9	0.7	3.5
CLN <sup>2)</sup>		0.1	0.4	1.6	0.8	0.4	0.2	0.1
CDS		2.7	1.6	9.7	6.0	8.7	18.0	6.7
Other		0.1	1.7	1.5	0.8	1.2	0.2	0.2
Total		6.6	4.4	13.3	13.3	11.2	19.1	10.4

Note: 1) Based on the notional amount reported by financial institutions pursuant to the Foreign Exchange Transactions Act.

2) Including cases where the synthetic CDO is a pledged asset of the CLN.

Source: Bank of Korea.

## Derivatives Markets: Derivative-linked securities

- Financial products whose returns are tied to underlying assets, including **stocks, interest rates, currencies, and commodities**.

### 1. Equity-Linked Warrants (ELWs)

- Introduced in **2005**
- Similar to stock options but **without daily margin settlement**.
- Allows investors to **gain exposure with a small initial investment**.
- Primarily used for **short-term speculation and leverage**.

Table 32

Comparison of ELWs and stock index options

	ELW	Stock index option
Legal form	Derivative-linked security	Derivative
Issuing institution	Qualified investment trader <sup>1)</sup> with permission to issue derivative-linked securities	Option seller (including individual investors)
Secondary market	Stock market	Derivatives market
Credit risk	Exposed to issuer's credit risk	KRX guarantees payment
Term of contract	3 months to 3 years	According to contract month system
Measure to supplement liquidity	Selection of a liquidity provider required	None
Basic deposit/margin	Basic deposit required/no margin	Both basic deposit and margin required
Investment methods	Investor can only buy	Investor can buy and sell
Settlement date	T+2 (same as stocks)	T+1

Note: 1) Net Capital Ratio (NCR) of 100% of higher.

## Derivatives Markets: Derivative-linked securities

### 2. Equity-Linked Securities (ELS)

- **Introduced in 2003**
- Structured financial products linked to **equities or indices**.
- Offers a **wide range of payoff structures**, such as:
  - **Autocallable ELS**: Provides early redemption if conditions are met.
  - **Principal-Protected ELS**: Guarantees initial investment if held to maturity.
  - **Leveraged ELS**: Enhances returns with embedded derivatives.

Table 34

## Equity-linked products

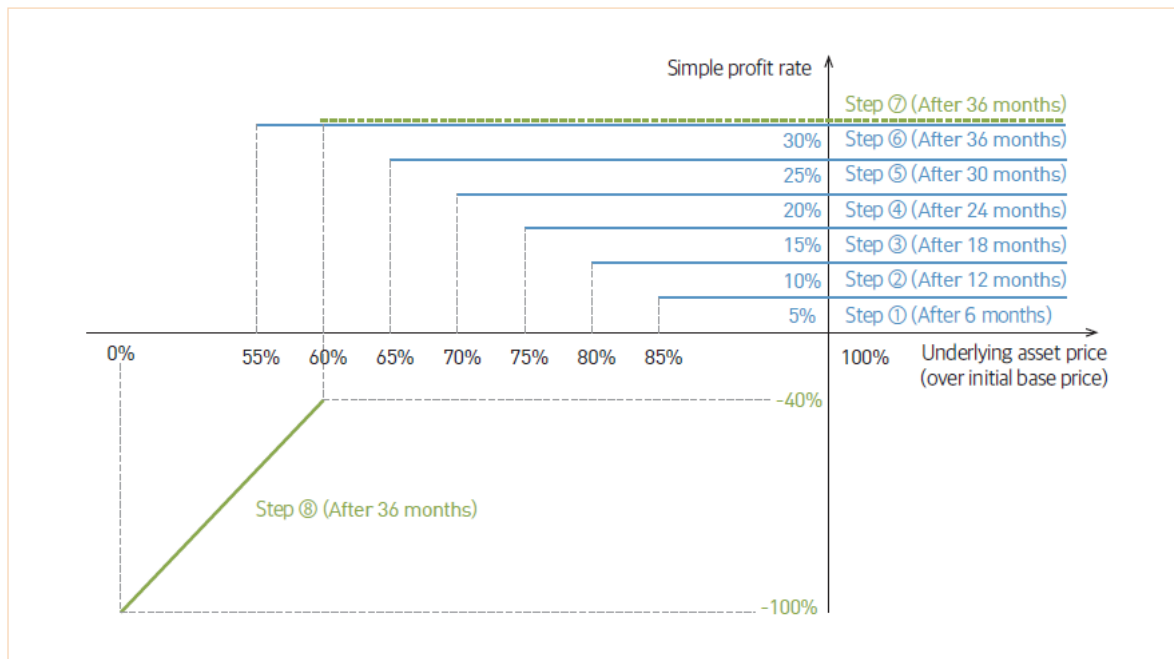
	Equity linked security (ELS)	Equity linked fund (ELF)	Equity linked trust (ELT)	Equity linked deposit (ELD)
Issuing institution	Investment trader (securities company)	Collective investment business entity (asset management company)	Trust business entity (securities company, bank)	Bank
Relevant law	Financial Investment Services and Capital Markets Act			Banking Act
Legal form	Derivative-linked security	Securities fund	Beneficiary certificates	Deposit
Deposit protection	No			Yes
Profit/loss structure	Predetermined method linked to stock price	Performance-based dividend by management performance		Predetermined method linked to stock price (principal guaranteed)



## Derivatives Markets: Common ELS Payoff Structure

Figure 37

Profit structure of step-down ELSs (example)



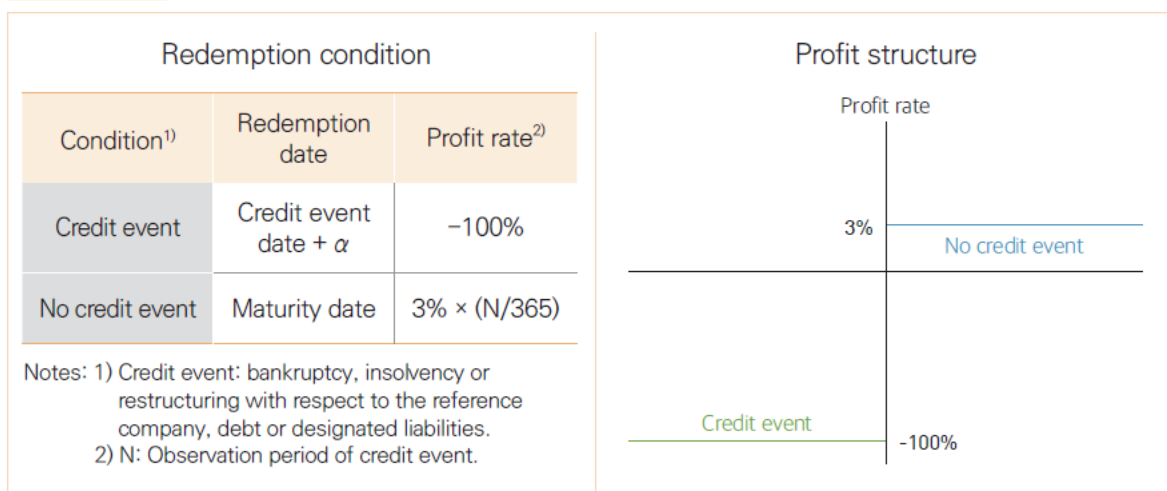
## Derivatives Markets: Derivative-linked securities

### 3. Debt-Linked Securities (DLS)

- Introduced in 2005
- Tied to interest rates, foreign exchange rates, commodity prices, and credit events.
- Primarily used by institutional investors for risk management and yield enhancement.

Figure 40

Profit structure of CLN-type derivative-linked securities (example)



## Derivatives Markets: Derivative-linked securities

### 4. Exchange-Traded Notes (ETNs)

- Introduced in 2014
- Hybrid between derivatives and fixed-income products:
  - ELWs behave like **options**.
  - ELS/DLS behave like **fixed-income securities**.
  - ETNs behave like **ETFs** but without actual asset ownership.

Table 38

Comparison of ETNs and ETFs

	ETN	ETF
Legal form	Derivative-linked securities	Collective investment securities
Issuing institution	Qualified investment trader on derivative-linked securities issuance <sup>1)</sup> (securities company)	Collective investment business entity (asset management company)
Credit risk	Yes	None (holding assets as trust assets)
Profit structure	Predetermined profit provided based on initial index by issuing institution	Performance-based distribution
Tracking error	None	Possible
Maturity	1~20 years	None
LP system	Yes	

Note: 1) Over 1 trillion won in equity capital, AA- or better credit rating, 200% or more in NCR.

### Derivatives Markets: Comparison of Derivative-Linked Products

Type	Underlying Assets	Issuer	Features
<b>ELS</b>	Individual stocks, indices	Securities firms	Structured equity exposure
<b>DLS</b>	Interest rates, FX, commodities	Securities firms	Linked to non-equity assets
<b>ELT</b>	Stocks, indices	Banks	Similar to ELS but bank-issued
<b>DLT</b>	Interest rates, FX, commodities	Banks	Similar to DLS but bank-issued
<b>ELF</b>	Stocks, indices	Asset management firms	Fund-based structured products
<b>DLF</b>	Interest rates, FX, commodities	Asset management firms	Fund-based debt-linked investments
<b>ELD</b>	Stocks, indices	Banks	<b>Principal-protected deposits</b>

Type	Underlying Assets	Issuer	Features
<b>DLD</b>	Interest rates, FX, commodities	Banks	<b>Principal-protected</b> deposits
<b>Options</b>	Any tradable asset	Anyone	Direct derivative contracts
<b>Warrants</b>	Individual stocks	Issued by companies	Stock purchase rights
<b>ELW</b>	Individual stocks, indices	Securities firms	Similar to options but no margin calls
<b>ETN</b>	Various asset classes	Securities firms	<b>Trade like ETFs but unsecured debt</b>
<b>ETF</b>	Various asset classes	Asset management firms	<b>Fund with underlying asset ownership</b>

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### Derivatives Markets: Comparison of Derivative-Linked Products

- E: individual stocks or indices
  - D: forex, gold, credit, etc.
  - ELS and DLS: issued by securities companies
  - ELT and DLT: issued by banks
  - ELF and DLF: issued by asset management companies
  - ELD and DLD: principal protected
  - Options (anyone), Warrants (Companies), ELW (securities companies)
  - ETN (securities companies), ETF (funds)
-

## Risk/Return Characteristics of Securities

### Understanding Risk and Return

- Financial securities exhibit **different risk-return profiles**, which are central to **asset allocation decisions**.
  - **Risk and return trade-off**: Investors demand **higher returns for higher risks** over the long run.
- 

## Risk/Return Characteristics of Securities

### Factors Affecting the Risk of a Security

#### 1. Maturity of the Security

- Longer-term securities generally carry **higher risk** due to **interest rate fluctuations and uncertainty**.
- Example: **30-year bonds** are riskier than **1-year Treasury bills**.

#### 2. Credit Quality of the Issuer

- Issuers with lower credit ratings offer **higher yields** but come with **default risk**.
- Example: **U.S. Treasury bonds (AAA-rated, low risk)** vs. **junk bonds (BB-rated or lower, high risk)**.

#### 3. Priority Over Income and Assets

- **Senior debt** is repaid first in bankruptcy, making it safer than **subordinated debt or equity**.
- Example: **Common stock** is riskier than **corporate bonds** because bondholders are paid first.

#### 4. Liquidity

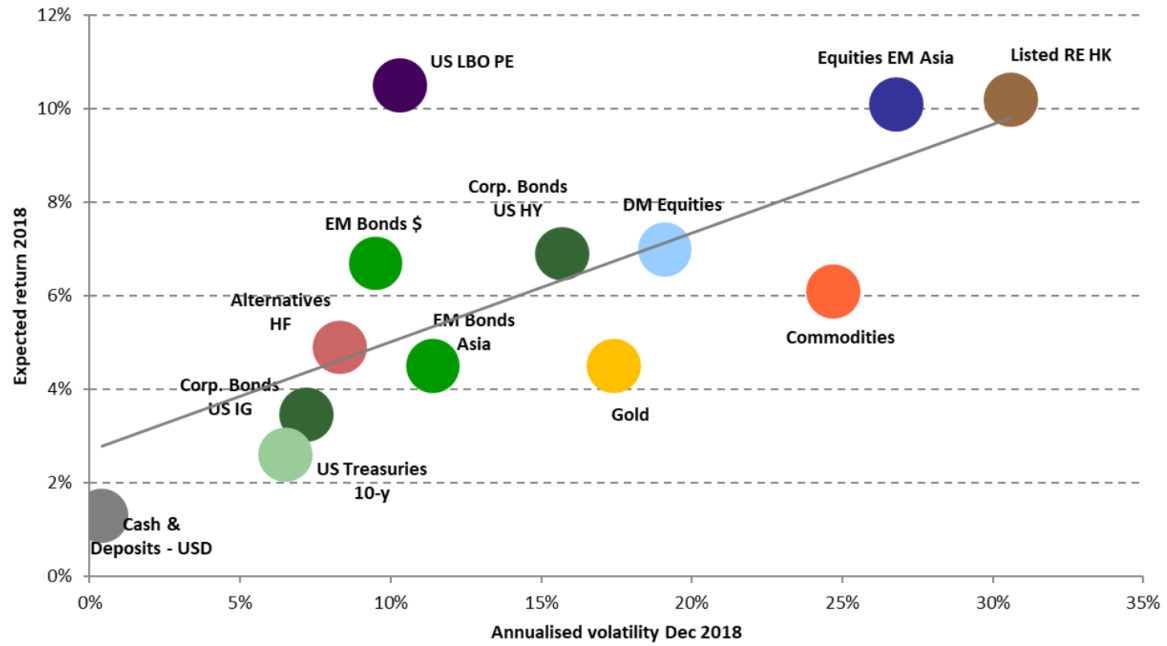
- More liquid assets can be easily bought or sold without affecting their price.
  - Example: **Large-cap stocks (Apple, Microsoft)** are **highly liquid**, while **small-cap stocks or private debt** may have limited liquidity.
-

## **Risk/Return Characteristics of Securities**

### **Risk and Return Relationship**

- **Higher risk should be compensated with higher expected returns** over the long term.
  - **Typical return hierarchy (from lowest to highest risk/return):**
    1. **Government Bonds** (low risk, low return)
    2. **Investment-Grade Corporate Bonds**
    3. **High-Yield Bonds (Junk Bonds)**
    4. **Large-Cap Stocks**
    5. **Small-Cap Stocks**
    6. **Private Equity / Venture Capital** (high risk, high return)
-

## Risk vs. Return



Source: BNP Paribas