

## III. Financial system assessment

### 3.1 Financial markets

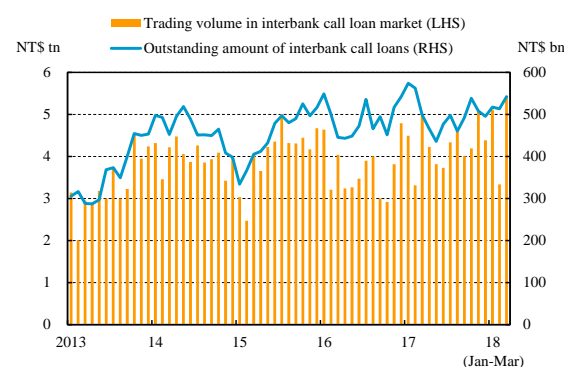
With respect to money and bond markets in 2017, the interbank call loan market expanded and the outstanding amount of bill and bond issuance in the primary market increased, but the turnover rates of outright transactions in the secondary bond market declined. In the same period, short-term market rates remained at a low level, while long-term rates moved within a small range. As for stock markets, stock prices trended up over the same period, yet market volatility fluctuated dramatically at the beginning of 2018. In the FX market, although the NT dollar exchange rate against the US dollar followed an upward path, its volatility remained relatively stable.

#### 3.1.1 Money and bond markets

##### *Outstanding amount and trading volume of interbank call loans increased*

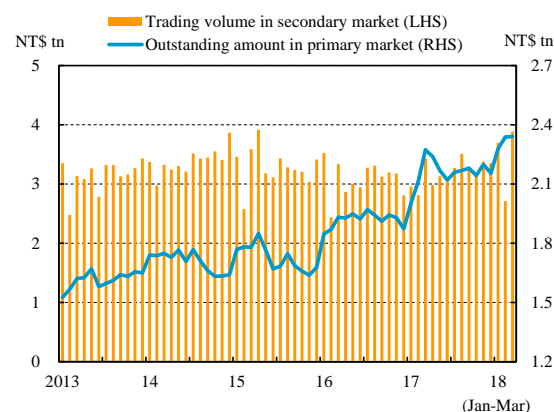
The average daily outstanding amount of interbank call loans in 2017 registered NT\$500.5 billion, increasing by 2.38% year on year. The main reason was that bills finance companies increased interbank borrowing owing to low interest rates, and the turnover rates of call loans surged. As a result, the trading volume of interbank call loans in 2017 increased by 15.39% year on year. In 2018 Q1, the outstanding amount and the trading volume of interbank call loans stayed at a high level (Chart 3.1).

**Chart 3.1 Interbank call loan market**



Note: Outstanding amount is the monthly average of daily data.  
Source: CBC.

**Chart 3.2 Primary and secondary bill markets**



Sources: CBC and FSC.

### Both primary and secondary bill markets remained on growth paths

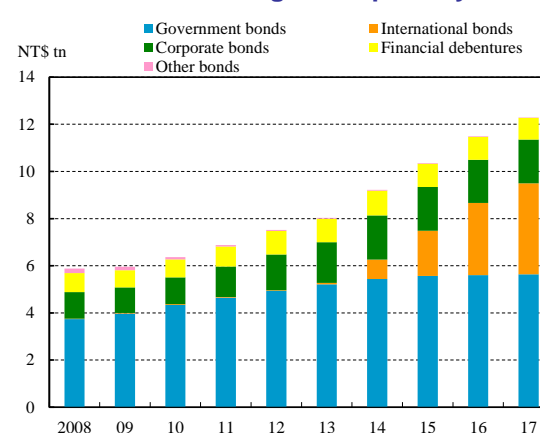
At the end of 2017, the outstanding amount of bill issuance in the primary market stood at NT\$2.15 trillion, substantially increasing by 15% year on year owing to the expansion of CP issuance and banks' negotiable certificates of deposit (NCDs). In 2018 Q1, the outstanding amount of bill issuance continued its upward trend because of increases in CP and treasury bill issuance (Chart 3.2).

Following the expansion in the primary market, the bill trading volume in the secondary market also increased by 3.55% year on year and amounted to NT\$38.33 trillion in 2017. It continued at a high level in 2018 Q1 (Chart 3.2).

### Bond issuance expanded, but the turnover rates of outright transactions remained at a low level

At the end of 2017, the outstanding amount of bond issuance stood at NT\$12.29 trillion and increased by 6.98% on a year-on-year basis, mainly driven by significant growth of international bond issuance.<sup>38</sup> However, after the FSC stipulated the regulations on international bond investments<sup>39</sup> of life insurance companies in June 2017, the momentum of bond issuance cooled down. In addition, the outstanding amount of corporate bond issuance increased slightly by 1.91% year on year induced by low funding rates, while that of government bond issuance remained about the same because of the implementation of regular issuance and debt management by the government (Chart 3.3).

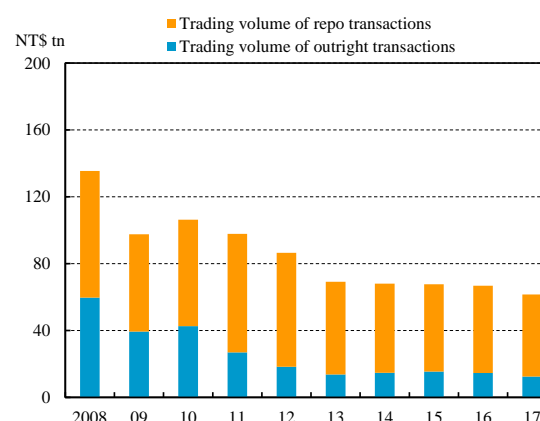
**Chart 3.3 Total amount of bonds outstanding in the primary market**



Note: Other bonds include beneficiary securities and foreign bonds.

Source: FSC.

**Chart 3.4 Outright and repo transactions in the bond market**



Source: CBC.

<sup>38</sup> International bonds refer to bonds denominated in foreign currencies and issued in Taiwan by domestic and overseas issuers.

<sup>39</sup> See section 4.2 of this report in detail.

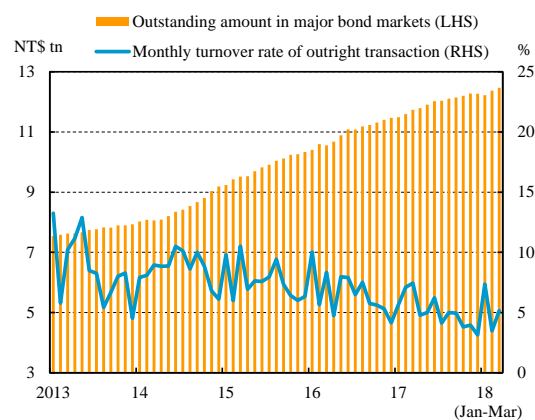
In the secondary bond market, trading volume decreased by 7.83% year on year to NT\$61.58 trillion, in contrast to the trend in the primary market, mainly because of the buy-and-hold strategies for international bond investments adopted by life insurance companies (Chart 3.4). The monthly turnover rates of major bonds<sup>40</sup> in the secondary market also declined in 2017, but slightly rebounded in 2018 Q1 (Chart 3.5).

**Short-term market rates remained at a low level, while long-term market rates moved within a small range**

In 2017, owing to sustained ample funds in financial markets, short-term market rates remained at a low level. However, long-term market rates (i.e. 10-year government bond yields) moved downward after 2017 Q2 and fell to a low level of 0.915% on January 2, 2018, resulting from market expectations of stable interest rates and low inflation. Afterwards, long-term market rates fluctuated within a small range following a rebound in US government bond yields (Chart 3.6)

Gradual interest rate hikes by the Fed and more US government bond issuance after tax cuts might push up the yields on US government bonds and, in turn, lead to the yields on Taiwan's government bonds to rise. Therefore, interest rate risks related to bond investments warrant close attention.

**Chart 3.5 Outstanding amount in major bond markets and monthly turnover rate**



Notes: 1. Major bonds include government bonds, international bonds, corporate bonds, and financial debentures.  
2. Monthly turnover rate = trading value in the month/ average bonds issued outstanding amount.  
Average bonds issued outstanding amount = (outstanding amount at the end of the month + outstanding amount at the end of last month)/2.

Source: FSC.

**Chart 3.6 10-year government bond yield and interbank overnight rate**



Source: Bloomberg.

<sup>40</sup> See Note 7.

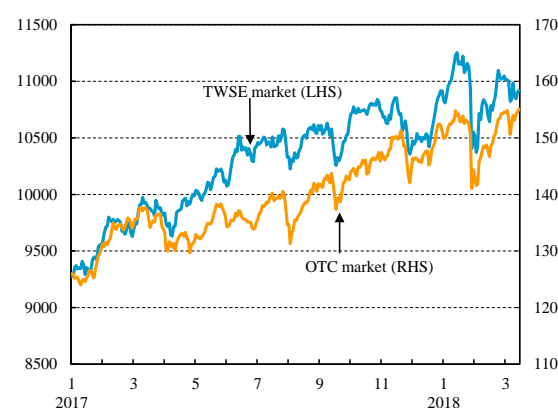
### 3.1.2 Equity markets

#### **Stock indices gradually trended up, but turned volatile in early 2018**

Affected by US stock markets hitting new highs and massive net buying by foreign investors, both the TWSE and the OTC markets trended up in the first half of 2017, especially the TAIEX of the TWSE market which stood above 10,000 from May onwards. In the second half of the year, stock markets initially tumbled, induced by a slump in international stocks owing to geopolitical risks from North Korea, but soon regained momentum after a surge in major stock markets in Europe and the US. At the end of the year, the TAIEX and the Taipei Exchange Capitalization Weighted Stock Index (TPEX) of the OTC market respectively registered 10,643 and 149, posting increases of 15.01% and 18.65% year on year (Chart 3.7). Going into 2018, although dropping in February following a big fall in US stock markets, stock prices moved up further, while the TAIEX and the TPEX reached 10,919 and 155, respectively, at the end of March, higher than the records posted at the end of 2017 (Chart 3.7).

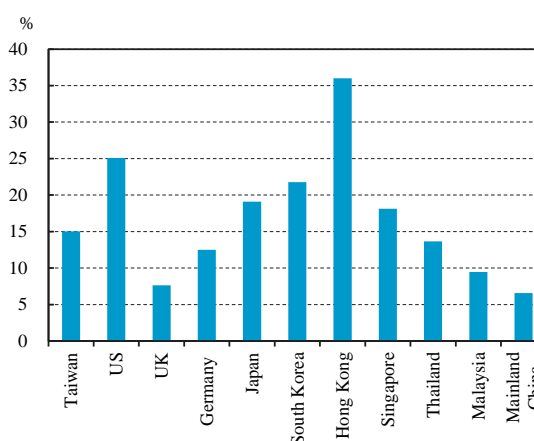
Compared to major stock markets around the world, performance of the TAIEX ranked in the middle, outperforming Europe, Thailand, Malaysia, and Mainland China in 2017 (Chart 3.8).

**Chart 3.7 Taiwan's stock market indices**



Sources: TWSE and TPEX.

**Chart 3.8 Major stock market performance**



Notes: 1. Figures are for 2017.

2. Market performance is based on TWSE Weighted Index for Taiwan, DJIA Index for the US, FTSE-100 Index for the UK, DAX Index for Germany, NK-225 Index for Japan, KOSPI Index for South Korea, Hang Seng Index for Hong Kong, Straits Times Index for Singapore, SET Index for Thailand, Kuala Lumpur Composite Index for Malaysia, and SSE Composite Index for Mainland China.

Source: TWSE.

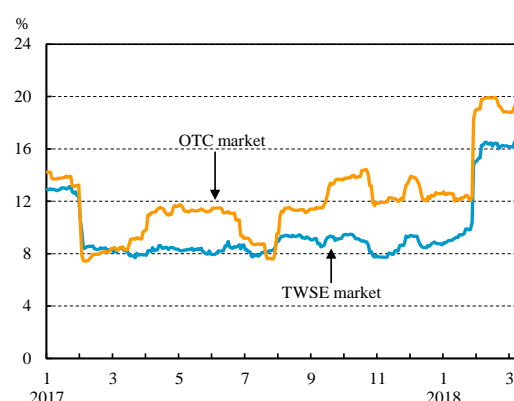
In 2017, volatility in the TWSE and the OTC markets dropped sharply from their respective highs of 13.11% and 14.23% in the beginning of the year, but then fluctuated mildly and stood at 8.80% and 12.41% at the end of December. In 2018 Q1, however, affected by the drop in US stock markets in February, volatility of the two markets surged and registered 16.71% and 19.02%, respectively, at the end of March (Chart 3.9).

### Annual turnover rate increased

With the day trading transaction tax being cut by half, trading in both the TWSE and OTC markets were boosted in 2017, and the annual turnover rates in terms of trading value in both markets rose to 78.40% and 247.81%, respectively (Chart 3.10). In 2018 Q1, the annual turnover rate in the TWSE market continued to rise and reached 85.88%, whereas that in the OTC market slightly declined to 242.07%. Compared to major stock markets around the world, the annual turnover rate of TWSE was higher than that in Hong Kong, Singapore, and Malaysia (Chart 3.11).

In recent years, Taiwan's exchange-traded fund (ETF) market has expanded rapidly and its trading volume has risen significantly on account of relaxation of regulations, active issuing by securities firms, and lower trading costs than other countries. The quick expansion of ETF assets and high turnover rates have posed a great influence on Taiwan's stock markets. Therefore, ETF market developments and potential impacts on local financial markets warrant close attention (Box 2).

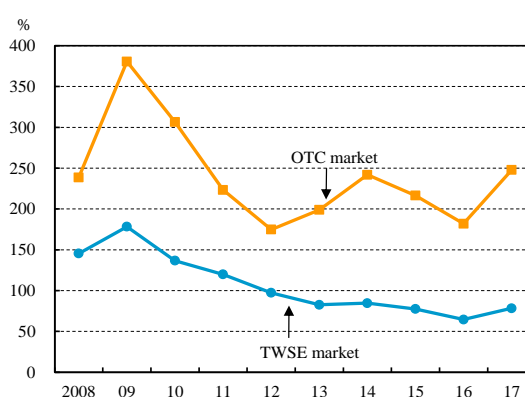
**Chart 3.9 Stock price volatility in Taiwan's markets**



Note: Volatility refers to the annualized standard deviation of 60-day daily index returns.

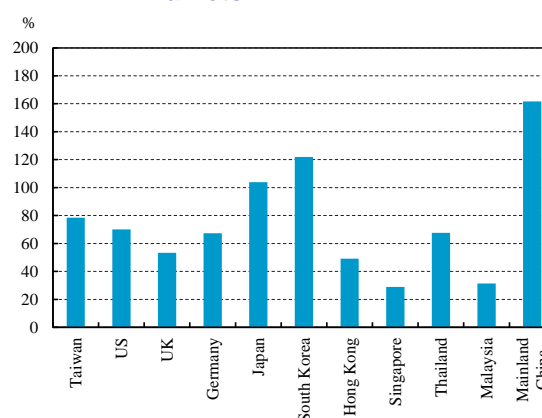
Sources: TWSE, TPEX, and CBC.

**Chart 3.10 Annual turnover rates in Taiwan's stock markets**



Sources: TWSE and TPEX.

**Chart 3.11 Turnover rates in major stock markets**



Notes: 1. Figures refer to accumulated turnover rates in 2017.

2. As for the stock market in each country, please see Chart 3.8 note 2.

Source: TWSE.

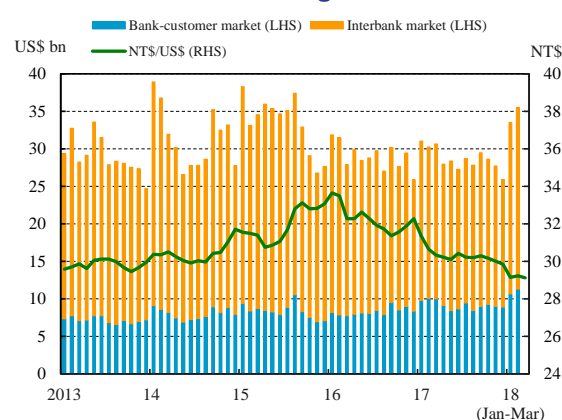
### 3.1.3 FX market

#### *The NT dollar exchange rate appreciated, while the trading volume of the FX market slightly decreased*

Owing to global economic growth, Taiwan's rebounding exports, and sustained foreign capital inflows to Asian economies, the NT dollar exchange rate experienced volatility and appreciated against the US dollar to stand at 29.848 at the end of 2017, an annual appreciation of 8.14%. In 2018 Q1, as the expansion of US fiscal deficits remained a concern, accompanied by a recovery of Taiwan's domestic economy and persistent foreign capital inflows attracted by the high dividend yields offered by some companies listed on its stock markets, the NT dollar exchange rate continued appreciating against the US dollar and rose to 29.120 at the end of March<sup>41</sup> (Chart 3.12).

The NT dollar against the US dollar appreciated by 8.14% in 2017, lower than the Korean won, the Malaysian ringgit, and the Singapore dollar. Furthermore, it continued to appreciate by 2.50% in 2018 Q1 (Chart 3.13). However, it depreciated by 4.93%, 3.81%, and 1.48% against the euro, the Korean won, and the British pound, respectively, but appreciated by 4.05% against the Japanese yen over the same period (Chart 3.14).

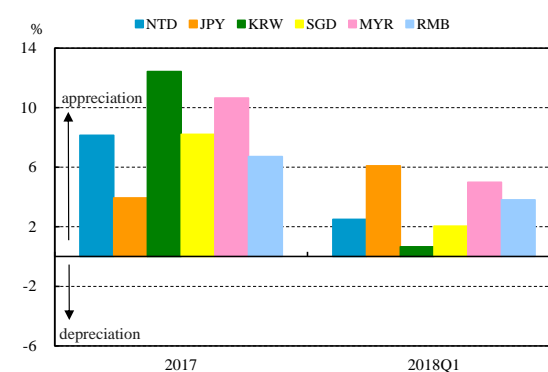
**Chart 3.12 NTD/USD exchange rate and FX market trading volume**



Notes: 1. Trading volume is the monthly average of daily data, while exchange rate is end-of-period data.  
2. The latest data for trading volume are as of February 2018.

Source: CBC.

**Chart 3.13 Exchange rate changes of major Asian currencies against the US dollar**



Source: CBC.

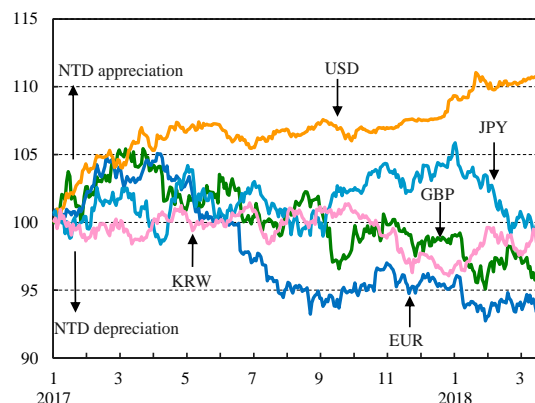
<sup>41</sup> See Note 8.

In 2017, the average daily trading volume in Taiwan’s FX market contracted by 1.25% to US\$28.7 billion, compared to US\$29 billion a year earlier, primarily because of a decrease in the interbank market (Chart 3.12).

**NT dollar exchange rate volatility remained relatively stable**

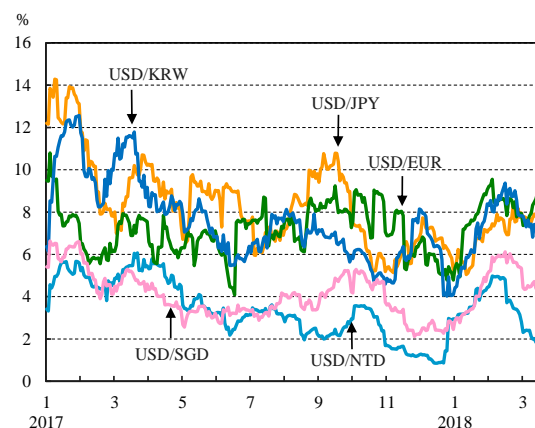
Volatility in the NT dollar exchange rate against the US dollar shifted between 0.85% and 6.07% and registered an annual average of 3.41% in 2017, while moving between 1.43% and 4.97% during 2018 Q1. Compared to major currencies such as the Japanese yen, the euro, the Korean won, and the Singapore dollar, the NT dollar exchange rate has been relatively stable against the US dollar (Chart 3.15).

**Chart 3.14 Movements of NT dollar exchange rate against key international currencies**



Note: December 31, 2016 = 100.  
Source: CBC.

**Chart 3.15 Exchange rate volatility of various currencies versus the US dollar**



Note: Volatility refers to the annualized standard deviation of 20-day daily returns.  
Source: CBC.

## Box 2

### The development of exchange traded funds business in Taiwan

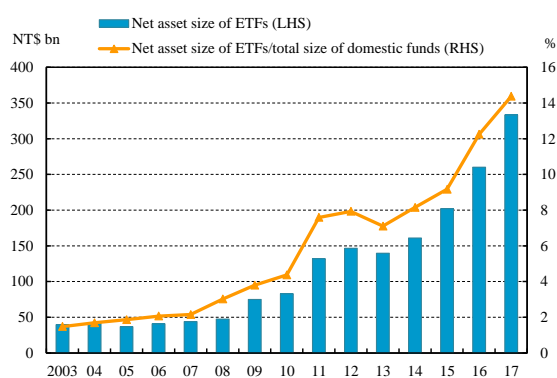
Thanks to transaction convenience and lower transaction costs, the global assets of exchange-traded funds (ETFs) have grown rapidly. Among them, passive investment funds such as equity ETFs have gradually nibbled away at the market share of actively managed funds. In the US, for example, with growth in equity ETF assets, which tend to have higher turnover rates, their influence on US stocks has been increasing steadily. Equity ETFs adopt a “package deal” model, which also causes transaction volumes and prices among the stocks within the package to become more and more convergent (i.e., correlation coefficients increase in magnitude). As a result, the risk diversification effect of holding multiple stocks has reduced, signifying that the systematic risks of the stock market have subsequently risen. A number of key persons in the financial sector and academia have appealed to the public to pay attention to the systemic risks which could be derived from passive investments such as ETFs. Several foreign regulators have also reviewed the impact of ETFs on financial markets and set out to formulate relevant regulations. So far, the types of ETFs in Taiwan have been quite diverse, and the volume of their transactions has been booming. Regulators should continue to pay close attention to the future development of ETFs and their potential impact on financial markets.

#### 1. ETF development in Taiwan

##### 1.1 Asset size greatly expanded and types diversified

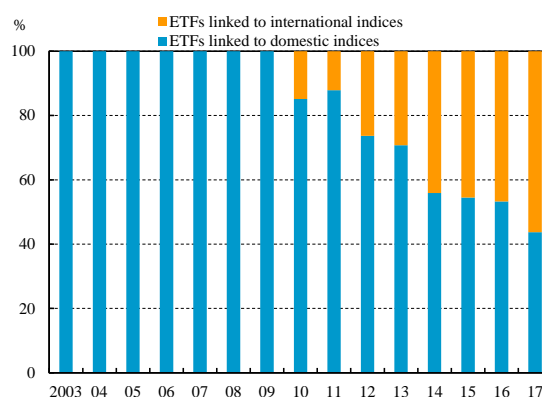
Taiwan’s first ETF (P-shares Taiwan Top 50 ETF) was issued in 2003, but the domestic ETF market has grown rapidly since 2009. Against a backdrop of declining transactions in actively managed funds, the ETF assets as a share of total

**Chart B2.1 ETF assets and their market share in Taiwan**



Source: SITCA.

**Chart B2.2 The proportion of Taiwan-issued ETFs linked to different indices**



Source: SITCA.



assets of domestic funds rose sharply, reaching 14.4% at the end of 2017 (Chart B2.1).

With investors gradually accepting domestic ETFs and a relaxation of related regulations, domestically issued ETF products have not been limited to those linked to domestic stock price indices. Instead, they have been expanding their linkages to overseas targets from 2010 onwards. At the end of 2017, of Taiwan's ETFs, those linking to global targets and to domestic ones made up 56.3% and 43.7%, respectively (Chart B2.2).

In addition, regulations began to allow investment trust companies to issue leveraged, reversed and futures ETFs in 2014, making it easier for the public to raise financial leverage, short underlying assets, and invest in more complex products. As a result, domestic ETF products are no longer simply general financial products.

## 1.2 Transactions were booming

According to the statistics of the Taiwan Stock Exchange, the turnover rate of ETFs listed on the market reached 427.5% in 2017, which was equivalent to them rotating 4.3 times a year, much higher than the common stock turnover rate of 83.8%. This phenomenon is similar to that in international markets.

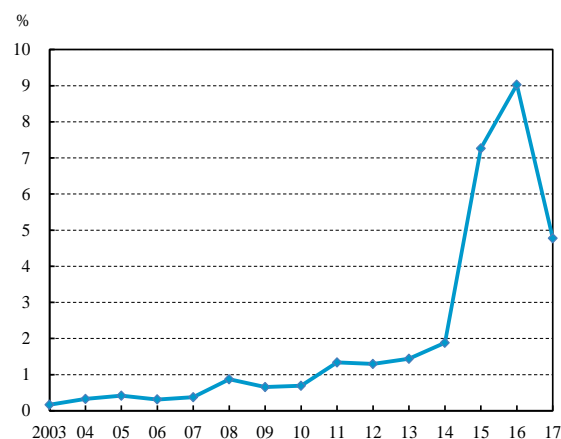
The transaction amount of ETFs to total market trading value in Taiwan reached the highest point of 9.03% in 2016. While the share fell to 4.77% in 2017, it was still much larger than the 0.17% recorded in 2003 (Chart B2.3).

## 2. The possible impact of ETFs on financial markets has drawn wide attention

### 2.1 The industry, official institutions and the academia appeal to the public to address the systemic risks that could result from ETFs

Academia, financial circles, and official institutions such as the Norwegian Sovereign Wealth Fund and the Japanese Government Pension Investment Fund have warned that the increasing interconnectedness among constituent stocks resulting from the rise of

**Chart B2.3 The proportion of transaction amount of ETFs listed on the TWSE to total market trading value**



Source: TWSE.

ETFs may escalate systematic risks in stock markets and the passive investment model used by ETFs may undermine the efficiency of financial markets, leading to a reduction in the ability of ETF markets to efficiently allocate resources in the economy.

## **2.2 Several regulatory authorities and international organizations evaluated**

### **ETF-related risks in depth**

On August 24, 2015, numerous ETF transactions on the US stock market were temporarily suspended due to trading program problems, which resulted in the total value of the US stock market's impairment losses reaching a peak of US\$1.2 trillion on the same day. Meanwhile, stocks and ETFs listed on the exchange were halted 1,278 times, among which ETFs accounted for 1,008. As ETF trading was suspected to exacerbate the plummet in US stocks on the same day, the US Securities and Exchange Commission (SEC) initiated a series of investigations. This also prompted more national regulatory authorities and international organizations to pay attention to the development of ETFs, including the Central Bank of Ireland and the International Organization of Securities Commissions (IOSCO).

In addition, on February 5, 2018, the US stock market crash pushed the CBOE volatility index (VIX) to rise rapidly, leading to a sharp devaluation in total assets of short VIX exchange-traded products (ETPs), to US\$525 million from US\$3.7 billion. The Bank for International Settlements (BIS) points out that even though the overall scale of leveraged and inverse volatility ETPs is relatively small currently, they could induce and aggravate market volatility. Investors should pay more attention to this risk. The US SEC has launched investigations into such products, including looking into how investment performance is calculated and whether retail consumers are qualified investors.

- Notes: 1. SEC (2015), *Research Note: Equity Market Volatility on August 24*, U.S. SEC Report, December.
2. Campbell, Dakin et al. (2018), *Volatility Inc.: Inside Wall Street's \$8 Billion Mess*, Bloomberg, February.
3. Borio, Claudio et al. (2018), *BIS Quarterly Review: International banking and financial market developments*, BIS, March.