

## DEVELOPING VIETNAM'S COMMODITY DERIVATIVES MARKET: LESSONS FROM JAPAN AND CHINA

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### Abstract

*In the context of globalization, commodity derivatives have become vital tools for price risk management, especially for export-oriented economies like Vietnam. This paper reviews the development of commodity derivatives markets in Japan and China to draw lessons for Vietnam's market growth and international integration.*

*Japan, through the Tokyo Commodity Exchange (TOCOM), has a history dating back to the seventeenth century, focusing on energy and precious metals. Its success relies on a strict legal framework, adoption of blockchain technology, and an efficient clearing system. China, via the Shanghai Futures Exchange (SHFE), Dalian Commodity Exchange (DCE), and Shanghai International Energy Exchange (INE), has achieved rapid growth through international investor participation, diverse products (agricultural goods, metals, energy), and advanced technologies such as artificial intelligence and big data. Both emphasize transparent supervision and position limits to manage risks.*

*In Vietnam, the Mercantile Exchange of Vietnam (MXV) has made progress but remains small compared to its agricultural export potential. Key challenges include low liquidity, limited stakeholder awareness, and incomplete regulations. Lessons for Vietnam include: diversifying products, prioritizing key exports like coffee and rubber and emerging areas like carbon credits; applying modern technologies for efficiency and transparency; improving the legal framework in line with global standards; strengthening risk management; and raising awareness through education and media. Implementing these measures can enhance MXV's liquidity, support international integration, and contribute to Vietnam's sustainable economic growth.*

**Keywords:** Commodity derivatives, Vietnam's commodity market, Japan's experience, China's experience, Market development.

### Phát triển thị trường hàng hóa phái sinh của Việt Nam: Bài học từ Nhật Bản và Trung Quốc

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### Tóm tắt

*Trong bối cảnh toàn cầu hóa, các công cụ phái sinh hàng hóa đã trở thành công cụ quan trọng để quản lý rủi ro giá, đặc biệt đối với các nền kinh tế định hướng xuất khẩu như Việt Nam. Bài viết này xem xét sự phát triển của thị trường phái sinh hàng hóa tại Nhật Bản và Trung Quốc nhằm rút ra những bài học cho quá trình phát triển và hội nhập quốc tế của thị trường hàng hóa Việt Nam.*

*Tại Nhật Bản, Sở Giao dịch Hàng hóa Tokyo (TOCOM) có lịch sử hình thành từ thế kỷ XVII, tập trung chủ yếu vào năng lượng và kim loại quý. Thành công của TOCOM dựa trên khuôn khổ pháp lý chặt chẽ, việc áp dụng công nghệ blockchain và hệ thống thanh toán bù trừ hiệu quả. Trong khi đó, Trung Quốc, thông qua Sở Giao dịch Hợp đồng Tương lai Thượng Hải (SHFE), Sở Giao dịch Đại Liên (DCE) và Sở Giao dịch Năng lượng Quốc tế Thượng Hải (INE), đã đạt được sự tăng trưởng nhanh chóng nhờ sự tham gia của nhà*

đầu tư quốc tế, đa dạng hóa sản phẩm (nông sản, kim loại, năng lượng), cùng với việc ứng dụng các công nghệ hiện đại như trí tuệ nhân tạo và dữ liệu lớn. Cả hai quốc gia đều chú trọng giám sát minh bạch và áp dụng giới hạn vị thế để quản lý rủi ro.

Tại Việt Nam, Sở Giao dịch Hàng hóa Việt Nam (MXV) đã có những bước tiến nhưng quy mô vẫn nhỏ so với tiềm năng xuất khẩu nông sản. Những thách thức chính bao gồm tính thanh khoản thấp, nhận thức hạn chế của các bên liên quan và khung pháp lý chưa hoàn thiện. Các bài học cho Việt Nam bao gồm: đa dạng hóa sản phẩm, ưu tiên các mặt hàng xuất khẩu chủ lực như cà phê và cao su cũng như các lĩnh vực mới nổi như tin chỉ carbon; áp dụng công nghệ hiện đại để nâng cao hiệu quả và minh bạch; hoàn thiện khuôn khổ pháp lý theo chuẩn quốc tế; tăng cường quản lý rủi ro; và nâng cao nhận thức thông qua giáo dục và truyền thông. Việc triển khai những giải pháp này có thể giúp tăng tính thanh khoản của MXV, thúc đẩy hội nhập quốc tế và đóng góp cho tăng trưởng kinh tế bền vững của Việt Nam.

**Từ khóa:** Kinh nghiệm Nhật Bản, kinh nghiệm Trung Quốc, phái sinh hàng hóa, phát triển thị trường, thị trường hàng hóa Việt Nam.

## 1. Introduction

Amid accelerating globalization and increasingly interconnected markets, Vietnam is encountering a new set of opportunities and challenges, especially within the commodity sector. Factors such as price volatility, changes in supply and demand, and global market trends have significantly affected corporate profits, producers' incomes, and macroeconomic stability. The commodity derivatives market, serving as a financial instrument to manage price risks through futures and options contracts, has become a global trend. It enables enterprises, investors, and farmers to "lock in" prices, thereby mitigating the impact of market fluctuations.

Worldwide, developed commodity derivatives markets such as those in Japan (Tokyo Commodity Exchange – TOCOM) and China (Shanghai Futures Exchange – SHFE, Dalian Commodity Exchange – DCE) have demonstrated their vital role in stabilizing prices, improving business efficiency, and attracting international investment. In Japan, the market focuses on energy and precious metals, supporting import-dependent industries in managing costs. In China, a strict legal framework, diverse product portfolio, and modern technology have made derivatives trading a key pillar of the economy, especially for strategic commodities such as crude oil and agricultural products. (Library of Congress, 2022). These experiences offer valuable lessons for Vietnam, a country with strong agricultural exports but still in the early stages of commodity derivatives development.

In Vietnam, early attempts at

commodity exchanges, such as the Cashew Futures Exchange (2002) and the Buon Ma Thuot Coffee Exchange Center (2006), failed due to low liquidity and non-standardized operations (Cuong, 2020). The traditional commodity market continues to face significant limitations, including pricing mechanisms not fully aligned with market signals, lack of effective hedging instruments, low transparency, and underdeveloped trading infrastructure. As a result, enterprises, particularly in agriculture (coffee, rubber, pepper), remain vulnerable to international price volatility, reducing competitiveness and sustainability. Established in 2010 and connected to global markets in 2018, the Mercantile Exchange of Vietnam (MXV) has advanced the commodity derivatives market, yet its scale remains modest compared to Vietnam's substantial agricultural export potential, constrained by low liquidity, limited stakeholder awareness, and an incomplete legal framework.

Developing the commodity derivatives market in Vietnam has strategic significance: (1) enabling enterprises to proactively manage price risks and reduce losses from market volatility; (2) creating a transparent environment that fosters fair competition and efficient resource allocation; (3) attracting domestic and foreign investment; and (4) enhancing international integration through globally standardized derivative products. To achieve these objectives, Vietnam can draw on the experiences of countries like Japan and China, where derivatives exchanges have helped exporters secure long-term contracts at stable prices, farmers plan

production with confidence, and investors diversify their portfolios.

For the Vietnamese derivatives market to operate effectively, several elements are required: a consistent legal framework, modern trading infrastructure, a skilled and knowledgeable workforce, and well-designed strategies for communication and training. This is a long-term process requiring close coordination among the State, enterprises, and financial institutions. Therefore, this paper aims to study and adapt international experiences to propose lessons for Vietnam, outlining a roadmap for domestic commodity derivatives market development. More than just a global trend, this market is expected to become a powerful tool for enhancing economic competitiveness, stabilizing producers' incomes, and building a transparent, modern, and sustainable business environment. The paper is structured into five sections: following this Introduction, Section 2 presents the theoretical framework; Section 3 examines the experiences of Japan and China; Section 4 draws lessons for Vietnam; and Section 5 concludes.

## **2. Theoretical basis**

### **2.1. Related Concepts**

A derivative is a financial instrument whose value depends on the value of an underlying asset (Hull, 2017). A commodity derivative is a financial instrument whose value is linked to the price movements of commodities such as oil, gold, wheat, or natural gas. Unlike spot transactions, commodity derivatives allow investors to trade contracts whose prices fluctuate with the underlying commodities, serving both hedging and speculative purposes (Chance & Brooks, 2015). In such transactions, investors buy or sell contracts whose prices are determined by the fluctuation of the underlying commodity, with the purpose of hedging price risk or profiting from price changes.

A commodity derivatives market is defined as an organized platform for trading derivative instruments tied to commodities. Such markets enable producers, investors, and consumers to hedge against price risks, discover prices transparently, and improve resource allocation (UNCTAD, 2009). In addition, they provide investors with exposure to commodities without physical ownership, thereby enhancing portfolio diversification (Gorton & Rouwenhorst, 2006). Through this market, investors can

gain exposure to commodities without physically owning them, using futures, options, and other financial instruments to hedge against price volatility and to capture profit opportunities.

### **2.2. Characteristics and Classification of the Commodity Derivatives Market**

The commodity derivatives market is characterized by its large scale, diversity of products, and multiple participants. It attracts producers, consumers, institutional investors, and speculators, each pursuing different objectives such as risk hedging or profit-seeking (Kolb, 2000). The market demonstrates high adaptability to price fluctuations, but also carries systemic risks when leverage is applied, amplifying both potential gains and losses (Chance & Brooks, 2015).

In terms of classification, the commodity derivatives market consists of two main forms. The exchange-traded market is where transactions are executed on commodity exchanges under standardized rules. Here, contract specifications such as type of commodity, quantity, quality, and delivery time are fixed, and clearing and margin systems are applied to ensure transparency and security. The growth of technology has shifted much of this trading to electronic platforms, improving speed and efficiency. In contrast, the over-the-counter (OTC) market involves direct negotiation between counterparties without going through an official exchange. This form allows high contractual flexibility but involves greater credit risk, less transparency in price and volume, and requires high trust and risk management capacity.

Beyond transaction mechanisms, the market can also be classified by the type of derivative instrument. Forward contracts are agreements to buy or sell a certain quantity of a commodity at a specific future date at a fixed price agreed upon at the contract's inception. Futures contracts are similar in nature but standardized and traded on exchanges, offering higher liquidity and reduced counterparty risk (Kolb, 2000). Commodity options give the holder the right, but not the obligation, to buy or sell the underlying commodity at a predetermined price, providing flexibility in risk management (Hull, 2017). Finally, commodity swaps are agreements to exchange cash flows based on commodity price movements, often used by firms to lock in input costs or sales prices over a

given period (Chance & Brooks, 2015).

### **3. Lessons from Japan and China in Developing the Commodity Derivatives Market**

#### ***3.1. Japan's Experience in Developing the Commodity Derivatives Market***

##### ***3.1.1. Strengthening the Legal Framework***

A comprehensive and effective legal framework has been a cornerstone for the stable and transparent operation of Japan's commodity derivatives market. The Financial Services Agency of Japan (JSFA), established in 2018, plays a central role in supervising and regulating all derivative trading activities. The JSFA ensures that market participants comply with relevant rules, prevents fraudulent practices, and protects the interests of investors, especially retail investors who may be more vulnerable to market risks.

Japan's legal system for commodity derivatives has evolved continuously to keep pace with the growing complexity of global markets. The first foundation was the Commodity Exchange Act of 1950, which set out the standards for establishing and operating commodity exchanges, regulated trading activities, protected the rights and obligations of all parties, provided mechanisms for dispute resolution, and encouraged the development of a robust market. As globalization and financial innovation advanced, this Act was replaced and updated by the Futures Trading Act (2009) and subsequently by the Commodity Derivatives Act (2018).

The 2018 Act includes detailed provisions on the registration, supervision, and enforcement of violations for commodity derivatives trading. It also introduced enhanced risk management mechanisms, such as mandatory margin requirements, position limits to prevent market manipulation, and compulsory trade reporting to improve market transparency. These measures ensure that investors have access to accurate information and possess adequate financial capacity before participating in the market. By establishing a clear and enforceable legal framework, Japan has succeeded in building strong investor confidence, attracting both domestic and international market participants.

##### ***3.1.2. Diversification of Derivative Products***

The Tokyo Commodity Exchange (TOCOM), established in 1984 through the merger of the textile, rubber, and gold exchanges, is the leading center for

commodity derivatives trading in Japan. Over the years, TOCOM has continuously diversified its product portfolio. Initially focused on agricultural commodities such as coffee, cocoa, and cotton, it later expanded into precious metals (gold, silver, platinum), industrial metals (copper, nickel, aluminum), and energy products (crude oil, gasoline, kerosene, liquefied natural gas). In 2019, TOCOM launched a carbon emissions derivatives contract, aligning with Japan's transition toward a green economy and its commitment to global climate goals.

Other exchanges, such as the Tokyo Grain Exchange (TGE), Chugoku Commodity Exchange (C-COM), and Kansai Commodity Exchange (KEX), have also contributed to product diversification by offering futures contracts on agricultural products, energy, metals, and even fisheries. This diversity enables market participants to hedge risks across a wide range of sectors and asset classes.

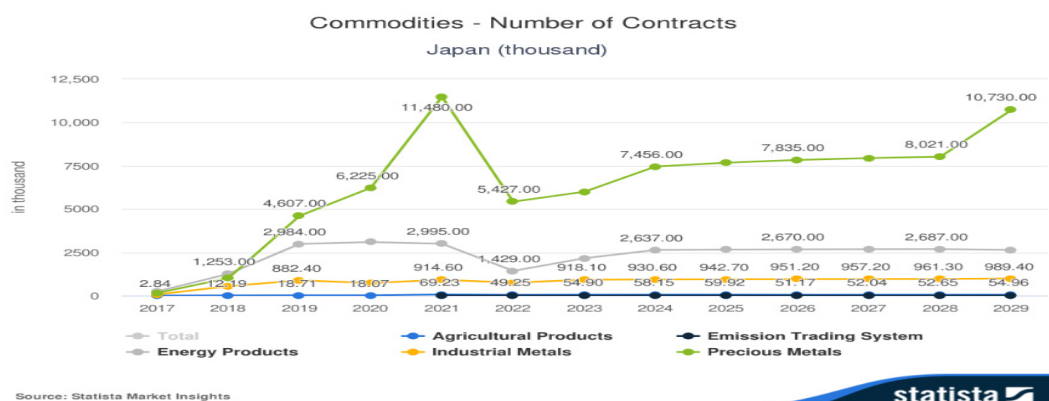
Japan's commodity derivatives market maintains a strong focus on energy and precious metals, reflecting the country's industrial economy that is heavily dependent on energy imports. For example, companies like JX Nippon Oil & Energy and Tokyo Gas use TOCOM crude oil futures to lock in prices and manage cost volatility. Gold futures are used by both institutional and retail investors to protect asset value in times of economic uncertainty. Options on gold and crude oil provide flexibility, enabling participants to benefit from price movements without the obligation to execute a physical trade. Large corporations, such as All Nippon Airways (ANA), use oil swaps to stabilize long-term fuel expenses.

According to Statista Market Insights (2024), the total volume of commodity derivatives traded in Japan between 2017 and 2023 reached approximately 455 thousand contracts, with projections of 11.72 million contracts by 2028. In notional value, total trades amounted to USD 366.90 billion in 2017, with forecasts of USD 842 billion in 2028. Agricultural commodity derivatives increased from USD 137.20 billion in 2017 to USD 399.80 billion in 2019, then declined sharply to USD 0.96 billion in 2023 due to the COVID-19 pandemic, but are expected to recover to USD 517.50 billion by 2028. Energy derivatives surged from USD 178.50 billion in 2017 to USD 1,827 billion in 2019, before dropping to USD 19.52 billion in



2023, with forecasts suggesting relatively low stability in the following years. Industrial metals derivatives peaked at USD 1,012 billion in 2019 before falling to USD 2.37 billion in 2023, and are projected to remain

under USD 8 billion annually from 2024 to 2028. Precious metals derivatives rose from USD 4 billion in 2017 to USD 235.30 billion in 2023, with forecasts of USD 325 billion by 2028.



**Figure 1.** Number of Commodity Derivatives Contracts in Japan, by Product Group  
Source: Statista Market Insights (2024)

### 3.1.3. Adoption of Advanced Technology

Japan has actively embraced advanced technology to improve the efficiency, transparency, and security of its commodity derivatives market. Major exchanges such as TOCOM, CGE, and KEX have transitioned from traditional open-outcry trading to fully electronic platforms. This transformation has significantly increased transaction speed, improved order matching accuracy, and reduced operational costs for both exchanges and market participants.

According to the Futures Industry Association (FIA) 2023 data, TOCOM ranked 19th, TGE ranked 44th, and KEX ranked 53rd among the world's largest derivatives exchanges, reflecting their active adoption of modern trading systems. Blockchain technology is applied to ensure transparency and security of transaction records. Smart contracts are used to automatically execute trade terms once predefined conditions are met, thereby minimizing human errors, preventing disputes, and optimizing settlement processes.

In addition, Japanese exchanges integrate electronic trading platforms with advanced data analytics and AI-driven market surveillance tools. These tools allow exchanges and regulators to detect unusual trading patterns, prevent manipulation, and assist investors in making quick and informed decisions. Cybersecurity measures such as advanced encryption

protocols, multi-factor authentication, and intrusion detection systems are implemented to protect sensitive data. Furthermore, continuous cybersecurity training programs are provided for brokers, clearing members, and exchange staff to enhance overall market resilience against digital threats.

### 3.1.4. Clearing and Physical Delivery Management

The clearing and settlement of commodity derivatives in Japan is handled through a sophisticated electronic clearing system operated by the Japan Securities Clearing Corporation (JSCC). This system calculates the daily settlement price based on the final trade price of the session. Gains and losses are determined from the difference between the contract price and the settlement price, and the corresponding margin calls or payouts are processed on the same day to maintain market integrity.

In the event that a market participant fails to fulfill their payment obligation, JSCC uses collateral deposits and its clearing fund to cover the shortfall. This mechanism prevents a single default from causing systemic disruption, thereby maintaining market stability.

For physical delivery, Japanese exchanges have established strict and transparent procedures. Blockchain technology and smart contracts are employed to automate the delivery process, ensuring that all contract terms—such as quantity, quality, and delivery

date-are executed precisely. The delivery system accommodates multiple methods, including negotiated delivery between parties, alternative delivery arrangements, and on-demand delivery upon maturity. Each delivery is subject to monitoring and reporting requirements, and in the case of disputes, exchanges provide arbitration mechanisms to resolve conflicts swiftly while maintaining market confidence.

### 3.1.5. Membership Regulation and Risk Management

Membership at Japanese commodity exchanges is strictly regulated to ensure market quality and stability. There are several categories of membership, including brokerage members, trading members, and affiliate members. Applicants must meet rigorous criteria regarding financial capacity, technical infrastructure, compliance systems, and human resources. For example, the application process for a brokerage membership typically takes around three months and involves thorough due diligence by the exchange. TOCOM also provides guidance to new applicants to ensure they meet operational and regulatory standards before commencing trading.

Risk management is a central element of Japan's commodity derivatives framework. Exchanges implement a multi-layered margin system, which includes initial margin, variation margin (daily mark-to-market), and intraday margin calls to manage price volatility risk. A central clearing fund is maintained to cover potential losses in extreme market situations. JSCC uses a combination of cash, government bonds, and other high-quality collateral to secure clearing obligations.

Position limits are also applied to prevent market manipulation and excessive speculation. In addition, exchanges conduct continuous monitoring of open positions, trading activity, and margin adequacy. If a participant's position exceeds allowed thresholds or margin requirements are not met, exchanges have the authority to demand immediate position reduction or additional collateral. These measures, combined with the strict enforcement of compliance rules, have helped the Japanese commodity derivatives market remain resilient even during periods of high volatility in global financial markets.

## 3.2. China's Experience in Developing the Commodity Derivatives Market

China has developed a highly dynamic commodity derivatives market through a well-structured legal framework, diversified product offerings, advanced technological applications, and effective risk management. This market not only supports price risk management but also attracts international investment, thereby contributing to sustainable economic growth.

### 3.2.1. Strengthening the Legal Framework

China's regulatory framework for commodity derivatives began taking shape in the early 1990s, when more than 50 futures exchanges emerged in major cities. However, this rapid expansion led to excessive speculation and regulatory violations, prompting the government in 1993 to implement stringent oversight measures to stabilize the market. The current legal system is organized into three levels to ensure comprehensive governance and transparency:

- Level 1: Laws and Regulations from the State Council

High-level regulations include the Regulation on the Administration of Futures Trading (effective February 15, 2007) and the Futures and Derivatives Law (effective August 1, 2022). These instruments establish the legal foundation for market activities and require strict compliance from all institutions and individuals.

The 2007 regulation specifies procedures for the inspection and approval of exchange applications, ensuring that only legal entities or economic organizations registered in China can participate. The Futures and Derivatives Law-the first national law in this area-provides a comprehensive framework covering margin requirements, position limits, large trade reporting, daily market price determination, risk monitoring, and emergency measures for abnormal conditions. It also allows foreign investors to participate in certain products, promotes cross-border trade cooperation, classifies traders into ordinary and professional categories to protect retail investors, and strengthens penalties for market manipulation, insider trading, and dissemination of false information.

- Level 2: Regulations from the CSRC and Other Ministries

The China Securities Regulatory Commission (CSRC) and relevant ministries issue detailed rules to implement and

supplement high-level laws. The CSRC oversees compliance, sets risk management systems such as margin requirements, real account management, and mandatory position reductions, while also verifying prices and managing resource allocation to stabilize the market. These regulations enhance transparency, curb speculative risks, and protect investor interests.

• Level 3: Exchange Rules and CFA Guidelines

Exchanges such as the Shanghai Futures Exchange (SHFE), Zhengzhou Commodity Exchange (ZCE), and Dalian Commodity Exchange (DCE), along with the China Futures Association (CFA), establish specific operational rules on trading, clearing, and delivery. These rules complement higher-level laws, align with the characteristics of each exchange, and strengthen member supervision and violation handling.

This multi-tiered framework not only fosters a transparent trading environment but also facilitates the integration of foreign

investors, reinforcing China’s position in the global derivatives market.

3.2.2. Diversification of Derivative Products

China’s commodity derivatives market began with the Zhengzhou grain market in 1990, later expanding into futures contracts. Following the 2000 reform that consolidated the market into three main exchanges, stability improved and financial derivatives products were introduced around 2010. Today, the main platforms-SHFE, ZCE, DCE, China Financial Futures Exchange (CFFEX), and the Shanghai International Energy Exchange (INE)-offer a wide range of products including agricultural commodities (soybeans), industrial metals (iron ore, steel), precious metals (gold, silver), energy (crude oil), as well as options and swaps. China’s commodity derivatives market demonstrated resilience during the COVID-19 pandemic, with effective risk management measures mitigating volatility (Chen et al., 2024).

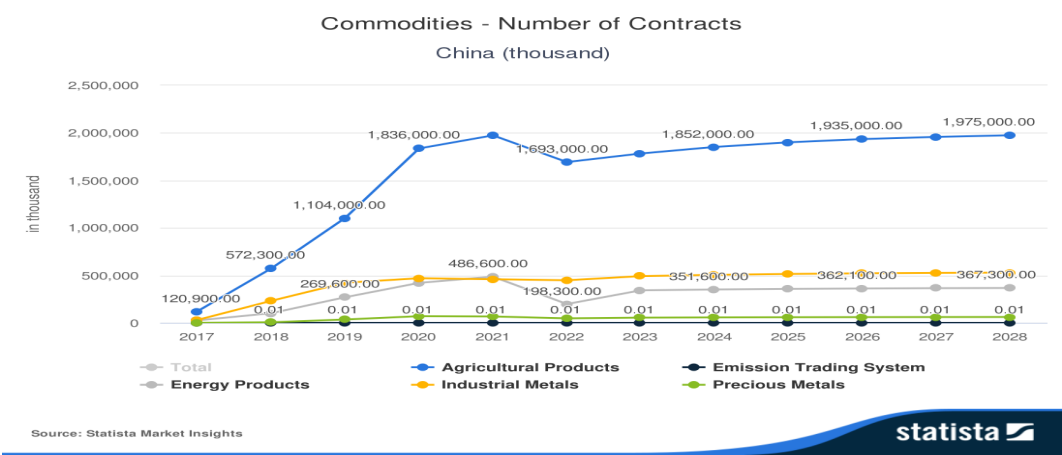


Figure 2. Number of Commodity Derivatives Contracts in China, by Product Group  
Source: Statista Market Insights (2024)

According to Statista Market Insights (2024), China’s commodity derivatives market has experienced remarkable growth over the past decade. The total number of contracts expanded from 177.5 million in 2017 to approximately 2.67 billion in 2023, with projections suggesting a further increase to around 2.34 billion contracts in 2024. This upward trajectory underscores both the depth of agricultural trading and the increasing role of other product categories in supporting market development.

Agricultural derivatives have been the dominant segment, rising from 120.9 million contracts in 2017 to about 1.78

billion in 2023, with forecasts reaching 1.85 billion contracts in 2024. Energy products followed a similar growth path, increasing from 25.6 million contracts in 2017 to 342.7 million in 2023, and are expected to edge up slightly to 351.6 million in 2024. Industrial metals also expanded significantly, climbing from 30.3 million in 2017 to 492.1 million in 2023, although projections suggest a moderation to around 486.6 million in 2024. Precious metals, though accounting for a smaller share, grew from 0.7 million contracts in 2017 to 55.2 million in 2023, with forecasts pointing to a modest rise of 57.6 million in 2024. By contrast, carbon emissions

derivatives remain limited, contributing only around 0.01 million contracts per year, though their symbolic role reflects China's broader environmental commitments.

Together, these figures highlight both the dynamism and diversification of China's derivatives market, with agricultural products maintaining dominance while energy, metals, and environmental contracts provide balance and resilience

### 3.2.3. *Development Policies and Technological Applications*

China has adopted flexible policies to promote the commodity derivatives market, particularly in the context of globalization, digital transformation, and environmental protection. These policies emphasize two main directions: attracting foreign investment and integrating advanced technology. In line with this orientation, China's commodity derivatives market has actively embraced advanced technologies to improve trading efficiency and transparency (Orient Futures, 2023). The country has opened its financial markets to international capital, allowing foreign investors to trade certain futures and options. A milestone was reached in March 2018 when crude oil futures were listed on the Shanghai International Energy Exchange (INE) with direct foreign investor access, aligning China's market closer to global standards. SHFE offers standardized futures for gold, silver, copper, and aluminum, while DCE and ZCE expand agricultural and industrial metal contracts.

Key policy measures to foster market development include facilitating trading access by streamlining participation procedures, reducing administrative barriers, and providing transparent information to attract foreign investors; promoting cross-border cooperation through the establishment of legal and commercial agreements with international markets to ensure interconnection and regulatory alignment; and encouraging product innovation by launching new options on agricultural and metal commodities to meet the risk management and investment needs of global participants. Technological modernization serves as a core driver of this development, with exchanges transitioning from traditional floor trading to advanced electronic platforms, thereby enhancing speed, cost efficiency, and transparency. Notable innovations include electronic

trading systems that enable fast and accurate remote execution, blockchain applications to ensure transparency, security, and automated execution via smart contracts, big data analytics and artificial intelligence for forecasting market trends such as iron ore or soybean price movements, and the Compliance Strategy Solution (CSS) platform, which automates position limit monitoring and ensures adherence to regulatory requirements set by the CSRC and the exchanges. These advancements increase efficiency, reduce risk, enhance investor confidence, and foster sustainable growth.

### 3.2.4. *Clearing and Physical Delivery Management*

China's exchanges operate centralized clearing systems using daily mark-to-market valuation. Clearinghouses manage margin deposits and risk reserves, requiring members to maintain minimum balances in local currency. Exchanges have authority to inspect members' financial documents to ensure compliance. Centralized clearing mitigates counterparty risk, with contingency funds in place to address payment defaults.

Physical delivery is conducted through designated warehouses with strict requirements on quality, weight, packaging, and defect handling. For example, at SHFE, metals such as cathode copper and electrolytic nickel must meet rigorous certification, quality, and loading standards, ensuring precise and transparent delivery. Exchanges may add product-specific rules to reduce disputes and improve efficiency

### 3.2.5. *Membership and Risk Management*

Exchange members must be enterprises registered under China's Company Law, hold minimum capital of RMB 30 million, have compliant infrastructure, professional management, and internal risk control systems. Members are classified as clearing or non-clearing, may act on client instructions, and must provide risk disclosure statements before trading. Unauthorized or non-compliant trades are prohibited.

Risk management measures include:

- **Margin requirements:** Margins apply only to inter-member settlements, with rates increasing near expiry to deter speculation (e.g., at DCE, from 5% to 10% and 20% near maturity). SHFE and ZCE apply similar measures with product-specific rates.



- Price, position, and trading limits: Daily price limits (4% normally, 6% in delivery month at DCE), expandable to multiple levels to prevent manipulation; position and trade limits cap the number of contracts held.

- Risk resolution mechanisms: Exchanges may issue risk warnings, conduct consultations, send formal notices, or enforce mandatory position reductions for high-risk or non-compliant trades, maintaining market stability

#### 4. Lessons from Japan and China in Developing the Commodity Derivatives Market

##### 4.1. Current Status of Vietnam's Commodity Derivatives Market

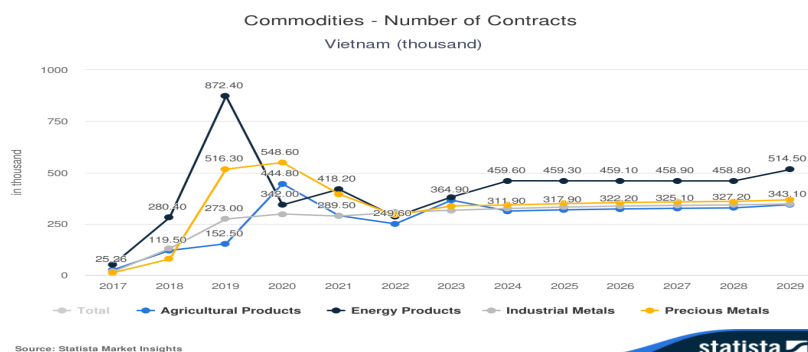
The commodity derivatives market in Vietnam, initiated with the establishment of the Vietnam Commodity Exchange (MXV) on September 1, 2010, under License No. 4596/GP-BCT from the Ministry of Industry and Trade, and further regulated by Decree No. 51/2018/ND-CP issued on April 9, 2018, remains relatively new. MXV is the only entity authorized by the Ministry of Industry and Trade to organize centralized commodity trading at the national level.

As of July 2025, MXV has 31 active trading members and offers trading for 44 commodities, grouped into three main categories: agricultural products, metals, and industrial materials. The product portfolio has expanded significantly from a few basic commodities at the outset to its current scale.

MXV operates an internationally standardized trading system that serves as an effective tool for enterprises and investors to manage price risks. By applying modern technology and scientific management, MXV aims to build a transparent trading

platform that enables domestic farmers and investors to access global prices, avoid price manipulation, and support businesses in long-term planning.

The development of MXV has closely followed the evolution of the legal and institutional framework governing commodity trading in Vietnam. The period from 2017 to 2018 marked the initial groundwork, particularly with the issuance of Decree No. 51/2018/ND-CP, which established the legal foundation for MXV's operations. However, during this early phase, market participation remained limited due to low public awareness and underdeveloped infrastructure. From 2019 onward, the market gained momentum as MXV established connectivity with major international exchanges such as CME, ICE, and TOCOM. This integration allowed domestic investors to access global agricultural, energy, and metal commodities. As a result, trading value surged from USD 24.94 billion in 2018 to USD 240.9 billion in 2019, before declining by 24.18% in 2020 due to extreme volatility in oil prices during the COVID-19 pandemic. Between 2021 and 2023, the market experienced strong growth despite global uncertainties. Trading value reached VND 180 trillion in 2021, increased by 36% to VND 240 trillion in 2022, and was estimated at VND 300 trillion in 2023. Contract volume also expanded significantly, from just 104,700 contracts in 2017 to 1.399 million in 2023, with major jumps in 2018 (up 479%) and 2019 (up 199%). While trading volume dipped slightly between 2020 and 2022 due to pandemic-related disruptions, it rebounded in 2023, increasing by 23.8%.



**Figure 3.** Number of Commodity Derivatives Contracts in Vietnam, by Product Group  
Source: Statista Market Insights (2024)

Looking ahead, projections for the 2024–2028 period suggest a temporary decline in agricultural trading value in 2024 (down 29.32%) due to weak corn and soybean prices, followed by steady growth of approximately 3.53% annually, driven by strong coffee demand and the introduction of new products such as carbon credits. The number of trading accounts reached nearly 30,000 in 2023, marking a 20% increase from the previous year.

Agricultural commodities represent a significant portion of the trading value on the derivatives market. However, in comparison to the scale of Vietnam's overall agricultural exports, the derivatives market remains relatively underdeveloped, as many enterprises have not yet effectively adopted derivatives as tools for price risk management. The market still faces several challenges, including limited awareness, an incomplete legal framework, low liquidity, and high transaction costs. In response, MXV is actively working to develop specialized exchanges for commodities like coffee and rubber, while also expanding into environmental products to support international integration and sustainable growth.

#### **4.2. Lessons for Vietnam**

The experiences of Japan and China demonstrate that a successful commodity derivatives market requires a balanced combination of transparent regulation, diversified products, advanced technology, effective risk management, and investor education. However, both countries have faced challenges in their development, such as managing excessive speculation, ensuring information transparency, and controlling international capital flows, which Vietnam must carefully consider to avoid similar pitfalls. Combined with the current situation of Vietnam's market, these lessons suggest several key directions for improvement while addressing potential risks in adopting foreign models.

- **Diversifying the Product Portfolio**

Japan and China have expanded their product portfolios to include agricultural, metal, and energy derivatives, attracting diverse participation from domestic and international investors. For instance, Japan's Tokyo Commodity Exchange (TOCOM) offers contracts for energy and precious metals, while China's Shanghai Futures Exchange (SHFE) and Dalian Commodity

Exchange (DCE) trade a wide range of commodities, from soybeans to crude oil. In contrast, the Vietnam Commodity Exchange (MXV) has grown its product list from a few commodities in 2018 to over 40 by 2024, including Robusta coffee, corn, rubber, cocoa, copper, crude oil, and natural gas. However, its portfolio remains limited compared to leading exchanges like CME, TOCOM, or SHFE, leading to low liquidity and modest global appeal.

To follow international practices, MXV should prioritize contracts leveraging Vietnam's export strengths, such as coffee, rubber, and pork, while exploring new instruments like carbon credit derivatives to align with global sustainability trends. This strategy can support enterprises in managing price risks, stabilize the domestic market, and enhance international competitiveness. However, Vietnam must be cautious of over-diversification, as seen in China's early 1990s market, where rapid expansion led to speculative bubbles and regulatory violations (Đinh, 2020). To avoid this, MXV should introduce new products gradually, ensuring robust risk management and market readiness.

- **Applying Technology in Trading and Risk Management**

Japan and China have placed technological innovation at the core of their market strategies, adopting electronic platforms, blockchain, and big data to enhance speed, transparency, and security. For example, TOCOM's shift to electronic trading improved transaction efficiency, while China's exchanges use AI and big data for market forecasting. Similarly, MXV should adopt cloud computing, following CME's partnership with Google, to handle large trading volumes efficiently and reduce costs. Blockchain can ensure data integrity and minimize fraud, while advanced cybersecurity measures—such as multi-layer encryption and continuous monitoring—are essential to protect against cyberattacks and ensure stable operations during peak periods.

However, technology adoption in China faced challenges, such as high implementation costs and cybersecurity vulnerabilities, particularly during the early stages of digital transformation (Chen et al., 2023). Vietnam, with its limited technological infrastructure, must address these risks by investing in scalable systems and training technical staff to ensure sustainable adoption. This will strengthen

investor trust, reduce systemic risks, and enhance market professionalism.

- Improving the Legal Framework

Japan's frequent legal updates and China's strict yet flexible regulations highlight the importance of governance in building market confidence. Japan's Commodity Derivatives Act (2018) and China's Futures and Derivatives Law (2022) provide clear rules for transaction monitoring and risk management. In contrast, Vietnam's legal framework under Decree No. 51/2018/ND-CP lacks the detail and coherence of these markets, limiting MXV's ability to attract international investors. MXV should collaborate with the Ministry of Industry and Trade and the State Securities Commission to align regulations with international standards, enhance transaction monitoring, and minimize manipulation risks. Targeted incentives, such as tax benefits or simplified procedures, can further boost participation and liquidity.

Nevertheless, China's early market faced challenges with information transparency due to inconsistent enforcement and complex regulations, which sometimes deterred foreign investors (CME Group, 2021). Vietnam, with its developing legal system, risks similar issues if regulations are not clearly communicated or consistently enforced. To avoid this, Vietnam should prioritize transparent legal guidelines and regular audits to ensure accountability and build trust among stakeholders.

- Strengthening Transaction Risk Management

China's exchanges have effectively managed risks through position limits and early-warning systems, while Japan uses multi-layered margin systems to control volatility. Vietnam should adopt a similar approach by working with regulators to establish clear position limits for each commodity, regularly publish these limits, and enforce strict supervision. These measures can curb excessive speculation while allowing exemptions for genuine hedging needs. Training programs on risk management tools can further discourage speculative behavior and promote a fair trading environment.

However, Japan and China have faced challenges with excessive speculation, particularly during periods of high market volatility, which occasionally

destabilized prices (Đinh, 2020). Vietnam must carefully design position limits and monitor speculative trading to prevent market distortions. Additionally, controlling international capital flows, as seen in China's restrictions on foreign investors, poses a challenge for Vietnam, where an open market could lead to capital flight if not properly regulated. MXV should implement safeguards, such as capital movement restrictions, to balance openness with stability.

- Raising Awareness and Market Education

Investor education has been crucial in Japan and China, enabling broader participation and sustainable growth. For example, China's exchanges provide extensive training to retail investors, while Japan offers guidance for new market participants. In Vietnam, raising awareness remains a critical need. MXV should organize seminars, training courses, and publish guidance materials on the mechanisms, risks, and benefits of derivatives trading. Disseminating timely market information through mass media and social networks, combined with a transparent market database, will empower investors to make informed decisions. Enhanced market analysis and forecasting can also provide enterprises with deeper insights, reinforcing market credibility.

However, Japan initially struggled with low retail investor participation due to limited financial literacy, requiring years of educational campaigns (FIA, 2023). Vietnam faces similar challenges, particularly among agricultural producers unfamiliar with derivatives. To address this, MXV must tailor educational programs to local stakeholders, ensuring accessibility and cultural relevance to avoid the slow adoption seen in Japan's early market.

## 5. Conclusion

The experiences of Japan and China demonstrate that the successful development of a commodity derivatives market depends on a well-balanced combination of a transparent legal framework, a diversified product portfolio, advanced technology, and effective risk management mechanisms. Japan has established a stable legal foundation, transparent governance, and integrated blockchain technology into trading, while China has leveraged open-market policies, digital technology, and big data to enhance liquidity and attract international investors.

For Vietnam, although the Vietnam Commodity Exchange (MXV) has made notable progress since its inception, the market's scale remains disproportionate to the country's potential as a leading agricultural exporter. The solutions proposed in this study - including expanding the product portfolio, focusing on key export commodities and new instruments such as carbon credits, promoting the application of advanced technologies, improving the legal framework in line with international standards, strengthening risk management, and raising stakeholder awareness - are intended not only to increase market liquidity and attractiveness but also to build a transparent, efficient, and sustainable trading ecosystem.

If implemented in a coordinated manner, these strategic directions will enable Vietnam's commodity derivatives market to serve as a vital tool for enterprises

in managing price risks, foster deeper international integration, and contribute positively to the country's overarching goal of sustainable economic development.

However, this research is constrained by its reliance on secondary data, which may not fully capture on-the-ground practices or informal challenges faced by stakeholders. Additionally, the absence of econometric modeling or primary data collection, such as surveys or interviews, limits the depth of empirical insights. Future research should complement this qualitative comparison with quantitative methods to evaluate the effectiveness of specific policies and trading mechanisms.

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