WEP Warwick Evans Publishing

International Journal of Global Economics and Management

ISSN: 3005-9690 (Print), ISSN: 3005-8090 (Online) | Volume 7, Number 3, Year 2025
DOI: https://doi.org/10.62051/ijgem.v7n3.19
Journal homepage: https://ijgem.org

Cocoa War: When El Nino Meets Wall Street Capital

Boru Li

International Education College, Wuhan University of Technology, Wuhan, 430000, China
liboru20040730@163.com

ABSTRACT

In 2024, the futures price of cocoa in London soared by 80% within just five months, becoming a rare and volatile event in the global agricultural products market. This paper takes this as the entry point and systematically explores the coupling effect of extreme climate shock and capital market behavior in the formation mechanism of agricultural product prices. Research has found that the main production areas in West Africa have suffered from severe drought and pests and diseases under the influence of strong El Nino, resulting in a 30% to 40% reduction in cocoa production and triggering a global supply panic. Meanwhile, financial speculative forces took advantage of the situation to build positions on a large scale, pushing futures prices to deviate from the fundamentals in a "short squeeze spiral". Based on the theory of warehousing costs, the perspective of financialization and the derivative linkage mechanism, this article analyzes the transmission chain of the sharp increase in cocoa futures prices, and points out that the lagging existing supervision and the vulnerability of the supply chain are the core of systemic risks. Finally, the response strategies proposed include dynamic hedging mechanisms, strengthening of climate financial tools and diversified layout of planting areas, providing theoretical support and policy suggestions for the risk management of similar events in the future.

KEYWORDS

Cocoa futures; El Nino; Short squeeze risk; Warehouse cost theory; Climate derivatives

1. INTRODUCTION

It is a globally significant soft commodity, with approximately 70% of it produced in West Africa. Cote d 'Ivoire and Ghana together contribute over 60% of the global supply [1]. This concentration of production areas makes the global market highly dependent on the climate and policy environment of the region.

In early 2024, due to the extreme drought and pests and diseases caused by a strong El Nino, the main cocoa-producing countries in West Africa experienced a significant reduction of 30% to 40% [2]. Coupled with government export restrictions, this led to a tight global supply chain. Meanwhile, speculative capital rushed into the futures market rapidly, causing sharp changes in trading volume and position structure, which led to a short-term surge of over 80% in the price of cocoa futures in London.

Cocoa Futures are mainly traded on ICE Futures U.S. in New York and ICE Futures Europe in London. Standardized contracts support growers and processors in managing the risk of price fluctuations. The futures market was originally priced based on fundamentals such as output, inventory, and transportation. However, with the frequent occurrence of global liquidity excess and abnormal climate , the impact of capital speculation and macro sentiment on price fluctuations has become increasingly prominent, and the transmission path to the real economy has become more complex [3].

In terms of natural factors, the strong El Nino in 2023-2024 caused widespread drought, high temperatures and pests and diseases in West Africa, severely weakening the productivity of cocoa trees. The outbreak of fungal diseases such as black gum disease has led to a year-on-year decline of 30% to 40% in production, the most severe reduction in production in nearly two decades, exposing the region's high vulnerability to abnormal climate.

On the economic front, due to fluctuations in international prices and weak bargaining power, farmers' incomes are generally low, making it difficult for them to invest in improving their planting. Since 2023, Ghana and Cote d 'Ivoire have raised the minimum purchase price, promoted export taxes and local processing, aiming to improve farmers' income. However, in the short term, they have increased export costs and further restricted the international supply of raw beans. Meanwhile, global inflation and the appreciation of the US dollar have pushed up the cost of agricultural supplies, making it more difficult for the cocoa industry to recover [4].

Geopolitical factors have also exacerbated supply bottlenecks. From 2023 to 2024, many countries will strengthen export control, such as COCOBOD restricting the export of raw beans and giving priority to local processing. Domestic political instability in countries such as Nigeria and Burkina Faso, coupled with rising shipping costs, has disrupted logistics channels. Although food enterprises have attempted to purchase cocoa from South America and Southeast Asia, it is difficult to fill the gap in West Africa in the short term. The imbalance between supply and demand in the global market remains unresolved, laying the foundation for a sharp increase in futures prices [5].

This article focuses on this event, explores the resonance mechanism of climate shock and financial speculation in the agricultural product market, and mainly analyzes the causes of futures price de-anchoring, the applicability of the storage cost theory, as well as the feasible paths for regulation and risk response.

2. DESCRIPTION OF CASE EVENTS

From January to May 2024, the futures price of cocoa in London soared from £2,600 per ton to £4,700 per ton, with a cumulative increase of more than 80%, marking the highest increase since the 1950s. This sharp increase originated from the severe drought and pest infestation caused by the strong El Nino in West Africa. The production in Ghana and Cote d 'Ivoire decreased by 30% to 40%. The authorities issued a production reduction warning in advance, triggering a rapid market response. Futures prices broke through £3,200 in February, and market liquidity tightened as diseases worsened and export restrictions were introduced.

Speculative capital took the opportunity to build up positions on a large scale, with long positions surging. ICE data shows that the proportion of non-commercial holdings reached a record high in April. On some trading days, there were even signs of forced selling. Meanwhile, major chocolate manufacturers such as Nestle and Hershey issued cost warnings, with the prices of some products rising by double digits. Despite soaring costs, global chocolate consumption remained stable in 2024, demonstrating resilience in demand.

Hedge funds initially drove the rise, but quickly withdrew from the market after prices were too high and volatility intensified. According to the Financial Times, the scale of speculative capital bets reached as high as 8.7 billion US dollars in 2023. By the peak of withdrawals in April 2024, it intensified price fluctuations and market imbalances, prompting enterprises to seek alternative trading tools. The responses of the main stakeholders are shown in Table 1 below.

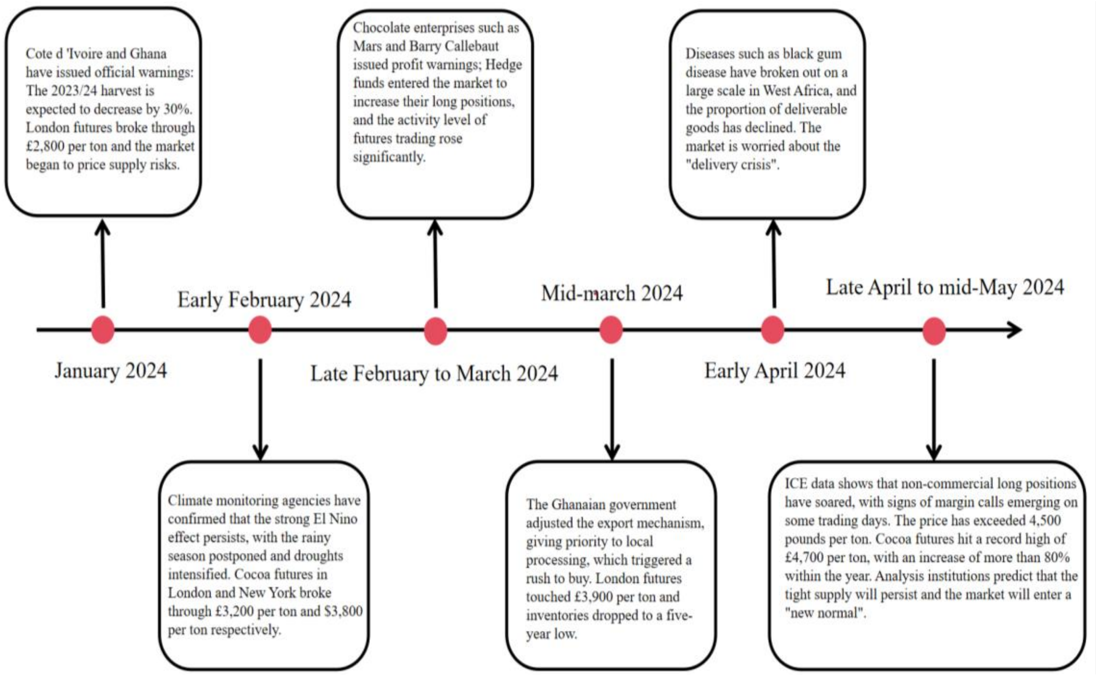

Figure 1. A timeline of the soaring cocoa futures prices from the beginning of 2024 to May 2024

Table 1. The actions and responses of the main stakeholders

Stakeholder	Role positioning	Main actions	Influence and Results
The governments of Ghana and Cote d 'Ivoire	The world's major producer, accounting for approximately 60% of the global output	- Issue a production reduction warning - Restrict exports and give priority to local processing - Promote an increase in farmers' purchase prices	- Triggering supply panic in the international market - strengthening the local industrial chain - supporting the continuous rise of futures prices
Hedge funds and speculative investors	Non-commercial funds and market bulls	- Large-scale increase in long positions - Participation in futures-spot arbitrage and volatility trading - Some days witnessed a forced position effect	- Boost the increase in price - Amplify market volatility - Raise concerns about delivery crises
ICE Exchange	The main trading platform for cocoa futures	- Increase margin - Raise deliverable standards - Issue risk warnings	- Stabilize market sentiment in some areas - Enhance market tension expectations in the short term - Guide institutions in risk prevention and control
Regulatory authorities (FCA, CFTC, etc).	Maintain fairness and stability in the financial market	- Strengthen market monitoring - Review abnormal positions - Call for prudent trading behavior	- Limit manipulation risks - Promote the issue of long-term rule reengineering
Chocolate terminal enterprises (such as Mars, Nestle)	Downstream of the consumption chain	- Issue profit warnings - Raise product prices and adjust formulas - Seek alternative raw materials	- Cost transfer to consumers - Long-term impact on product structure and consumer expectations

3. ANALYSIS OF KEY ISSUES

3.1. Climate Risks and Supply Chain Vulnerabilities

One of the core triggers for the sharp increase in cocoa futures prices in London in 2024 was the significant reduction in production in major West African production areas due to extreme climate events, especially the strong El Nino phenomenon, highlighting the high sensitivity of the agricultural product supply chain to climate disturbances.

Cocoa in West Africa is highly dependent on the tropical rainforest climate. In 2024, the rainfall in Ghana and Cote d 'Ivoire was 18% lower than the average, the ground temperature rose by 1.5°C, and the output decreased by approximately 28% to 32% year-on-year, which was highly correlated with the deviation of rainfall (R=0.81). Frequent occurrence of pests and diseases has led to an infection rate of 12.4%, further reducing the proportion of deliverable goods and exposing the combined risks of reduced output, deteriorated quality and disrupted logistics under climate disturbances. This indicates that there is a typical "climate-vulnerable coupling effect" in the cocoa supply chain of West Africa: Climate disturbances not only affect the total output, but also superimpose quality degradation and logistics disruptions, constituting a compound risk.

Theoretically, the agricultural product futures market conducts price discovery and risk transfer based on the warehousing theory. However, due to the characteristics of cocoa such as perishability, difficult storage, and high delivery thresholds: the linkage between the futures and spot markets is relatively weak, and some small and medium-sized growers cannot directly participate in hedging. Extreme weather has brought about quality differences and a decline in deliverable ratios, causing a "decoupling" between futures prices and actual procurement costs. The hedging efficiency is limited by the delivery bottleneck and the short closing mechanism, which instead intensifies the risk exposure in a short squeeze market. Therefore, the hedging ability of traditional futures in such extreme events is limited.

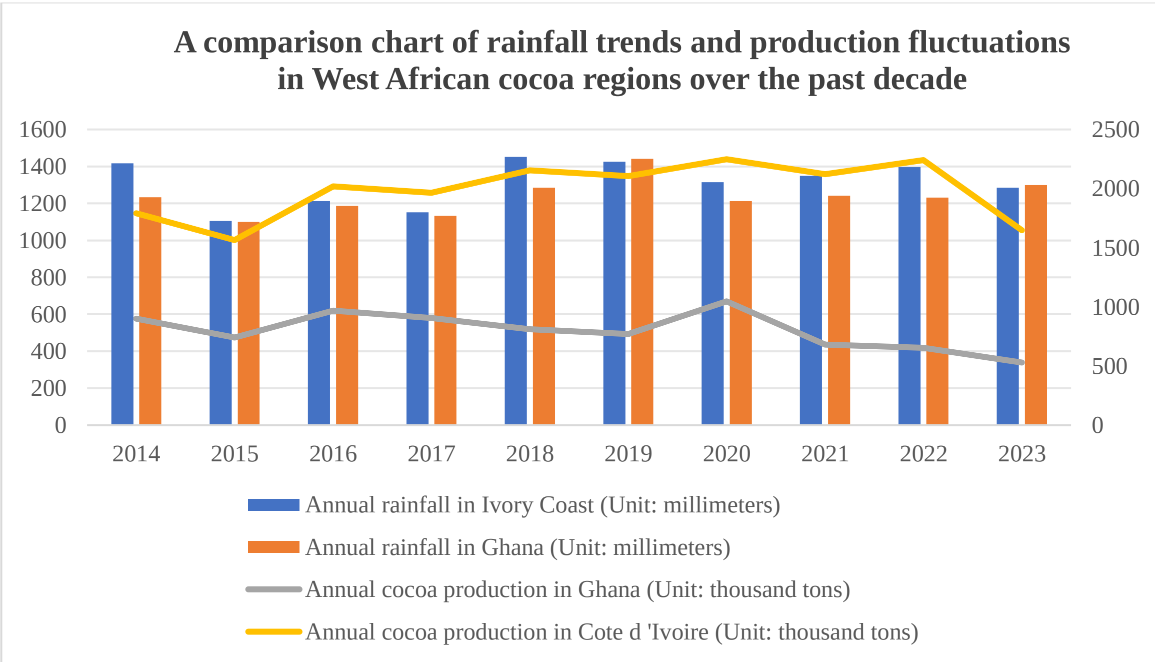

Figure 2. A comparison chart of rainfall trends and production fluctuations in West African cocoa regions over the past decade

Data source: https://www.icco.org/statistics/#production, Extreme Weather Watch

3.2. Short squeeze Risk and Market Structure Imbalance

In 2024, the London cocoa futures soared by more than 80%, with the core driving force being the "short squeeze spiral" mechanism: against the backdrop of production cuts and export delays in West Africa, the reversal of short expectations led to concentrated liquidation. Meanwhile, ICE inventory dropped to its lowest level in 15 years, intensifying the physical delivery bottleneck and forcing short sellers to cover their positions at high prices. The net long position of hedge funds reached 38%. Coupled with the shortage of warehouse receipts and high storage costs, it led to an imbalance in futures liquidity. The market has entered a self-reinforcing cycle of "inventory depletion → short positions covering → price rise → long positions increasing", which has magnified price fluctuations and risk exposure, reflecting the systemic fragility of the futures market due to structural imbalance and lagging regulation.

The cocoa short squeeze in 2024 originated from the resonance of short flattening and delivery bottlenecks. At the beginning of the year, due to the influence of El Nino, the expectation of production cuts in West Africa failed to materialize. After a large amount of short selling by funds, they encountered export delays and default risks, which triggered a concentrated liquidation of short positions and led to a sharp increase in prices. Meanwhile, ICE-certified inventories have dropped to a 15-year low (less than 60,000 tons), making it difficult for short sellers to close their positions and forcing them to buy back at high prices, further boosting the market and forming a typical "short squeeze spiral". As shown in Figure 3.

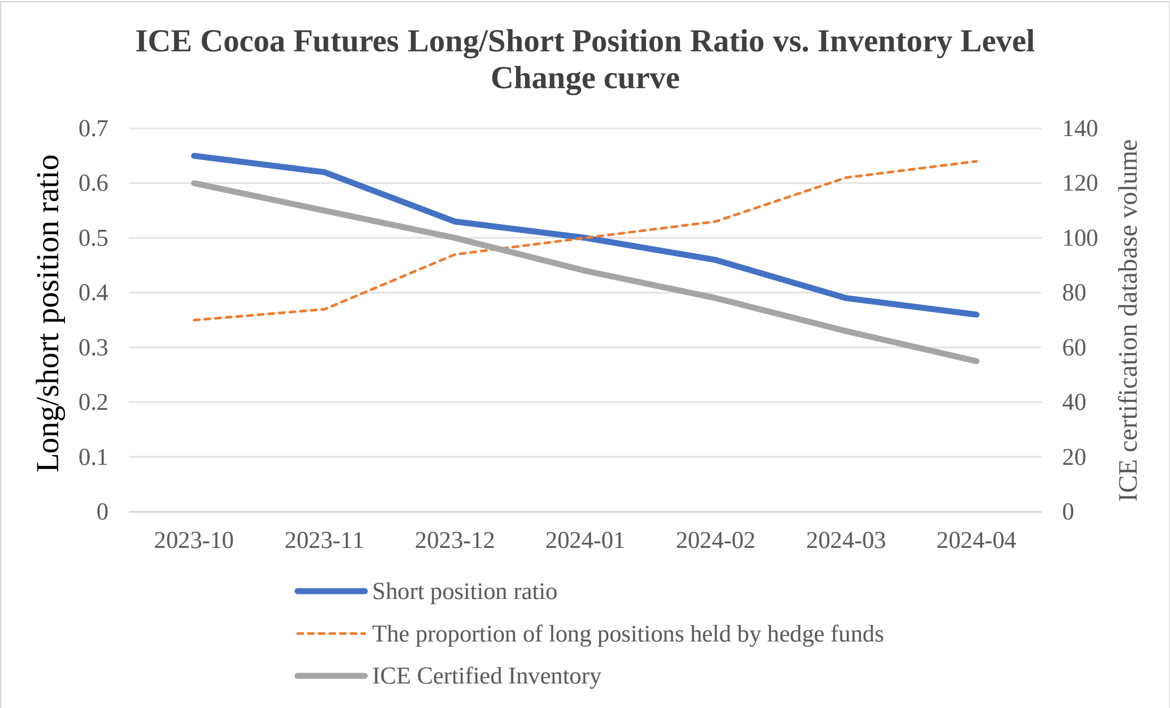

Figure 3. ICE Cocoa Futures Long/Short Position Ratio vs. Inventory Level Change curve

3.3. The Impact of Financialization on the Real Economy

The financialization of commodities, that is, through the extensive use of derivative tools such as futures markets and options trading, makes commodity prices not only affected by the relationship between supply and demand, but also by the flow of financial capital [6]. In 2024, cocoa futures in London soared by 80%, highlighting the leading role of speculative capital in price fluctuations. This kind of fluctuation is divorced from the actual supply and demand, weakens the traditional pricing mechanism, makes it difficult for enterprises to predict raw material costs, and increases operational uncertainty. The supply chain crisis in West Africa has led to a shortage of raw materials. Speculative funds' hoarding has further pushed up costs, and chocolate enterprises are facing a severe squeeze on profits. Take cocoa as an example. It accounts for 25% to 35% of the product cost. The soaring price directly affects the enterprise's profit. The option lock-in strategy can provide enterprises with cost ceiling protection and effectively alleviate the risk of volatility [7]. Data shows that enterprises that do not adopt hedging strategies have an increased risk of bankruptcy in extreme market conditions, while those with high hedging can maintain relatively stable profits. Overall, financialization intensifies the competition for resources. Processing enterprises are at a disadvantage in price competition, and the game between speculative capital and the real economy is becoming increasingly prominent.

3.4. Synergy Between Climate Derivatives and the Futures Market

Under the background of financialization of the commodity market, climate derivatives are becoming an important tool to deal with extreme climate risks [8]. Temperature options and precipitation swaps, which were originally used in agricultural insurance, have now been linked with the futures market to form a price pre-response mechanism. Cocoa is more vulnerable to meteorological factors such as drought due to its concentrated cultivation, climate sensitivity and weak substitutability. Climate signals are rapidly transmitted to the futures market through derivatives, triggering speculative buying, amplifying price fluctuations, and highlighting the core position of climate risks in the soft commodity market.

As shown in Table 2 below, the degree of financialization of the cocoa futures market and its sensitivity to climate derivative signals are significantly higher than those of other soft commodities such as coffee. Therefore, when the drought signal in West Africa emerged in 2024, the price warning in the climate derivatives market was quickly transmitted to the cocoa futures market, causing funds to flow in rapidly and further pushing up prices. This linkage mechanism not only reflects the market's sensitive response to climate risks, but also intensifies the price volatility of the cocoa market.

Table 2. The comparison between cocoa and coffee

Project	Cocoa	Coffee
Planting concentration degree	High (70% in West Africa)	Medium (many countries in Latin America and Southeast Asia)
Climate sensitivity	Extremely high (extremely sensitive to temperature and precipitation)	High (mainly affected by frost and drought)
Degree of financialization	High (speculative funds account for approximately 45%)	Among them (speculative funds account for approximately 30%)
Climate derivatives linkage	Strong (The price is significantly linked to the drought index)	It is related to frost warnings, but the response is lagging.
Market price fluctuation range (2024)	Strong (The price is significantly linked to the drought index)	+25% (ICE Coffee C Contract)

3.5. Global Industrial Chain Chain Reaction

In 2024, the sharp increase in cocoa prices triggered a chain reaction across the entire industrial chain: the price of raw beans rose by more than 80% within the year, raising the cost of raw material procurement. The prices of intermediate products such as cocoa butter and cocoa powder have risen accordingly, compressing the profit margins of processing plants. Brand factories and the retail end are facing profit squeeze due to the lagging contract pricing at the beginning of the year, with "rising costs and unadjusted selling prices". Since the second half of the year, chocolate prices in the European and American markets have generally increased by 10% to 15%. High-end brands have raised their prices even more, while low-end brands have passed on the pressure by reducing packaging and lowering cocoa content. The burden on consumers has significantly increased, and the terminal market has begun to show changes in demand elasticity.

The recent sharp increase in cocoa prices has exposed the systemic risks brought about by the excessively high concentration of plantations in West Africa. Abnormal climate, frequent occurrences of pests and diseases, and policy intervention have driven the industrial chain to accelerate its diversified layout. Latin American countries such as Brazil and Ecuador are attracting investment to return, Asian countries are enhancing production capacity through technology, and Africa is also accelerating its transformation in infrastructure construction and financing. To cope with cost pressure, enterprises are seeking substitutes one after another: palm oil partially replaces cocoa butter in the confectionery sector, the rising demand for sugar and sugar substitutes has pushed prices up by more than 20%, and dairy and nut oils have also widely replaced them. The fluctuation of cocoa prices has driven the overall upward movement of "soft commodities", showing the characteristics of assetization. Enterprises are increasingly relying on financial tools such as options and raw material combinations to hedge cost risks.

The following chart 3-4 shows the trends of the London cocoa futures price and the global chocolate retail price index from 2020 to 2024. It is obvious that the futures price of cocoa rose sharply in 2024, and although the retail price index of chocolate showed a synchronous upward trend, the lag was significant. This reflects that there is a time delay when upstream price fluctuations are transmitted to the consumption end. At the same time, it also indicates the existence of hedging factors such as terminal pricing strategies and brand adjustment capabilities.

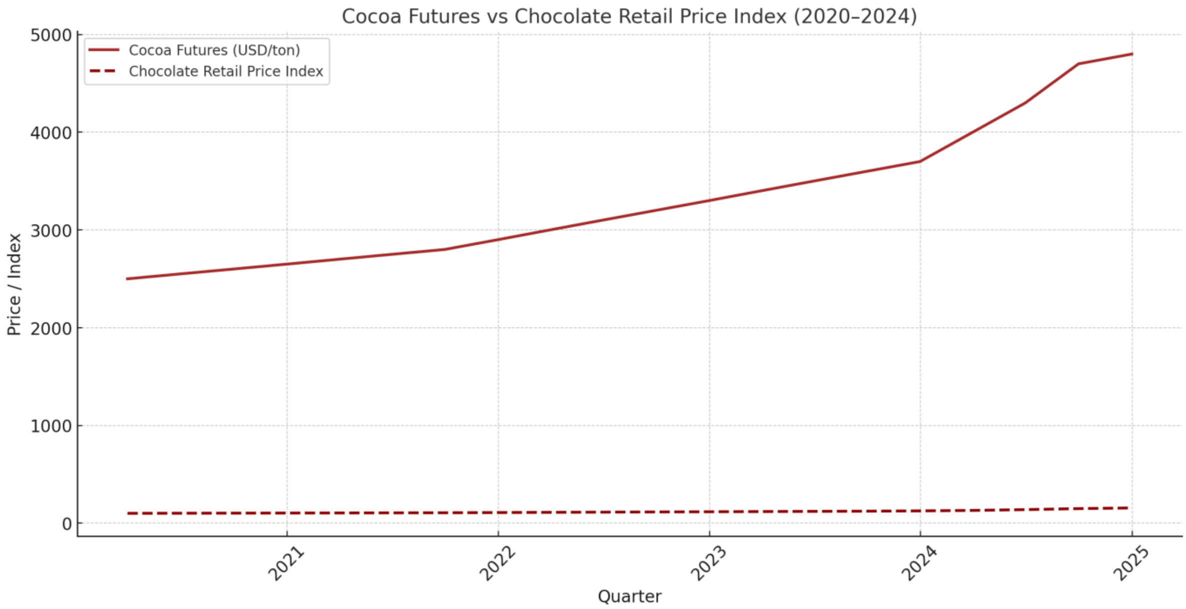

Figure 4. Correlation Analysis of Cocoa Futures Prices and Chocolate Retail Price Index

4. RESEARCH CONCLUSIONS

This study takes the sharp increase in cocoa futures prices in London in 2024 as a case to reveal the complexity of the resonance mechanism between climate shock and financial speculation in the agricultural product market. Research indicates that the extreme climate triggered by strong El Nino is the root cause of the reduced production in major cocoa-producing countries, exposing the high risk of the global supply chain's reliance on a single region. Speculative capital, on the other hand, intensifies price decoupling through position building and short selling operations, triggering cost shocks to the real economy. Under the constraints of the perishability of cocoa and the high delivery threshold, the traditional risk transfer mechanism in the futures market has failed and instead magnified the fluctuations. As climate derivatives and capital power increasingly dominate the logic of price formation, agricultural products are becoming increasingly financialized, leading to simultaneous pressure on the upstream and downstream of the industrial chain and giving rise to the trend of supply diversification and industrial migration. In the face of the systemic vulnerability of the global agricultural products market, it is urgent to strengthen policy coordination and regulatory upgrading, improve the climate early warning system, optimize the delivery system, and promote the innovation of financial tools to achieve a coordinated response to the dual risks of climate and the market.

REFERENCES

[1] Jiang, H. (2012) Current Situation of Agricultural Development in Cote d 'Ivoire. World Agriculture. (09):98, 100-103.

[2] Shu, X. (2024) How much impact will the annual increase of international cocoa futures prices exceeding 266% have on the consumption end of chocolate food? 21st Century Business Herald.

[3] Zhang, L., Chen, Y. (2024) Economic Policy Uncertainty, Financialization and Agricultural Futures Prices. Price Monthly. (11):1-10.

[4] Liu, J., Wang, C., Zhao, J. (2024) Fed Interest Rate Hikes, Energy Price Fluctuations and China's Macroeconomic Stability. World Economic Review. (06):83-100.

[5] Ziso, E., Hamandishe, A.L. (2024) Terrorist Groups’ Exploitation of State Fragility and Ungoverned Spaces in Burkina Faso and Niger. Journal of Central and Eastern European African Studies, 4: 2.

[6] Fang, X., Gao, Y. (2023) Geopolitical Conflict Risks, Financialization of Bulk Commodities and Fluctuations in Agricultural Futures Prices. Economic Issues. (06):57-67.

[7] Muravyev, D., Neil, D.P., Broussard, J.P. (2013) Is there price discovery in equity options? 107: 259-283.

[8] Yao, F., Xue, L., Liang, J. (2021) Research on the Hedging Effect of Weather Derivatives on Crop Yield Fluctuations. Price Theory & Practice. (12):126-129, 201.