Sarcouncil Journal of Public Administration and Management

ISSN(Online): 2945-3712

Volume- 02| Issue- 02| 2023

Research Article **Received:** 12-01-2023 | **Accepted:** 11-02-2023 | **Published:** 23-03-2023

Impact of Future Contract on Spot Price in Vietnam Agricultural Commercial Market: Case of Robusta Coffee and Arabica

Lan Phuong To and Hoang Linh Ngo
VNU – University of Economics and Business

Abstract: Due to the unpredictability of politics, the economy, and pandemics, the price of commodities has been erratic throughout the past year. As a result, investing in commodities is seen as a desirable way to diversify a portfolio and reduce market risk. One of the biggest issues in investments is risk management, so investors must employ a technique to help them reduce their risk. Futures contracts, one type of derivative, are used as a tool to efficiently control the risks associated with investments. This research investigates the impact of the future contract price on the commodities market price in the agricultural commercial market in Vietnam: Case of Robusta and Arabica coffee. To answer the research question, we will collect the time series of future contract price and spot market price of coffee from August 2019 to June 2022 and we use the regression analysis and serial autocorrelation test to evaluate these variables. The major results of the research indicate that the future contract price of Robusta affects directly on the spot price whereas the futures contract price of Arabica has no correlation with the spot price. Thus, we recommend the investors and the farmer should use the future contract to hedge the price of coffee in the spot market.

Keywords: Coffee, Arabica, Robusta, Future contract, Hedging, Risk Management.

INTRODUCTION

Agriculture is one of the key industries in Vietnam with the structure of agriculture, forestry and fisheries accounting for up to 11.88% of the country's GDP. Laborers aged 15 and over working in agriculture, forestry and fishery as of December 2022 are about 13.9 million people, accounting for about 27.5% of the total number of employees in the country, and only less than industrial and construction sector (17 million people) (General Statistics Office of Vietnam, 2022). In recent years, Vietnamese agricultural products have achieved many remarkable successes, in which coffee is one of the agricultural products with the largest production output in our country, after rice. The export turnover of the whole agriculture, forestry and fishery industry in 2022 achieved impressive results with over US$53.22 billion, an increase of 9.3% compared to 2021. Of which there are 8 products/product groups of turnover over 2 billion USD (coffee, rubber, rice, vegetables, cashew, shrimp, pangasius, wood products) (Chu Khôi, 2023). Thus, it can be seen that coffee is one of the key agricultural products of Vietnam. Therefore, price fluctuations when trading this commodity is one of the most important factors and is of interest to producers or farmers. However, the nature of the coffee price of our country depends on the price of the world market, only a sharp drop in price also causes coffee growers and coffee traders to bear great risks. lead to bankruptcy. In the world, in order to protect prices for exporters of agricultural products in general and coffee in particular, countries often use measures to build a market for trading futures contracts and options for agricultural commodities to trade entities (manufacturers, exporters of agricultural products) participating in transactions, sharing risks on commodity prices to other partners in that market and to the international market. These contracts are implemented through major centralized commodity trading centers such as London (LIFFE), New York (NYBOT). Like other countries in the world, there is no reason why Vietnam does not apply this form when the development of trading products for Vietnamese goods is inevitable and necessary corresponding to the stage of economic development economy and integration today. Both domestic and international studies have shown the effectiveness of using futures contracts in hedging price risks in the agricultural commodity market, especially with Vietnam's coffee. In Vietnam, the two main domestic coffee products are Robusta and Arabica, each with its own distinct characteristics in terms of production and harvesting methods. However, coffee is a seasonal agricultural product and according to the survey, the price fluctuations of coffee in the world are constantly changing, which directly affects the import and export of coffee in Vietnam. Therefore, the hedging effectiveness of futures contracts that international exchanges such as ICE EU or ICE US at the same level and Vietnamese entities participate in through MXV is something that many people are interested in. At the same time, at present, there are still many highland households that do not have much understanding about the use of futures contracts in hedging price risks for coffee in particular and agricultural products in general.

***Corresponding Author:** Lan Phuong To

DOI- https://doi.org/10.5281/zenodo.7764500

LITERATURE REVIEW

Price fluctuations are always a big concern for farmers or producers or businesses dealing in commodities. This is considered one of the biggest risks, directly affecting the production stages, input and output costs and profitability of the business. Therefore, hedging is a top concern for commodity producers, especially Vietnam's key agricultural products such as coffee. In the world, there are many research studies on the hedging role on price of futures contracts such as agricultural product futures, gold, etc. However, when applied to different markets. The results of the retest are inconsistent and controversial.

John and Benjamin, (2016) used GARCH and VECM models to test the relationship between coffee producer prices in Uganda and international futures prices, and also to test the feasibility of hedging strategies when use these markets. The results demonstrate that there is a strong relationship between coffee producer prices in Uganda and international futures prices.

Sugirtha, *et al*., (2021) used the VECM model to evaluate the price behavior of the Indian commodity market and evaluate the hedging effectiveness of futures contracts on sample commodity selection on the Multi-Commodity Exchange of India. Research results show that commodity futures prices determine the spot prices of some sample commodities, and natural gas futures provide the highest hedging efficiency compared to other commodities.

Yang and Allen, (2005) used four models: OLS, VAR, VECM and multivariable GARCH to estimate the optimal hedge ratio of Australian futures contracts, and then compared the hedging effectiveness of these ratios using in-sample and out-of-sample performance, based on two different approaches, the risk-return and the benefit-maximizing approach.

According to the hedging theory of (Gordon Gemmill, 1986), the optimal hedging in the futures market for the commodity exports of the exporting country is to determine whether the futures market provides provide exporting countries with the means to reduce volatility in export revenues. Research has evaluated based on the commodities such as cocoa, coffee and sugar of exporting countries and assumed that each country is a price taker in the futures market.

Nicolau and Palomba, (2015) analyzes the dynamic relationship between spot and futures prices, looking at the possibility of predicting futures prices based on spot prices and vice versa. The research uses a multivariate VAR model with price data of two energy commodities, crude oil, natural gas and gold. The results of the research show that the dynamic relationship between spot prices and futures prices depends significantly on the characteristics of each commodity market. In the markets studied by the author, spot and futures prices are always merged, with crude oil and natural gas both having predictive power between spot and futures prices but not gold meaning

Wibowo, (2017) used OLS, VECM and TARCH models to estimate the optimal hedging coefficient. Cocoa and coffee futures price data is obtained from the Jakarta futures exchange. The results of the research show that the Jakarta futures exchange performs quite well its defensive role, all methods showing a decrease in price movements of about 70% compared to the unprotected commodity. In terms of hedging effectiveness, the VECM model creates the highest hedging efficiency compared to the remaining models (OLS, TARCH). The hedging coefficient estimated by the OLS model tends to be lower than the hedging coefficient according to the VECM model.

Research by (Neharika Sobti, 2021) on the factors of a successful commodity contract: A case from the Indian agricultural futures market, the author used random array data from 30 futures contracts. Agricultural products were traded in India from 2003 to 2016 and used array data stochastic efficiency model for analysis. The factor variables in the research include spot price size, homogeneity, open interest, hedging effectiveness, spot price volatility, inactiveness of spot market (ISM), risk Basic and mandatory transportation arrangements. The research results show that: Firstly, factors related to macroeconomics or factors related to futures contract do not have a direct influence on the successful transaction of a futures contract. Instead, the success of a contract largely depends on whether the contract fulfills the primary purpose of a futures contract, which is to restrain fluctuations in the underlying spot price and effectively high hedging results, greater liquidity (open interest), cash settlement logic, and no government intervention (ban). Second, the volatility of the spot price is the only characteristic of the commodity that leads to the success of a futures contract.

Arfaoui, (2018) on the relationship between crude oil prices and crude oil futures prices on the New

Publisher: SARC Publisher

York Mercantile Exchange in the period from 2007 to 2015, the research explored the causal relationship was obtained using the ARDL limit test method and the VECM model. The results of the research confirm the existence of a long-run equilibrium relationship between spot prices and futures prices. Short- and long-term elasticities exist between futures and spot prices and between oil and refined oil prices, with large dependencies only in the short run. The rate of adjustment to long-run equilibrium is not large but faster for refined oil in the spot market. Thus, from the above results, it is shown that the spot price movement for refined oil is not effective in the short term, but it will become effective in the long term.

It can be said that Vietnam is one of the major agricultural countries with the number of export items accounting for a large proportion in the world. Coffee is one of the main export agricultural products of Vietnam. In the context of the increasingly difficult economy and potential risks, in 2011, the Vietnam Commodity Exchange came into operation. According to (Nguyễn Thị Nhung, 2017), Vietnamese commodity exchanges were created to reduce commodity transaction costs, manage risks to improve liquidity, especially adding a new investment channel on the Internet. financial market, helping Vietnamese goods get closer to modern transactions in the world. However, the research also shows that since the time BCEC and VNX were established, Vietnam has not achieved the goals set by the Government. Commodity exchanges in Vietnam completely failed to attract manufacturers as well as investors, the trading results were still very modest. Therefore, the research has suggested improvement measures such as developing the spot market and B2B trading, forming intermediaries representing producers, improving the role and strong support from the Government, the commercial banks.

Nguyễn Thị Dung, *et al.*, (2021) give some analysis on the situation of developing intermediary services for agricultural products derivatives at commercial banks in the area Dak Lak province. Research results show that the level of satisfaction with the quality of intermediary services for agricultural commodities is only average with the criteria of margin policy, transaction fee or service attitude. On the other hand, criteria related to facilities, supporting information technology systems, safety and reliability in the implementation of commitments received more positive feedback from customers.

Nguyễn Văn Phúc and Tô Thị Kim Hồng, (2014) used the cointegration test and the Pairwise Granger causality test to research the correlation between Vietnamese coffee export prices and world coffee prices. Data were collected on a monthly basis from January 2008 to April 2014. This paper uses the cointegration test based on (Engle and Granger, 1987) and (Johansen, 1988) because the linear regression method for time series data is often not make sure the stationary attribute does not give accurate results. The research results show that the export price of Vietnamese coffee and the world coffee price fluctuated strongly and in the same direction during the period 2008-2014, which represents a high price risk for coffee producers. From the research results, the author makes recommendations on measures to hedge price risks such as investing in more technology - techniques for coffee storage, this helps keep product quality stable. In the long term More specifically, the research of (Tô Thị Kim Hồng, 2016) analyzes the fluctuations in the price of Vietnamese coffee exports and also compares the competitiveness of Vietnam's coffee exports compared to the previous years with other countries. This research uses the method of least squares (OLS) to build the regression model. The results show that the export price of Brazil plays a very large role in forecasting the export price of Vietnam's coffee. When the price of Brazilian coffee increases by 1%, the price of Vietnamese coffee exports tends to increase by 0.31%. Meanwhile, Brazil is the strongest Robusta coffee exporter, but mainly focuses on output and Vietnam focuses on price. Therefore, in order for Vietnamese coffee to continue to be competitive in the world, it is necessary to focus on stable development and product branding

"Using futures and options to hedge the risk of coffee material price fluctuations at Trung Nguyen Coffee Company" (Nguyễn Lê Tường Vy, 2007), the author analyzed the total Quantitative coffee supply and demand, and at the same time give theories about derivative products in the market and point out the impact of using futures contracts in hedging the risk of price fluctuations of coffee raw materials at the Company. Trung Nguyen Coffee Joint Stock Company. The research has shown that the price volatility of coffee strongly affects the company's profit, from which, the author believes that the futures and options trading

Publisher: SARC Publisher

market in Vietnam will soon be formed quickly become an effective hedge against price risks for commodity products in general.

From the literature review, it is necessary to use futures contracts as a hedging tool. Research that test the hedging role rely on a variety of approaches, such as examining the correlation between the futures price and the spot price of that commodity or the price discovery ability of these futures contracts. From there, make recommendations and suggestions to improve the quality and applicability of futures contracts. However, the use of futures contracts still faces many difficulties due to government policies, due to the lack of understanding of derivatives by farmers and producers. Moreover, the characteristics of agricultural products are seasonal and have different characteristics, so previous studies only evaluated the defense ability of one or a few certain commodities, in a country certain family. Therefore, the applicability of futures contracts will depend on different countries, cultures, and economies. In particular, there has been no in-depth study examining the impact of Robusta and Arabica coffee futures prices on spot prices with a combined qualitative and quantitative approach.

Below is a summary of domestic and foreign studies on the role of futures contracts in hedging.

Table 1: Methods used to examine the role of hedging on prices of commodity futures

No	Authors	Model
1	Nguyễn Như Ngân, 2021	VECM, Optimum defense factor
2	Nguyễn Thị Nhung, 2017	
3	Nguyễn Văn Phúc & Tô Thị Kim Hồng, 2014	Cointegration test, Pairwise Granger causality test
4	Huỳnh Thị Mỹ Duyên, 2020	Qualitative
5	Tô Thị Kim Hồng, 2016	OLS, Regression model
6	Nguyễn Lê Tường Vy	
7	John Thadford Jackson, Ben Woodruff, 2016	VECM, GQARCH
8	R. Sugirtha, *et al*., 2021	VECM
9	Yang, *et al*., 2005	OLS, VAR, VECM and Multivariable GARCH
4	Nicolau & Palomba, 2015	Multivariable VAR
5	Buddi Wibowo, 2017	OLS, VECM and TARCH
6	Neharika Sobti, 2018	Panel random-effects model
7	Arfaoui, 2018	ADRL bounds testing approach and VECM

Source: Authors' summary.

RESEARCH MODELS

The Research uses a linear regression model with the independent variable being the futures price of Robusta and Arabica coffee, the dependent variable being the spot price of Robusta coffee and testing the autocorrelation between the variables with together. With the futures price of Robusta and Arabica coffee and the spot price of Robusta coffee taken from Bloomberg.

RESEARCH DATA

The study uses historical price data series from August 2019 to June 2022 from Bloomberg sources, including:

- Robusta coffee futures contract price (USD/ton)
- Arabica coffee futures contract price (US cent/pound)
- Spot price of Robusta coffee FOB HCM Robusta

RESEARCH RESULTS

The variables used in the study corresponding to each of the above historical price data series are as follows:

(1) Robusta variable: Robusta coffee futures price
(2) Arabica variable: Arabica coffee futures price
(3) Variable FOB HCM: Spot price of Robusta coffee FOB HCM Robusta

Publisher: SARC Publisher

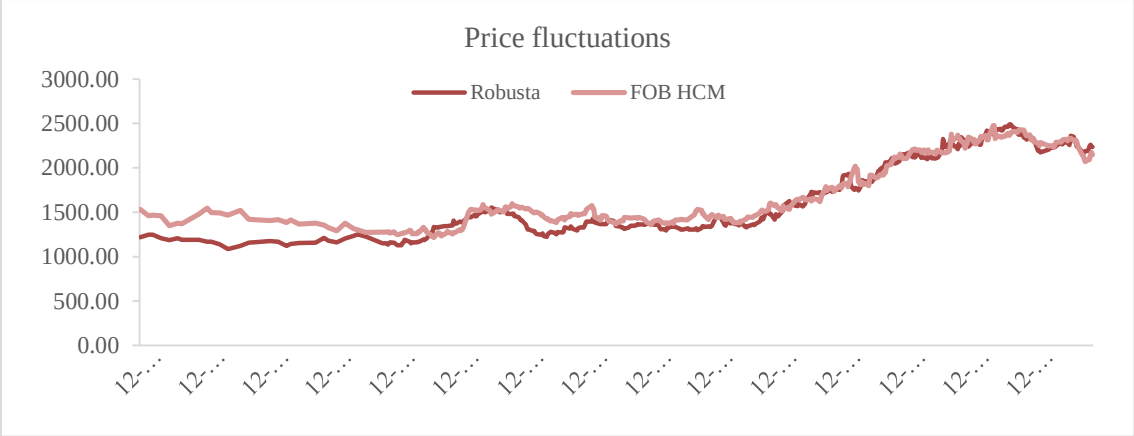

Figure 1: FOB HCM spot price movement and Robusta futures contract price on ICE EU exchange.
Source: Bloomberg, Investing.vn

Looking at Figure 1, it can be seen that the futures contract price and FOB HCM Robusta spot price have a close relationship with each other and move in the same direction. That is, when the FOB HCM Robusta spot price increases, the Robusta futures contract price also increases and vice versa in the recent period. As observed in the figure, the spot price of Robusta coffee is usually higher than the futures contract price. Thus, when the subject participates in the coffee futures market, it is often more beneficial to the buyer because of the price difference between the futures contract price and the spot price of coffee.

The research is calculated and analyzed based on time series data on futures prices of Robusta and Arabica coffees and FOB HCM Robusta spot prices.

Linear regression test between FOB HCM Robusta spot price and Robusta and Arabica futures prices

Table 2: Linear regression test between FOB HCM spot price and Robusta & Arabica futures price

Source	**SS**	**df**	**MS**		**Number of ob**	**= 431**
Model	54004725.6	2	27002362.8		F(2, 428)	= 92.17
Residual	125392615	428	292973.4		Prob > F	= 0.0000
Total	179397341	430	417203.118		R-squared	= 0.3010
					Adj R-squared	= 0.2978
					Root MSE	= 541.27
FOB HCM	**Coef.**	**Std. Err**	**t**	**P>|t|**	**[95% Conf. Interval]**	
Arabica	1.113809	1.417471	0.79	0.432	-1.672262	3.89988
Robusta	.6548377	.2238512	2.93	0.004	.2148533	1.094822
_cons	461.9743	152.8053	3.02	0.003	161.6321	762.3165

Source: Authors

Linear Regression: FOBHCM Robusta = 461.9743 + 0.6548377*Robusta

From the results of the regression test between FOB HCM spot price and the above Robusta and Arabica futures prices, the p-value of Arabica 0.432 > 0.05, so the Arabica futures price has no statistical significance for the FOB HCM spot price, p-value of Robusta 0.004 < 0.05, so Robusta futures price is statistically significant and has a linear relationship with FOB HCM spot price.

Linear regression test between FOB HCM Robusta spot price and Robusta futures price

Publisher: SARC Publisher

Table 3: Linear regression test between FOBHCM spot price and Robusta futures price

Source	**SS**	**df**	**MS**		**Number of ob**	**= 431**
Model	53823832.7	1	53823832.7		F(2, 428)	= 183.88
Residual	125573508	429	292712.14		Prob > F	= 0.0000
Total	179397341	430	417203.118		R-squared	= 0.3000
					Adj R-squared	= 0.2984
					Root MSE	= 541.03
FOBHCM	**Coef.**	**Std. Err**	**t**	**P>|t|**	**[95% Conf. Interval]**	
Robusta	0.8241209	0.0607749	13.56	0.000	0.7046674	0.9435745
_cons	375.0957	105.4277	3.56	0.000	167.8765	582.3149

Source: Authors

Linear regression equation between FOB HCM Robusta spot price and Robusta futures price:

FOBHCM = 375.0957 + 0.8241209*Robusta

Observing the results, there is a linear relationship between the futures price of Robusta and the spot price of FOB HCM Robusta. At the same time, Std. Robusta's Err for FOB HCM is only about 0.06, showing that the Robusta futures price is highly accurate and representative.

Linear regression test between FOB HCM Robusta spot price and Arabica futures price

Table 4: Linear regression test between FOB HCM spot price and Arabica futures price

Source	**SS**	**df**	**MS**		**Number of ob**	**= 431**
Model	51497596.1	1	51497596.1		F(2, 428)	= 172.73
Residual	127899745	429	298134.603		Prob > F	= 0.0000
Total	179397341	430	417203.118		R-squared	= 0.2871
					Adj R-squared	= 0.2854
					Root MSE	= 546.02
FOBHCM	**Coef.**	**Std. Err**	**T**	**P>|t|**	**[95% Conf. Interval]**	
Arabica	5.104485	0.388387	13.14	0.000	4.341107	5.867863
_cons	854.4587	73.77465	11.58	0.000	709.4539	999.4634

Source: Authors

Linear Regression: FOBHCM Robusta = 854.4587 + 5.104485*Arabica

The results of separate regression test between FOB HCM Robusta and Arabica spot prices show that the test is statistically significant with these two variables. However, the standard error of Arabica prices is too high, so the Arabica variable lacks accuracy and cannot be a representative of the overall mean.

The results of the linear regression test show that there is a link between the variables. The next step is to study the Breusch-Godfrey and Durbin-Watson autocorrelation test. The following results:

Lags (p)	**Chi2**	**Df**	**Prob>chi2**
1	0.003	1	0.9534

Durbin-Watson d-statistic(3, 431) = 2.005386

According to the first-order Breush-Godfrey test, with the hypothesis H0: There is no autocorrelation, so with the value Prob>chi2 > 5% as above, it leads to the conclusion that the hypothesis H0 is accepted, which means there is no present. autocorrelation between variables.

Check the regression assumptions, using the normal distribution over the graph as follows:

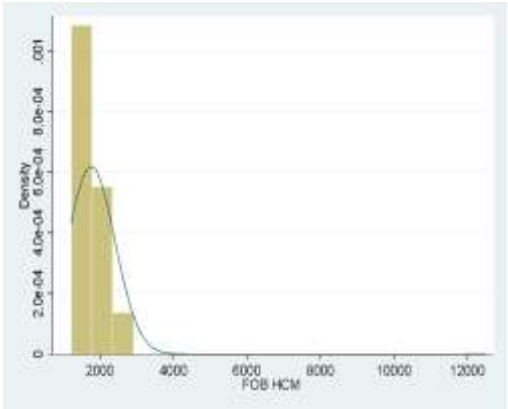

Figure 2: Distribution chart of FOB HCM spot price

Publisher: SARC Publisher

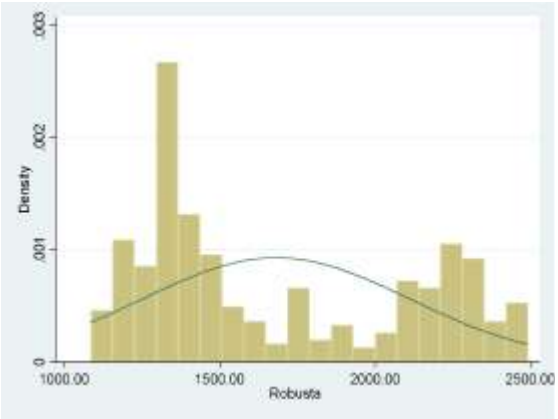

Figure 3: Distribution graph of the futures price of Robusta

The image above shows that the distribution graph of FOB HCM Robusta spot price is disproportionate and skewed to the left. Thus, the average FOB HCM price is limited to the price range from 2000 USD/ton. The price distribution graph of Robusta futures contract is a normal distribution when the price fluctuates between 1000 and 2500 USD/ton.

Check for violation of the assumption of a linear relationship between the dependent variable and the independent variable

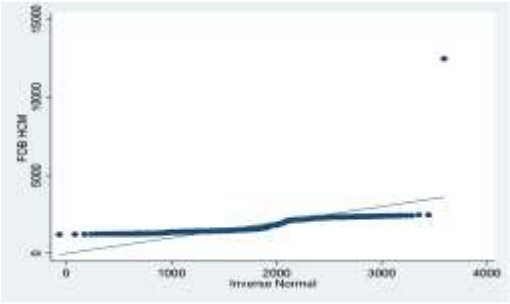

Figure 4: Linear graph FOB HCM

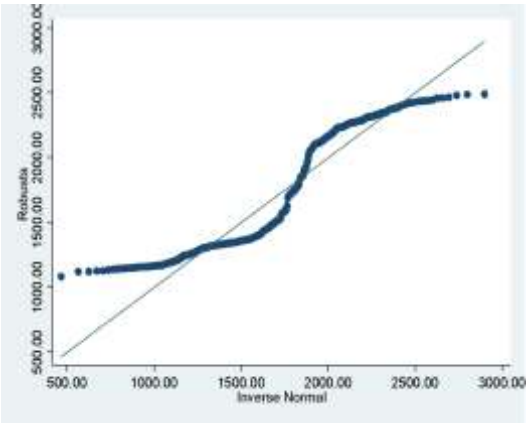

Figure 5: Robusta Linear Grap

Check the normal distribution through Skewness and Kurtosis values:

Variable	Obs	Pr (Skewness)	Pr (Kurtosis)	adj chi2 (2)	Prob>chi2
FOB HCM	431	0.0000	0.0000	.	0.000
Variable	Obs	Pr (Skewness)	Pr (Kurtosis)	adj chi2 (2)	Prob>chi2
Robusta	431	0.0000	0.0000	.	0.000

Overview of the Current Situation of the Coffee Market in the World

According to the ICO, global coffee exports in January 2022 ordered 10.9 million bags, up 2.8% from 10.6 million bags in the same period last year.

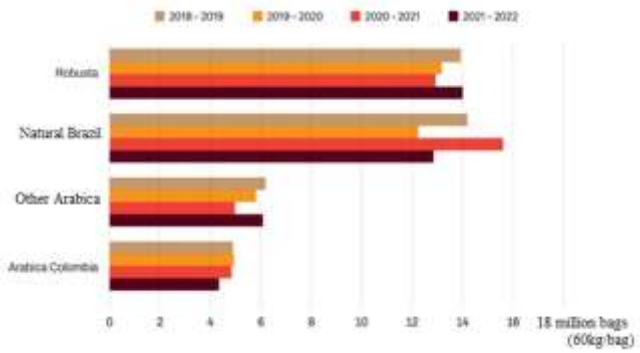

Figure 6: Global exports of green coffee in crop year 2018 – 2019 to 2021 – 2022.
Source: ICO

Regarding coffee price movements, the price of Robusta coffee also fluctuated on the London exchange and the price of Arabica coffee also increased from the beginning of 2022.

Figure 7: Price movements of Robusta coffee for future delivery on the London exchange from the beginning of 2022 until now.
Source: Import and Export Department. Unit: USD/ton

Publisher: SARC Publisher

Figure 8. The price movement of Arabica coffee on the New York exchange from the beginning of 2022 until now.
Source: Import and Export Department. Unit: US cent/pound

In 2020, Russia and Ukraine consumed 6.3 million 60kg bags of coffee, accounting for 3.8% of global consumption. However, the conflict between these two countries has caused oil prices to rise sharply with Brent crude oil prices reaching 128 USD/barrel on March 8. Meanwhile, Russia supplies about 20% of ammonia to the world market and disruptions in supply from Russia could impact fertilizer prices, leading to higher input costs for coffee farmers around the world. around the world and drive coffee prices higher. Coffee exporters are also beginning to face logistical difficulties, with a number of Honduras coffee containers being stranded in international waters.

In addition, the complicated epidemic situation will continue to increase pressure on major producing countries such as Colombia and some South American countries. Due to the lack of supply from Arabica coffee, some roasters are looking for the option of mixing Arabica and Robusta coffee to lower the selling price. According to the forecast of the Ministry of Industry and Trade, the global coffee price in 2022 will continue to be high. Thus, hedging risks with coffee is very important, especially for producers, farmers need to come up with plans and strategies to hedge price risks to ensure profits. profitability and price stability in the world market.

Current Status of Coffee Futures Application in Vietnam's Coffee Market

Vietnam's Coffee Market

According to Vũ Long, (2022), coffee is one of six export items of over 3 billion USD/year, along with high-value commodities such as wood and wood products, seafood, cashew nuts, rice, and vegetables. fruit, rubber... are agricultural products with export value belonging to the "top" of the agricultural and rural development industry. In 2021, despite the complicated development of the COVID-19 epidemic, Vietnam's coffee exports still brought in over 3 billion USD, contributing to the overall growth of Vietnam's commodity exports. The main coffee export markets of Vietnam include: Europe (EU), US, Russia, Japan, UK.

According to the General Statistics Office of Vietnam, (2022), Vietnam's coffee exports in the first five months of this year were estimated at 889 thousand tons, up 24.2% over the same period last year. Notably, export turnover increased by 54% (more than 700 million USD) to a record of 2 billion USD thanks to high coffee prices. Thereby continuing to consolidate the second position in global coffee exports after Brazil.

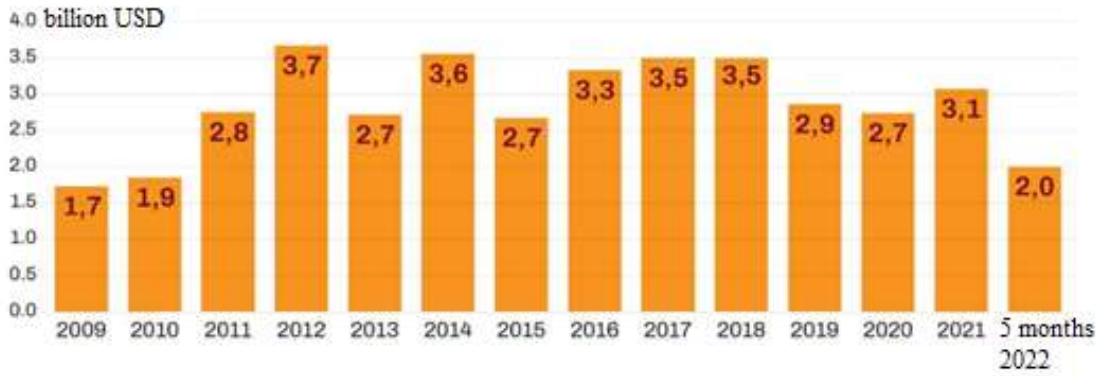

Figure 9: Coffee export turnover of Vietnam from 2009 to the first 5 months of 2022.
Source: Vietnambiz.vn

The Import and Export Department forecasts that world coffee prices will continue to increase, but the nature of Vietnamese coffee prices depends heavily on world coffee prices, therefore, Vietnam will benefit from the increase in coffee prices. according to the forecast. However, the coffee

Publisher: SARC Publisher

market will still be under pressure from unresolved supply chain bottlenecks. In addition, speculators are afraid of global growth risks that may affect commodities, including coffee. In addition, the Russia-Ukraine conflict will make coffee consumption more difficult. On the other hand, consumers tend to cut spending due to high inflation, difficult economic situation and farmers are still under pressure from the high cost of fertilizer and gasoline prices affecting profits. Therefore, participants in the coffee market need to have risk management strategies to ensure profits for their businesses.

Arabica Coffee Futures Contract

Arabica is the second most traded coffee in the world, especially low-caffeine Arabica. This type of coffee is usually traded on the ICE US exchange (New York). Here is the detailed contract:

Table 5: Details of Arabica coffee futures.

Trading Commodities	Arabica Coffee ICE US (Coffee C)
Commodity codes	KCE
Contract size	37 500 pounds / Lot
Quotation unit	cent / pound
Transaction time	Monday - Friday 15:15 – 00:30 (next day)
Price step	0.05 cent / pound
Maturity month	March, May, July, September, December
Transaction registration date	5 days before the first notice
Date of first announcement	7 working days before the first working day of the due month
Last trading day	8 working days before the last working day of the due month
Escrow	According to the provisions of MVX
Position limit	According to the provisions of MVX
Price range	No specified
Payment methods	Material delivery
Quality standards	Arabica coffee grade 1, grade 2, grade 3

Source: HCT

Robusta Coffee Futures Contract

Robusta contains more caffeine than Arabica coffee and is traded on the ICE EU exchange (London). The price of Robusta coffee is also higher than that of Arabica. Following are the details of the Robusta coffee futures contract:

Table 6: Details of Robusta coffee futures contract

Trading Commodities	Robusta Coffee ICE
Commodity codes	LRC
Contract size	10 tons/Lot
Quotation unit	USD/tons
Transaction time	Monday - Friday: 15:00 – 23:30
Price step	1 USD/ tons
Maturity month	January, March, May, July, September, November for a total of 10 months listed
Transaction registration date	5 days before the first notice
Date of first announcement	The 4th business day before the first business day of the due month
Last trading day	The 4th working day before the last working day of the due month at 19:30
Escrow	According to the provisions of MVX
Position limit	According to the provisions of MVX
Price range	No specified
Payment methods	Material delivery
Quality standards	Robusta coffee grade 1, grade 2, grade 3

Source: HCT

Application status of futures contracts to hedging Vietnam's coffee market

Publisher: SARC Publisher

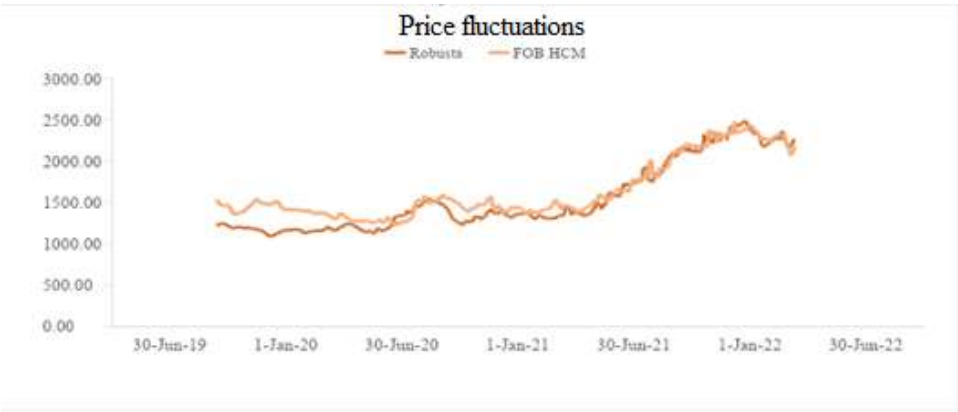

Figure 10: FOB HCM spot price movement and Robusta futures contract price on ICE EU exchange.
Source: Bloomberg, Investing.vn

Looking at Figure 10, it can be seen that the futures contract price and FOB HCM Robusta spot price have a close relationship with each other and move in the same direction. That is, when the FOB HCM Robusta spot price increases, the Robusta futures contract price also increases and vice versa in the recent period. As observed in the figure, the spot price of Robusta coffee is usually higher than the futures contract price. Thus, when the subject participates in the coffee futures market, it is often more beneficial to the buyer because of the price difference between the futures contract price and the spot price of coffee.

CONCLUSION

From the research results, we can see the relationship between the futures price of Robusta and Arabica to the spot price of Robusta. The price of Robusta futures contract has a linear relationship with the spot price of Robusta coffee. However, the Arabica futures contract price does not have a linear relationship with the spot price of Robusta. From that, it can be assessed that the futures price of Robusta coffee has an impact on the spot price of Robusta coffee. The price of Robusta coffee futures contract has the same effect as the spot price of Robusta coffee.

RECOMMENDATIONS

Point of View

The research evaluated the impact of the price of Robusta coffee futures on the Intercontinental Exchange Future Europe and Arabica coffee futures on the Intercontinental Exchange Future US. Through the above research results, we can see that the use of futures contracts on the two exchanges ICE US and ICE EU will hedge risks for Vietnamese coffee.

Therefore, in the short term, the authors still encourages subjects including coffee manufacturers and investors to participate in futures contracts trading on international exchanges through Commodity Exchanges Vietnam MXV. Moreover, Vietnam is a developing country and agriculture accounts for the majority, many agricultural products always occupy a high position in the world in terms of export volume. In the future, the demand for an agricultural commodity futures market will certainly increase along with the economic development of the country. Then the establishment of an official centralized trading market for these instruments in the country is necessary to ensure the healthy and efficient development of the overall financial market as a whole. In other words, the development of domestic Commodity Exchanges will be an inevitable and objective trend in Vietnam when we are in need of an organization to manage and regulate commodity prices in the market.

Recommendations for Vietnamese Coffee Producers and Traders

This is a group of people who hold coffee and have to directly face the risks brought by fluctuations in coffee prices in the market. Therefore, the defensive needs of Vietnamese coffee producers and traders are very necessary. However, because coffee producers are often small businesses, their understanding and interest in the futures market and price risk instruments remains unclear. Therefore, the author recommends for Vietnamese coffee manufacturers as follows:

- Be proactive in raising awareness, equipping with good knowledge about the futures market and tools to hedge risk from price fluctuations by participating in professional training courses, knowledge training sessions, etc. method to get closer to how to trade on the MXV exchange. From there, it can help coffee

Publisher: SARC Publisher

producers and traders to find and choose reputable, safe and reliable brokers and consulting companies.

- Actively promoting the development and implementation of coffee production models along the value chain, from raw coffee beans to processing, consuming and branding coffee products of Vietnamese enterprises in order to improve the quality and competitiveness of Vietnamese coffee in the international market.
- Strengthen the ability to forecast the market by linking with companies and specialized consulting organizations to collect information to predict the market. From there, manufacturers and traders can analyze and process timely information on the market accurately.

Recommendations to State Management Agencies

- Support to promote centralized and linked production in production to meet the volume standard of coffee futures contracts by effectively implementing policies to support businesses to invest in coffee products. coffee production such as preferential credit policy, simplifying administrative procedures such as establishment procedures, business registration, land lease procedures, site clearance, etc.
- Promote awareness raising about the futures market, the futures market for agricultural commodities in general and coffee in particular. This is an extremely important activity to help farmers improve their understanding of the risk hedging process through the commodity futures market in some key coffee growing localities.
- Provide guidelines and solutions to help farmers improve the productivity, quality and competitiveness of Vietnamese coffee, such as developing the coffee ecosystem and value chain, researching and applying technology technology into the coffee value chain in the context that international trade agreements are entering the Vietnamese market. This is an opportunity for coffee producers to take advantage of to bring high-quality coffee to export, and the application of technology in production stages and value chains will bring high productivity for farmers.

REFERENCES

1. Arfaoui, M. "On the spot-futures relationship in crude-refined petroleum prices: New evidence from an ARDL bounds testing approach." *Journal of Commodity Markets* (2018): 48-58.
2. Wibowo, B. "Systemic risk, bank's capital buffer, and leverage." *Economic Journal of Emerging Markets - Universitas Islam Indonesia* 9.2 (2017): 150-158.
3. Khôi, C. "Năm 2022: Tổng giá trị sản xuất nông lâm ngư nghiệp tăng 3,36%." *VnEconomy* (2023).
4. Engle, R. and Granger, C. "Cointegration and Error Correction: Representation." *Estimation and Testing Econometrica* 55 (1987).251-276.
5. General Statistics Office of Vietnam. "Tình hình kinh tế xã hội Việt Nam năm 2022." *Hà Nội: NXB Thống kê* (2022).
6. Gemmill, G. "Fundamental analysis, technical analysis, trading, spreads and options: Jack D. Schwager, (Wiley-Interscience, New York, 1984) $29.95/[UK pound]34.65, pp. 741." *International Journal of Forecasting* 2.2 (1986): 251-252.
7. John, J. and Benjamin, W. "African Coffee Market Efficiency and International Hedging Viability: Evidence from Uganda." *SSRN* (2016).
8. Johansen, S. "Statistical Analysis of Cointegrating Vectors." *Journal of Economic Dynamics and Control* 12 (1988): 231-254.
9. Sobti, N. "Determinants of a Successful Commodity Contract – Evidence from Indian Agriculture Futures Market." *IIMB Management Review, Elsevier* (2021).
10. Vy, N.L.T. "Sử dụng hợp đồng tương lai và quyền chọn để phòng ngừa rủi ro biến động giá nguyên liệu cà phê tại công ty cà phê Trung Nguyên." *Trường Đại học Kinh tế TP Hồ Chí Minh* (2007).
11. Dung, N.T., Ngoc, N.T.B. and Duyen, H.T.M. "Dịch vụ cung ứng sản phẩm phái sinh giá cả hàng hóa tại các ngân hàng thương mại trên địa bàn tỉnh Đắk Lắk." *Tạp chí khoa học Trường Đại học Tây Nguyên* (2021).
12. Nhung, N.T. "Sở giao dịch hàng hóa tại Việt Nam: Trường hợp giao dịch kỳ hạn cà phê." *Chuyên san Kinh tế và Kinh doanh (ĐHKT-ĐHQGHN), Số 3/2017* (2017).
13. Phúc, N.V. and Hồng, T.T.K. "Kiểm định đồng liên kết giữa giá cà phê Việt Nam xuất khẩu và giá cà phê thế giới giai đoạn 2008–2014." *Tạp chí Khoa học Trường Đại học Mở TP.HCM*, 4.37(2014).

Publisher: SARC Publisher

14. Nicolau, M. & Palomba, G. "Dynamic relationships between spot and futures prices. The case of energy and gold commodities." *Resources Policy* 45 (2015): 130-143.
15. Sugirtha, R., Babu, M., Gayathri, J. and Indhumathi, G. "Futures market hedging in indian commodities market-a comparative study on spot and futures price." *Academy of Strategic Management Journal* 20.2 (2021): 1-6.
16. Hong, T.T.K. "Sự biến động giá và khả năng cạnh tranh của cà phê Việt Nam xuất khẩu trên thị trường thế giới." *Van Hien University Journal of Science* 4.3 (2016): 85-85.
17. Long, V. "Xuất khẩu cà phê Việt Nam xếp thứ 2 thế giới và nỗi thiệt thòi "xuất thô"." *Tạp chí Lao Động* (2022).
18. Yang, W. & Allen, D. E. "Multivariate GARCH hedge ratios and hedging effectiveness in Australian futures markets." *Accounting and Finance* 45.2 (2005): 301-321.

Source of support: Nil; **Conflict of interest:** Nil.

Cite this article as:
To, L.P. and Ngo, H.L. "Impact of Future Contract on Spot Price in Vietnam Agricultural Commercial Market: Case of Robusta Coffee and Arabica." *Sarcouncil Journal of Public Administration and Management* 2.3 (2023): pp 1-12.

Publisher: SARC Publisher