Developing a Fuel Futures Market for Hedging Risks of Price Fluctuation in Vietnam

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ABSTRACT

The paper aims at analyzing recent fluctuations in the fuel prices in the world in general and in Vietnam in particular. The author also reviews strengths and weaknesses of derivatives which have been thus far employed to prevent risks to the fuel prices in Vietnam's market; and then recommends a model of fuel futures market for Vietnam. Hopefully, the construction and operation of such futures market will help predict and prevent fluctuations in the fuel prices, and improve the domestic futures market.

Keywords: fuel futures market, fuel price risk management

1. INTRODUCTION

In recent years, Vietnam has witnessed some fierce fluctuations in price of crude oil, gasoline, gas, etc. which have resulted in rises in prices of consumer goods and services in the domestic market. In the field of energy, many related enterprises are faced with lots of risks in the post-crisis context. Therefore, utilizing derivatives in general and the futures market is one of effective ways to deal with these problems. In the paper, the author would like to develop a model of fuel futures market to administer risks of fuel price fluctuations in the Vietnam's market.

2. THE THEORETICAL BACKGROUND AND ANALYTICAL FRAMEWORK

a. Theoretical Basis and Analysis Framework:

Empirical studies by R. Sauter & Awerbuch (2003), and Brown & Yucel (2000) did figure out sharp impacts of crude oil price volatility on the economy. Tan (2010) analyzed empirical models of some fuel exchanges in the world and proved the crucial role of fuel derivative agreements in preventing risks. Moreover, surveys by Virtual Metals Research & Consulting Ltd. (2005) for derivatives exchanges in South America, and researches by Blanco et al. (2005), Carter et al. (2003), Daniel (2001), Hamilton (2008), Medova & Sembos (2001), Rueyjiau & Yuanchen (2009) have proven benefits of preventing oil price risks for the sake of enterprises and the government as well. However, as yet there has been no related research for the Vietnam's market. Therefore, based on extant researches and theories as well the circumstance of Vietnam, the author would like to extend a model of fuel futures exchange for Vietnam's market.

b. Methodology:

Both quantitative and qualitative methods will be utilized. The author will synthesize, analyze, and evaluate the development of some fuel exchanges as well numerical data of the foreign and local fuel

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market, which are collated from the Internet, mass media, research papers, etc. Such analysis and evaluation aims at developing a model of fuel futures exchange for Vietnam's market.

3. RESULTS

a. Fluctuations in the Crude Oil Price in the World Market in Past Years and Some Reasons:

There are many factors that profoundly affect the price of fuel in both long and short run, such as the crude oil price (including spot prices and forward prices), demand for energy in general and for fuel in particular, imbalance between the supply of and demand for fuel, effects of OPEC, cornering of Hedge Funds, futures traders, relationship between the oil price and fluctuations in the US dollars, differences in the oil tax among countries, etc.

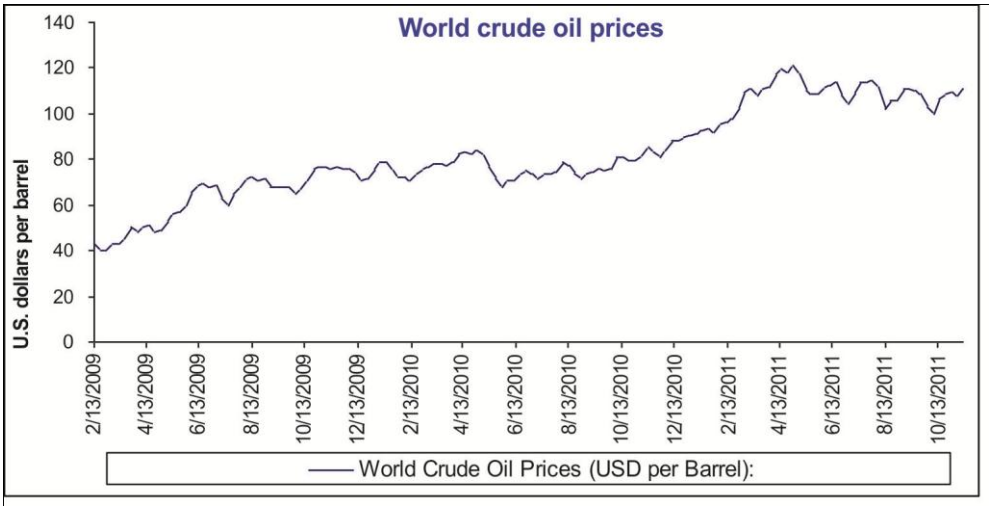

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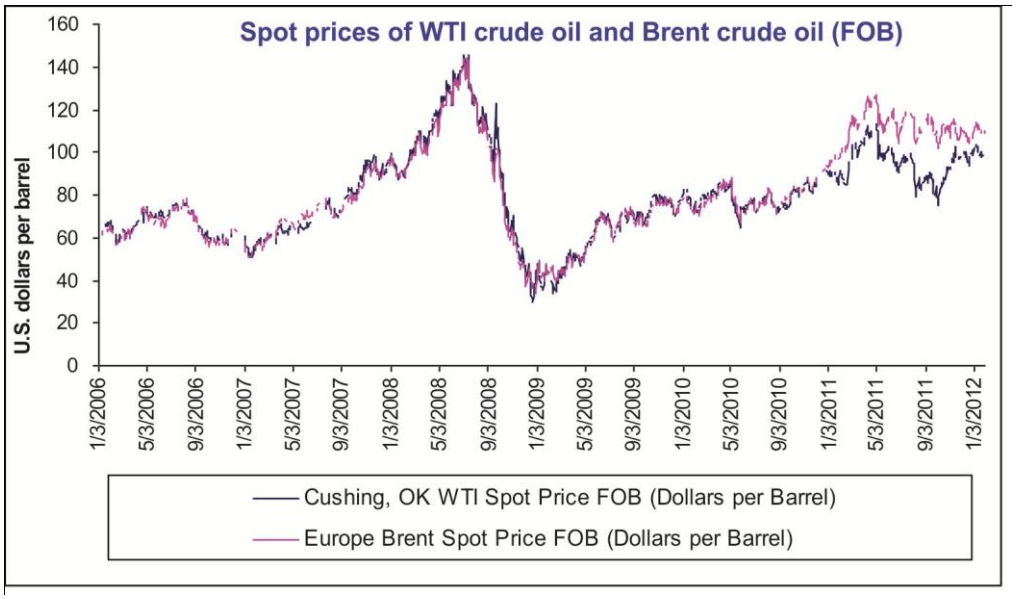
Figure 1: The World Crude Oil Prices in the Spot Market in the Period 2009-2011



Source: http://www.eia.gov/dnav/pet/pet_pri_spt_s1_d.htm

Figure 2: Spot Prices of WTI Crude Oil and Brent Crude Oil (FOB)

The crude oil price peaked in 2008 and bottomed in early 2009 due to the economic recession. Also in 2009, the crude oil price recovered due to the fact that OPEC cut off the quantity for fear that the economic recession might be deeper while political growing unrest in Iran caused a fall in the supply of crude oil. Yet then, the world crude oil price hit a high in 2010, which was supposed to be due to the depreciation in the value of the U.S. dollars and volatility in the money market. In 2010, the oil price became more volatile. Upheavals in economies of the U.S., Japan, China, and geopolitical problems in the Middle East and North Africa (especially Libya, a member of OPEC) adversely impinged on the supply of crude oil.

Table 1: Fluctuations in the Fuel Price in Vietnam's Market

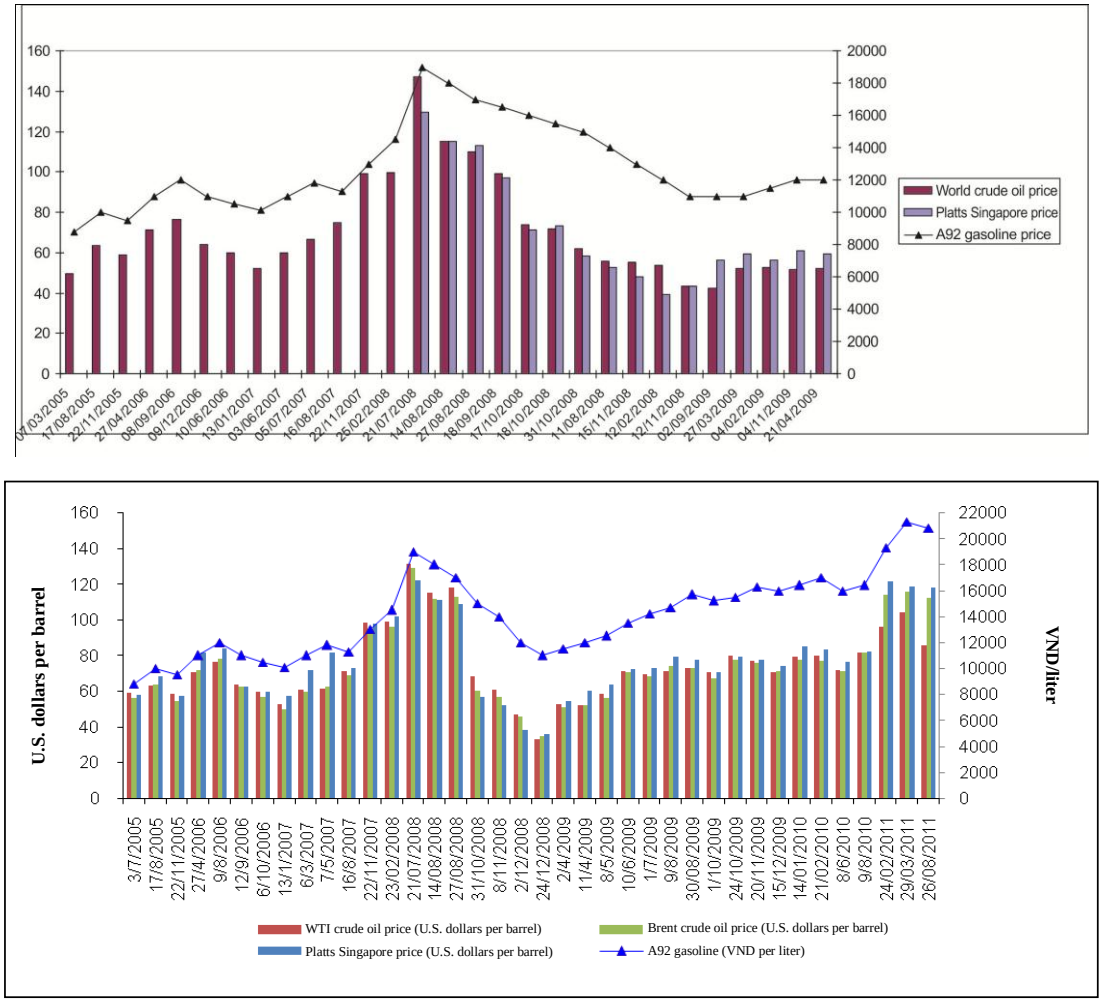
Date	Diesel (VND/liter)	Mogas 92 (VND/liter)
Jan.1, 2005	4,970	7,550
Nov. 22, 2005	6,630	9,500
Apr. 27, 2006	7,650	11,000
Oct.6, 2006	8,670	10,500
May 7, 2007	8,870	11,800
Nov. 22, 2007	10,400	13,000
Feb. 23, 2008	14,000	14,500
Dec. 24, 2008	10,950	11,000
Apr.2, 2009	9,950	11,500
Dec. 15, 2009	14,550	15,950
Jan. 14, 2010	14,850	16,400
June 8, 2010	14,350	15,990
Aug.9, 2010	14,700	16,400
Feb. 24, 2011	18,250	19,300
Mar. 29, 2011	21,050	21,300
Aug. 26, 2011	20,750	20,800

Source: http://www.xangdau.net/index.php?opt=viewnews&group=23&items=32&name=bang-tong-hop-gia-ban-le-xang-tu-nam-2005-den-nay)

Table 1 sets forth the date when the fuel retail prices are adjusted in Vietnam in past time. Even though the world crude oil price has to witness numerous changes, it takes a long time for the domestic fuel prices to be adjusted accordingly. This fact derives from the governance mechanism of the government and operation of major fuel enterprises. Prior to September 2008, the domestic fuel price was subsidized by the government (i.e. roughly 10% for gasoline and 5% for oil). The gap between two adjustments is quite big due to the gasoline stabilization policy. After September 2008, the fuel price was floated following fluctuations in the world market. Perhaps, it is due to the governmental rules concerning the minimum number of days for marking up and the maximum number of days for marking

down, and policies adopted by related enterprises that the domestic fuel price has not precisely reflected fluctuations in the world crude oil market.

Due to the fact that many countries floats the domestic fuel prices, most fuel traders in Asia employ the mean of Platts Singapore (MOPS) - a measure of fuel oil pricing, for pricing and hedging risks of fluctuations in fuel prices. Thus far, Vietnam has exported crude oil at low prices and acquired fuel at high prices. Measures to prevent risks of oil price fluctuations have not been widely employed; and thus once the world crude oil price becomes very shaky, changes in the fuel are inevitable and the domestic fuel prices should also be adjusted up accordingly. Ordinarily, the prices of crude oil and refined fuel move on the same trend. If the crude oil price falls, so does the fuel prices albeit a bit later. However, in many cases, it may be due to problems in processing and distribution in the world market that the prices of crude oil and fuel may go in opposite directions.



Source: EIA, Economic time series Page, xangdau.net, Petrolimex

Figure 3: World Crude Oil Price, Mean of Platts Singapore, and A92 Gasoline Price of Vietnam in the Period 2005 – 2011 (US$ Per Barrel)

Fluctuations in the fuel price have thus far had profound impacts on Vietnam's economy. For instance:

- Impacts on CPI: A 30% rise in the fuel price will directly push the CPI up around 0.6%, which can even be overshot by chain effects in no time.

- Impacts on the trade balance: The rise in fuel price can cause a surge of speculation in such commodity, causing Vietnam to become a victim to trade deficit.

- Impacts on the national reserve of fuel: Due to financial constraints and lack of storage, Vietnam's reserves can only meet the market demand in a month. Therefore, it is obligatory for Vietnam to continually import this commodity to satisfy the market need.

- Impacts on the stock market: Rises in the fuel price seem to cause negative effects on investors in the stock market, and thus hindering the recovery of the stock market.

- Impacts on the gold price and exchange rate: In the market, gold, the U.S. dollars, and fuel have a close interactive relationship with each other in terms of price. When the U.S. dollar rises, the two others' prices often go down, and vice versa.

- Impacts on related enterprises: Fluctuations in the fuel price also sharply affect the operation of local enterprises such as petroleum traders, electric corporations, transportation companies, etc.

- Impacts on the daily life of consumers: The fuel price rising entails rises in costs of many industries. As some experts put it, the ratio of expenditure of Vietnam's households on fuel and cooking gas to the total spending is 2.45% and 0.95% respectively. This implies that if the fuel price goes up by 30%, consumers must pay more 0.74% to acquire it.

Apparently, fluctuations in the fuel prices sharply influence the national economy; and thus it is necessary to stabilize prices of such commodities.

b. The Role of Derivatives in Stabilizing the Fuel Price in Vietnam:

At present, fuel importers in Vietnam (mainly state-run enterprises) have not pay due attention to the use of derivatives in hedging risks. Yet besides importing petroleum products at floating prices, many enterprises have entered into forward contracts in international futures exchanges so as to administer risks of abrupt rises in crude oil price and manipulate domestic price volatility.

There are two types of forward contract:

- In the first, if the commodity is forwarded to the buyers a month later as of the signing date, the contract value is the mean of floating prices quoted within five days before and five days after the delivery day. Similarly, if the delivery is done a quarter later, the contract value is the mean of floating prices quoted within ten days before and ten days after the delivery day. And if the delivery is done six months later, the contract value is the mean of floating prices quoted within a month before and a month after the delivery day. Therefore, buyers must wait for a period of time to know exactly the buying price.

- In the second, the price set forth in the contract shall be the fixed price, and thus the buyers can know how much they have to pay at the time of signing. On delivery day, no matter how wildly the market price fluctuates, the contract value stays unchanged.

However, there have also been some weaknesses in employment of the derivatives for the purpose of hedging risks.

At present, derivatives have not been widely employed by fuel enterprises. It can be explained by the following facts:

- For the government: Under current mechanism, state-run enterprises are holding a monopolistic role in importing fuel, and the government also intervenes a lot in this field. Annually, the government has to define the selling price and grant quota to each importer; and Petrolimex is granted a quota of 60%.

- For fuel retailers: Many local retailers have resorted to derivatives to hedge risks. Yet, besides impacts from the government, retailers also assume responsibility for weaknesses. Firstly, many retailers have not attached benefits from derivatives to benefits for managers; and thus they have not pay due attention to such tools. Secondly, due to the fact that crude oil price prediction in the world still has weaknesses, utilization of derivatives can generate ample damage. Lastly, many retailers' knowledge of derivatives is limited, and hence they do not dare to resort to such tools.

- For banks which play an active role in managing exchange rate risks: Departing from a backward economy, Vietnam is not enabled to utilize state-of-the-art financial techniques. In other words, traditional business habits and styles are great impediments to the popularization of derivatives in Vietnam.

4. A FUEL FUTURES EXCHANGE SUITABLE FOR VIETNAM

A fuel futures exchange provides not only common benefits as other commodity exchanges but also characteristics that cannot be found in other commodities, especially in Vietnam today. These benefits include: an instrument for preventing risks caused by fluctuations in fuel prices, favorable conditions for distribution and export of oil and fuel in the near future, support for development of futures market in Vietnam, reduction in gap between international and domestic prices of fuel, an instrument for enterprises to control expenses on energy, support for policies on energy security and inflation control, and a new commodity for the stock exchange.

a. Basic Conditions for Development of a Fuel Futures Exchange in Vietnam:

Building successfully a fuel futures exchange relies on various factors, including three basic conditions that determine marketability of such futures.

First, better knowledge of this class of commodity: Marketing successfully fuel futures requires a better knowledge of this commodity from involved parties, including policy makers, exchange authority and customers (suppliers and buyers).

Second, enhanced market efficiency: If the market is effective, spot prices and value of contract respond quickly to related information. As a result, all participants in the market are equal in terms of information and fairness of transaction is ensured.

Third, appropriate infrastructure for the futures exchange: The infrastructure includes material facilities and site for the exchange, regulations about transactions, and a clearing system for daily transactions.

b. A Model of Fuel Futures Exchange Suitable for Vietnam:

When building a fuel futures exchange, we need a specific model suitable for businesses, small traders and large-scale investing organizations in order to ensure feasibility and efficiency of the fuel exchange when it is put in practice.

Mode of transaction: Most futures exchanges in the world have been automated by introducing electronic transaction systems. Such system is more feasible and suitable for Vietnam when most entities participating in the fuel market have enough skills and knowledge of employing computers.

Model of exchange: The following model of fuel futures exchange for Vietnam is based on NYMEX (CME Group) in the US, SICOM in Singapore, and operations of commodity exchanges in Vietnam.

- The exchange is a center responsible for matching orders and includes only representatives from brokerage firms and trading members (brokers and dealers according to Decree 158/2006/NĐ-CP).

- Buyers/sellers establish relations with brokers to open accounts, and then place orders via electronic transaction system or brokers.

- The fuel exchange builds its own oil depots and transport fuel to its delivery centers. It may cooperate with major fuel traders to use their distribution and storage systems.

- The electronic transaction system may employ or upgrade existing technologies used by the stock exchanges.

- Clearing system of fuel exchange establishes relations with buyers' (sellers') banks to complete transactions when sellers/buyers close their positions.

c. Strategy and Stages of Development of the Fuel Exchange:

Building successfully a fuel futures exchange requires a strategy with clear objectives for each stage of development. The strategic plan and schedule for building the fuel exchange should be appropriate to fluctuations in fuel market and basic conditions of fuel traders in Vietnam.

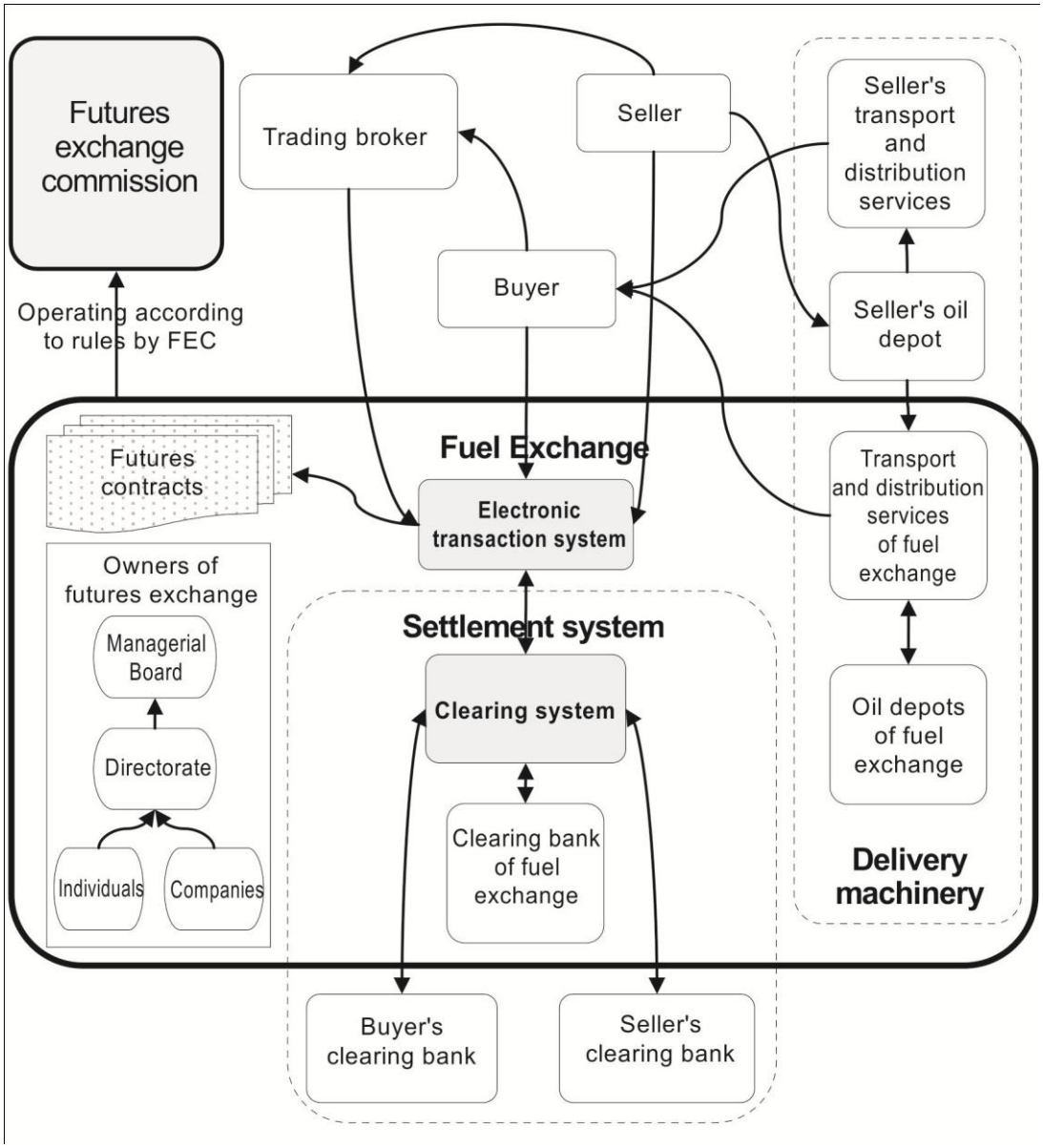


Figure 5: Model of Fuel Futures Exchange

Table 2: Plan to Build the Fuel Exchange in Vietnam in 2012-2017

Period	Objectives	Work	Transaction	Supply of oil from refineries
2012 - 2014 *(Preparation)*	*Petition & promotion*	- Petition for establishment of a fuel futures exchange, build legal infrastructure for trade in fuel - Cooperate with VNX. BCEC and fuel exchanges in Southeast Asian countries in exchanging experience and technologies - Disseminate knowledge of fuel futures - Develop a futures exchange of small scale to serve as a basis for further developments + Legal infrastructure: - Develop basic rules and regulations on operations in the exchange, electronic transaction and clearing systems, and personnel problems + Facilities: - Create new networks and share existing ones run by brokerage firms, along with their transport and warehouse services if possible. - Hold conferences on the plan to build the fuel futures exchange to gather opinions and support from fuel producers, wholesalers, importers and retailers.	No transaction	Satisfying part of domestic market demand
2014 - 2015 *(Operation)*	*Establishment*	- Officially establish the fuel futures exchange - Introduce rules and regulations on operations in the exchange - Carry out a pilot scheme with various contracts to help participants master all procedures and techniques	Carry out transactions between local participants & Act as intermediaries in regional and international fuel exchanges	
2015 - 2016 *(Operation)*	*Survival*	- Keep training and fostering personnel - Expand transport and oil depot networks - Perfect electronic transaction system - Petition for improvements in rules and regulations to align with international practices		
2016 - 2017 *(Operation)*	*Development*	- Enter into futures market as sellers - Training personnel needed for internationalization - Make rules and regulations meet international standards	Operate at home and abroad	Export a limited volume
From 2017 onwards *(Operation)*	*Development*	- Make rules and regulations meet international standards - Keep on training personnel needed for internationalization - Apply new technologies, upgrade transport, pipeline and depot services in preparation for development and participation in international exchanges	Operate at home and abroad	Export in large quantities

References

Blanco, C., J. Lehman & N. Shimoda, (2005), "Airlines Hedging Strategies: The Shareholder Value Perspective", *Commodities Now*, June, 1 - 4.

Brown, Stephen P.A.B & M.K. Yucel (2000), "Gasoline and Crude Oil Prices: Why the Asymmetry?", *Economic and Financial Review,* Third Quarter 2000, 23 - 28.

Carter, David A., D. Rogers & B.J. Simkins (2004), "Does Fuel Hedging Make Economic Sense? The Case of the US Airline Industry", Oklahoma State University working paper. 11 December, 29 - 31.

Daniel, James A. (2001), "Hedging Government Oil Price Risk", IMF Working Paper.

Hamilton, James D. (2008), "Understanding Crude Oil Prices", NBER Working Paper No. 14492.

Knapp, James W. (2008), "Should the Department of Defense Hedge Oil Prices in Order to Save Money?", Naval Postgraduate School, Monterey, California, March, 41 – 43.

Lin Rueyjiau & Chang Yuanchen (2008), "Does Hedging Add Value? Evidence from the Global Airline Industry", Department of Finance National Chengchi University Taipei, Taiwan, R.O.C., 28 – 29.

Markham, Jerry W. & D.J. Harty (2008) "For Whom the Bell Tolls: The Demise of Exchange Trading Floors and the Growth of ECNs", *The Journal of Corporation Law*, 33(4), 871 – 882.

Medova, E.A. & A. Sembos (2001), "Price Protection Strategies for an Oil Company", Presented at the 9th International Conference on Stochastic Programming, Berlin, Germany, August 2001, 21 - 22.

Nguyễn Thị Ngọc Trang (2006), *Quản Trị Rủi Ro Tài Chính* (Financial risk management), Thống Kê Publisher, Hà Nội.

Sauter, Raphael & S. Awerbuch (2003), "Oil Price Volatility and Economic Activity: A Survey and Literature Review", IEA Research Paper, Paris, August, 11 -2.

Tan, M. (2010), "Managing Aviation Fuel Risk: Emerging Market's Airline Companies Perspective On The International Arena", London South Bank University, Centre For International Business Studies, 8 June, 38 – 9.

Virtual Metals Research & Consulting Ltd (2005), "An Investigation into the potential viability of a sustainable Commodity Exchange in South Africa", August, 1 - 28.

Websites :

http://www.cmegroup.com/clearport/

http://www.cmegroup.com/trading/energy/files/CME-EN_SalesBrochure.pdf
http://www.cmegroup.com/rulebook/NYMEX/1/5.pdf http://www.cmegroup.com/rulebook/NYMEX/2/200.pdf

http://www.centreforenergy.com/AboutEnergy/CanadianEnergy/Pricing/CrudeOil.asp

https://www.theice.com/publicdocs/ICE_Crude_Oil.pdf

http://www.imf.org/external/pubs/ft/weo/2009/

www.tocom.or.jp

http://www.sempracommodities.com/oil_producers.asp http://www.sempracommodities.com/oil_endusers.asp