HEDGE TRANSACTIONS, TAXATION, AND ACCOUNTING IN THE NATURAL GAS TRADE IN THE TURKISH ENERGY SECTOR*

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ABSTRACT

Due to its significant advantages, natural gas, which forms an increasing share of world energy resources, has become one of the important energy resources worldwide. When natural gas prices are analyzed around the world, it is seen that the price formulas depend on petroleum products. Natural gas prices are increasing in proportion to the price increase in petroleum products. There is a simultaneous change in the same direction between oil prices and exchange rates. Natural gas prices are also determined depending on oil prices substantially in Turkey. Therefore, a hedging mechanism should be implemented against fluctuations in oil prices. Thus, the effect of prices on natural gas cost is reduced and the costs are controlled within a certain band interval or fixed by a single price. In this study, firstly the hedging of natural gas prices is explained with an example application. Then taxation processes of the natural gas trade and accounting records including taxation processes are presented. Herein, a guiding resource has been created for both real sector actors in the natural gas business and academics who plan to design an academic study on this subject.

Keywords: Natural Gas, Hedge, Taxation, Accounting, Risk, SCT, VAT.

JEL Codes: M40, M41, H25.

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ENERJİ SEKTÖRÜNDE DOĞALGAZ TİCARETİNDE HEDGE İŞLEMLERİ, VERGİLENDİRİLMESİ VE MUHASEBELEŞTİRİLMESİ

ÖZ

Sahip olduğu belirgin avantajları nedeniyle dünya enerji kaynakları içindeki payı gittikçe artan doğal gaz, dünyanın önemli enerji kaynaklarından biri haline gelmiştir. Dünya genelinde doğal gaz fiyatlarına bakıldığında doğal gaz fiyat formüllerinin petrol ürünlerine bağlı olduğu görülmektedir. Doğal gaz fiyatları, petrol ürünlerinin fiyat artışıyla orantılı olarak artmaktadır. Petrol fiyatları ile döviz kurları arasındaki eşzamanlı ve aynı yönde bir değişim söz konusudur. Türkiye'de de doğalgaz fiyatları büyük ölçüde petrol fiyatlarına bağlı olarak belirlenmektedir. Dolayısıyla petrol fiyatlarındaki dalgalanmalara karşı hedging mekanizması çalıştırılması gerekmektedir. Böylece fiyatların doğal gaz maliyeti üzerindeki etkisinin azaltılmakta, maliyetlerin belirli bir bant aralığında kontrol edilmekte veya tek bir fiyatta sabitlenerek belirlenebilmektedir. Çalışmada doğal gaz fiyatlarının hedge edilmesi örnek uygulamayla anlatılmıştır. Bu süreçte oluşan işlemler ve bu işlemler sonucunda meydana gelen vergilendirme muhasebe kayıtlarıyla ortaya konulmaya çalışılmıştır.

Anahtar Sözcükler: Doğal Gaz, Hedge, Vergi, Muhasebe, Risk, ÖTV, KDV.

JEL Kodları: M40, M41, H25.

1. INTRODUCTION

Reserves, production and investment costs, transformation technologies, and economic and political relations between countries and regions emerge as effective factors in the determination of energy supply (Bayrac, 2014). The process of privatization and liberalization, which manifested itself in the energy markets with the effect of globalization, and the legal and structural change process, which will undermine this process, have created significant uncertainty in the world energy market. With this uncertainty, the importance of domestic resources has increased and the necessity to invest in these resources has been revealed. In terms of sustainable economic development, the creation of an energy infrastructure is inevitable for every country (Dagdemir, 2012).

As set out in the "Natural Gas Market Law No. 4646 dated 18.4.2001", constituting the legal structure for the natural gas market in Turkey, the importation, transmission, storage, wholesale, exportation, distribution, distribution, and transmission of compressed natural gas (CNG) are listed as mandatory market activities (Resmi Gazete 7 September 2002).

The Natural Gas Market Law was enacted in 2001 within the framework of market sharing principles established within this scope. The purpose of this law is to liberalize the natural gas market in order to make it accessible to consumers in a manner that does not harm the environment within the framework of quality, continuous, cheap, and competitive principles; to establish a financially strong, stable, and transparent natural gas market; and

to ensure independent regulation and supervision in this market. It states that the regulation and supervision are conducted by the Energy Market Regulatory Authority (EPDK), which is a financially and administratively independent authority (Yardımcı, 2011).

In Turkey, a license for natural gas, liquefied natural gas (LNG), and CNG transmission activities separately must be obtained from the EPDK. Natural gas transmission is only conducted by BOTAS (Petroleum Pipeline Company) in Turkey due to the cost of transmission, while natural gas imports are conducted by both private sector firms and BOTAS in Turkey. The distribution of natural gas supplied to the parties (eligible consumers, distribution companies, and power plants) through production or importation is carried out by companies having wholesale licenses (Öztürk, 2018).

Table 1: Natural Gas Consumption Data by Years 2007-2021

(EPDK 2017, 2018, 2019, 2020, 2021)

Years	Realization (Sm^3)
2007	35,394,878,230
2008	36,865,051,313
2009	35,218,839,390
2010	37,411,118,370
2011	43,697,409,192
2012	45,241,762,899
2013	45,582,044,872
2014	48,717,179,257
2015	47,999,276,834
2016	46,395,060,952
2017	53,857,136,920
2018	49,329,930,000
2019	45,285,498,424
2020	52,019,230,516
2021	***(EPDK forecast for 2021)*** 50,864,761,766

In this country, it is seen that natural gas consumption has been increasing day by day. There is a significant increase between the consumption in 2007 and the estimated consumption in 2021. This increase has occurred over 15 years. However, it reached its highest level in 2017 and the consumption forecast for 2021 is lower than that for the previous year. Turkey's need for natural gas is an important indicator of the increase in the following years.

When the natural gas prices worldwide are examined, it is seen that the price formulas depend on petroleum products. Even though natural gas prices sometimes depend on different criteria, natural gas prices increase in proportion to the price increase of petroleum products (Akgül, 2013). Natural gas prices are also determined depending on oil prices substantially in Turkey. There is a simultaneous and same-direction change between oil prices and exchange rates (Torun, 2017).

In the present study, firstly the hedging of natural gas prices is explained via an example application. However, an examination of the literature reveals that there is no academic study that includes the hedging of natural gas prices, recording this application in the accounting records, taxation processes, and recording taxation processes in the accounting records integrally. By this purely practical and empirical-based study, a guiding resource has been created for both real sector actors in the natural gas business and academics who wish to design an academic study on this subject.

In this respect, hedging in the natural gas sector is explained in short theoretically. Moreover, recording accounting records, which also includes taxation processes, in the natural gas sector and hedging processes is explained in detail in the application phase (in the accounting process).

2. LITERATURE REVIEW

Kramer, Biek, and Lee (2007) addressed the US federal and state tax treatment of energy derivatives and their use for price risk management and income generation. First, they presented a brief overview of popular energy products that deal with forward contracts, futures, swaps, and tolling contracts. They then referred to Code Sec. 1256 contracts, special rules for certain derivative products, elective mark-to-market provisions, commodity derivative dealer transactions, and the tax hedging rules by identifying their federal related taxes. They then set out state relevant state tax considerations, starting with the relevant federal statutory and statutory issues and then addressing relevant state tax concepts.

Pincus and Rajgopal (2001) examined the relation between two mechanisms that managers of oil and gas producing firms can use to manage earnings volatility. Specifically, they investigated whether discretionary accrual choices and hedging with derivatives are used as income smoothing substitutes. Earnings variability is a function of both cash flows and accounting accruals. Hedging dampens cash flow and thus earnings volatility, while smoothing with discretionary accruals directly affects only the latter. They have stated that discretionary accrual choices and hedging with derivatives can both be used to reduce volatility caused by oil price and

exploration risks, while only hedging can reduce cash flow volatility induced by oil price fluctuations.

Smith (2001) examined the regulatory and contractual framework applied to derivatives commonly used by Canadian oil and gas producers in general. In that article the author provides an overview of some of the key derivatives oil and gas companies can use. The author provides other examples of derivative products and shows how oil and gas companies can design and use these products to meet their individual needs. The author stated that derivative products enable oil and gas producers to actively manage non-core business risks such as depressed commodity prices, high interest rates, and unfavorable currency exchange rates.

Jin and Jorion (2006) examined the hedging activities of 119 US oil and gas producers from 1998 to 2001 and evaluated their effect on firm value. Theories of hedging based on market imperfections imply that hedging should increase the firm's market value. To test this hypothesis, detailed information on the extent of hedging and on the valuation of oil and gas reserves is required. They found that hedging reduces the firm's stock price sensitivity to oil and gas prices. Contrary to previous studies, however, they found that hedging does not seem to affect market value for this industry.

Villar and Joutz (2006) performed a graphical analysis of WTI oil prices with natural gas prices comparatively. They saw that oil prices have an effect on natural gas prices, but natural gas prices do not affect oil prices. They showed that the reason for this situation is that oil prices are revealed on a global scale, while natural gas prices are revealed on a regional scale.

Hartley, Medlock, and Rosthal (2008) examined the relationship between natural gas prices and crude oil prices. They concluded that electricity generation facilities play an important role in the formation of crude oil and natural gas prices, and exchange rates and variable weather conditions are also important factors in the formation of energy prices.

Nossa, Lotay, Vrana, and Walker (2016) discussed the benefits and limitations of oil and gas price hedges. They analyzed the main types of hedging instruments oil and gas producers use, including their principal differences, advantages, and disadvantages. In addition, they discussed the factors that oil and gas producers should consider when implementing a hedging strategy. They state that hedging is a crucial component of any oil and gas producer's risk and financial management program. They also state that oil and gas producers should be familiar with the risks and benefits of the hedging strategies typically used in the oil and gas sector to mitigate price risk. In this way, they assert that those who trade in this field are significantly freed from the exchange rate risks that arise with hedge transactions.

Torun (2017), as a result of analysis of the long-term relationships between oil prices and natural gas prices and the real exchange rate, concluded that oil prices affect natural gas prices positively and the real exchange rate affects natural gas prices negatively.

Çıtak and Kurt (2020) determined that enterprises in Turkey use hedging transactions for hedging, and for this they mostly employ forward contracts against currency risk among the derivative products, and almost all of them transfer derivative instruments to accounting records within the scope of hedge accounting.

3. HEDGING IN THE NATURAL GAS INDUSTRY

Through hedging, it is intended to ensure protection against the future risk of sudden price changes by trading goods at a predetermined price for a future purchase or sale of goods (Dizman, 2014). In other words, hedging is a term that sets out the methods of eliminating the negative effects of the risk, which may affect the profit, arising from the future interest, price, and exchange rate fluctuations and comes out as a loss. This increases efficiency in risk management and provides effective protection against existing risks (Usta, 2002).

By facilitating risk management, enterprises can transfer risks from future changes such as exchange rate risk, market risk, credit risk, interest rate risk, and liquidity risk that they can experience in the future by performing transactions in futures markets. Enterprises need to use financial derivatives to overcome the risks they are exposed to. However, financial derivatives do not eliminate the risk factor; they only enable the risk to pass into other hands. In other words, financial instruments ensure that risk and profit are transferred from hedge traders to speculative traders (Kurar and Çetin, 2016).

“Hedging” or "hedge" is an English term that means taking protective measures against a certain risk. Hedging is the process of closing the possible loss of a transaction with a second transaction of the same value but in the opposite direction (Erdogan, 1995). Hedge techniques are developed to avoid risk and to protect (Akgüç, 2009). By the definition of hedge, the risk relates to normal goods and liabilities (Lewis, 1993). For this reason, the hedge is an instrument used to maintain the cash position. Here, the difference in the correlation between the price generated by the hedge position and the non-hedged price (Moosa, 2003) demonstrates the importance of hedging in maintaining the cash position. International companies experience serious difficulties due to transactions in dollars and the resulting fluctuations in exchange rates (Hideki, 2004).

In the natural gas market where physical trade takes place, a hedging mechanism can be employed against the fluctuations in oil prices by making use of financial trading instruments. The oil-based uncertainty in gas prices requires optimum risk protection (Guo, 2016). The aim is to reduce the effect of prices on the cost of natural gas, to control costs within a certain band, or to fix them at a single price. For this reason, hedging is considered an important protection element against decreases that may occur. Already in many respects (including regulators) derivatives markets see hedging as a means of protection from price increases and decreases, not as a source of profit. Trading volumes in the natural gas market can have great risks. Therefore, the possible losses of transactions that are not hedged can be very large (Herbert, 2001). Hedge traders in the natural gas market are usually investors who want to buy or sell the product in the future, but who want to protect themselves from price risk (Kurar and Cetin, 2016).

In this respect, the board of directors of the enterprises importing natural gas assigns the CFO the duty of eliminating the risk of future price uncertainty under the management of the CEO. In order to determine and clarify the price uncertainty coming from Gazprom, it is requested to hedge the price of natural gas related to oil price by negotiating with Bank of America Merrill Lynch. By utilizing screen services provided by financial services such as Thomson Reuters and Bloomberg, business executives aim to predict future oil prices and the unit price at which natural gas prices may occur.

Since the formation of the natural gas price is indexed to the price of Brent oil under the contract, the financial institution actually fixes it to the price of Brent oil, which constitutes the price of natural gas. According to the direction of the difference between the future price and the forecast by predicting the possible Brent oil price, the transfer of the difference from the enterprise to the financial institution or vice versa is carried out. Thus, the enterprise hedges the price of the natural gas purchased by a financial institution abroad and protects the company against future loss of value. In other words, the enterprise is protected from the exchange rate risk.

The type of contract used and preferred in this whole field is forward and swap contracts. The type of contract that is preferred and used for hedge transactions applied by the company subject to the study in order to protect itself from the risk arising in the natural gas price is the forward contract.

4. TAXATION IN NATURAL GAS OPERATIONS

Special consumption tax (SCT), on the other hand, is defined as a single-stage, easy-to-manage tax where only certain groups of goods are taxed and which has a few taxpayers. With the adoption of the Special Consumption Tax Law No. 4760 published in Resmi Gazete (Official Gazette) (12 June

2002), 16 taxes, duties, fees, funds, and shares were collected under the SPT. According to the Special Consumption Tax Law, the tax is composed of four different product categories. These goods are oil and petroleum products (List I); motor vehicles (List II); tobacco products, alcoholic beverages, and soda pops (List III); and luxury goods, major appliances, and electronic products (List IV). Goods and services not listed are not subject to SCT.

(a) Oil and petroleum products (List I): In addition to the law, these products in List I are divided into two as tables (A) and (B). The research is about the petroleum products (like gasoline types, diesel, fuel oil, ***natural gas,*** diesel) in table (A). The thing that constitutes the subject of the tax on these goods is the stage of deliveries by importers or manufacturers. In List I, the tax rates for each product are specified in detail (Yıldırım, 2015). Therefore, with the decisions of the Council of Ministers issued on the basis of Article 11 of the Special Consumption Tax law no. 4670, natural gas was subject to excise duty *SCT (Special Consumption Tax)**.*** ***Article 11*** - (Amended: 30/3/2005-5479 / 9 art.)

1. The fixed tax amounts determined for the goods on List I are in kilograms, liters, cubic meters, *standard cubic meters,* and kilocalories or their upper and lower units, if necessary, can be applied in packaging or pieces taking into account the size of containers (ÖTV Kanunu, 2002).

According to the law, natural gas is excised by standard cubic meters (Sm^3). To determine the standard cubic meters of natural gas, the absolute pressure, temperature, and the upper thermal value units in the billing principles issued by the EPDK are used. Notice Article 5 of the principles regarding the determination and invoicing of the sales amount of the natural gas invoicing issued by the EPDK accepts the energy value as 9155 Kcal/Sm^3 when 1 Sm^3 natural gas is burned. The standard value used in legislation is 9155 Kcal/Sm^3. Again in Article 4 of the Notice on the principles regarding the determination and invoicing of the sales amount of the natural gas invoicing issued by the EPDK, it is explained that the value of 1 Sm^3 natural gas in kilowatts shall be multiplied by a coefficient of 10.64 (Resmi Gazete, 2002)

Unit Conversions, Article 4 - All legal entities operating in the natural gas market indicate the amount of natural gas they are trading on an energy basis. In order to calculate the amount of natural gas on an energy basis:

1 calorie = 4184 joules (thermochemical calorie)

1 kWh = 3,600,000 joules

based on the upper thermal value of 9155 kcal/m^3

1 Sm^3 = 10.64 kWh is used.

This is important when recording. The natural gas comes with USD unit price for normal cubic meters (Nm^3); then the total bill is divided by Sm^3, which is the unit of Turkey, using the above data. Thus, the unit price is converted in line with the standards in this country. An example of this is given in the application section.

The fixed price per unit of excise duty on natural gas delivery in table A in list 1 of Annex 1 of Special Consumption Tax Law numbered 4760 is given in the table below:

Table 2: Table (1), List (I), Table (A) Customs Tariff Statistics Position (HS Code) (ÖTV 2002)

HS CODE	Goods Name	Tax Amount (TL)	Tax amount to be applied (TL)	Unit
2711.11.00.00.00	*Natural Gas*			
	Motor Vehicles to be used as fuel	0.8599	0.8599	Cubic Meters
	Others (Gaseous**)**	***0.0230***	***0.0230***	**Cubic Meters**

Assuming that all imported gas is sold, the SCT is paid in two parts. Within the first fifteen days, it shall be declared and paid to the related tax office with a specific HS code (Customs Tariff Statistical Position) with the SCT1 declaration. The rest is declared in the second 15 days.

Per unit gas *0.023 TL × Used Natural Gas* sm^3 *= SCT amount to be paid* is obtained.

The first 15-day excise duty is paid through the bank within 10 days from the 15th day, i.e., on the 25th day after the declaration to the tax office to which it is attached before the end of working hours. If the date 25 January 202X coincided with a Saturday, the deadlines in the Tax Procedure Law would be dated 27 January 202X; *Article 18 - The periods specified in the tax laws shall be calculated as follows* (VUG, 2013):

1. If the period is specified in days, the day on which it starts is not taken into account and it ends at the end of working hours on the last day;

2. If the period is specified as a week or month, it ends at the end of working hours on the day corresponding to the last week or month that it began in.

If there is no day corresponding to the day on which it starts in the month the period ends, the period ends at the end of working hours on the last day of that month;

3. In the periods defined by a certain day, the period ends at the end of working hours on that day;

4. Public holidays are included. However, if the last day of the period coincides with a public holiday, it ends at the end of working hours on the first working day following the holiday.

According to the Law on Value Added Tax No: 3065, natural gas is charged at the retail price. The value added tax (VAT) accrual registration must be made not on the date of the customs declaration, but on a date in the month in which the VAT is paid. The point that draws attention here is that in order to get the discount on VAT, that is, to write down and declare the VAT to be discounted, the Article 29/1-b of the VAT Law; Article 29-1. says "Taxpayers may discount the following taxes on their activities from the value added tax calculated on taxable transactions, unless otherwise provided in the Law:

a) Value added tax shown in invoices and similar documents calculated due to the delivery and services made to them,

b) The value added tax *paid* due to the imported goods and services,

c) (Annex: 3/6/1986 - 3297/9 art.) Value added tax shown on invoices and similar documents of goods at the beginning of the accounting period according to the inventory issued for those who enter the real taxation system while being taxpayers subjected to the tax on a lump sum or compensatory basis, since it is stated as VAT paid, it can be subject to discount in the period it is paid. According to 2 November 1984 dated Law on VAT, taxpayers reduce the VAT by making the related VAT payment in the month when the customs declaration is opened (KDV Kanunu, 1984).

In addition, the basis of the SCT's entry into the VAT base in the transactions carried out is the "tax" word mentioned in Article 24/b of the VAT Law.

Article 24/b in the 2 November 1984 dated Law on VAT - The following elements are included in the basis: packing expenses, insurance, commission and similar expense provision elements such as ***tax***, duty, fees, shares, and fund provision (KDV Kanunu, 1984).

The Constitutional Court clarified that the criticism that the tax has a tax, i.e., the VAT on excise duty, and that VAT can be taken on excise duty, concluding with the reasons on 25 December 2014 (Resmi Gazete, 2015).

VAT is paid on the 26th day of the relevant month as it can be deducted in the period in which it is paid and is postponed until the financial deadline. When the relevant date coincides with a public holiday, the payment shall be made on the first business day following.

5. AN APPLICATION AND ACCOUNTING FOR TAXATION AND HEDGE TRANSACTIONS IN THE NATURAL GAS TRADE IN THE ENERGY SECTOR

In the application that is the subject of the research, the accounting will be carried out through the registration processes to be conducted according to the TDHP. While natural gas continues to flow through the pipe, the end of the month is considered the end of the period in terms of periodicity. The parties that buy and sell natural gas come together 1 day a month to meet with BOTAS to determine which seller sells how much natural gas in 1 month. The import quantity is approved in Nm³ (normal cubic meters). In the same report, the calorific value, that is, the value used to convert the imported gas to Sm³ (standard cubic meters) energy unit is determined. The calorific value is determined by Gazprom for each day. This value changes due to the different quality of each incoming natural gas. In addition, in order to calculate the amount of natural gas on an energy basis, using 1 calorie = 4184 joules (thermochemical calorie) 1 kWh = 3,600,000 joules, based on the upper thermal value as 9155 kcal/m^3, 1 Sm³ = 10.64 kWh is used.

Example: In January 202X, 10,000,000 Nm³ of gas was imported from Gazprom and the calorific value of the gas was calculated as 9145.0009 Kcal/Nm³. This value is converted to Sm³ in Turkey:

(Pursuant to the Notice on the principles regarding the determination and invoicing of the sales amount of the natural gas invoicing issued by the Energy Market Regulatory Authority (EPDK))

(10,000,000 Nm³ × 9145.0009 Kcal/Nm³) / 9155 Kcal/Sm³

= ***9,989,078 Sm³***

All energy units are converted to kWh in Turkey, 1 Sm³ = [(9155 Kcal/Sm³) / 860.42 kWh =] is multiplied by *10.64 kWh* and converted to kWh.

9,989,078 Sm³ × 10.64 = 106,283,789.92 kWh.

The invoice originally comes from Russia as a unit price of Nm³ × USD. In this case, while taking the records, the total of the bill is divided by Sm³, the unit of Turkey, and the unit price is converted to the standards in this country.

If the invoice total is USD 10,000,000 per unit price of USD/Nm³, the minutes signed by the parties (The parties are the official documents approved and signed by the parties of the quantity of Nm³ of delivery gas and Kcal/Nm³ at the end of the month). 4 February 202X,

Invoice date (invoice by Gazprom): 5 February 202X

Date of Customs Declaration: (latest) 10 January 202X

Billing Date: 20 February 202X

The parties are the official documents approved and signed by the parties of the quantity of Nm^3 of delivery gas and Kcal/Nm^3 at the end of the month (where the price is paid in this term); accounting records *(retrospective accrual can be done up to 7 days as of 31 January)* are presented considering the date below.

In addition, taking into account the two-way effect of the hedge transaction (future profit or loss), the amounts were changed and records were issued for both cases. In the example given above, the Gazprom payment for natural gas imported and sold during January 202X will take place on 20 February 202X. The invoice of this payment, on the date when the price is fixed, is determined as 4 February 202X.

Price Per Unit (Sm^3)= 10,000,000 USD / 9,989,078 Sm^3 =1.0011 USD/Sm^3

The type of contract that is preferred and used for hedge transactions applied by the company subject to the study in order to protect itself from the risk arising in the natural gas price is the forward contract. In the records made during the process, it will be used as a hedge transaction instead of the term forward contract.

From here:

1st Assumption, the case and the accounting records that will occur when the price of *Gazprom is predicted as* 1.1 USD/Sm^3 and hedged:

(As of 8 January 202X*)*

1.1000 USD/Sm^3 × 9,989,078 Sm^3 × 5.9594 CBRT Exchange Rate

= 65,481,802.58 TL

When the forecast is made, the record:

08.01.202X

950 OFF-BALANCE SHEET ACCOUNTS PAYABLE	65,481,802	58		
950.01 Accounts Payable from Hedging Transactions				
951 OFF-BALANCE SHEET ACCOUNTS				
RECEIVABLE			65,481,802	58
951.01 Accounts Receivable from Hedging				
Transactions				
BOA Merrill Lynch GP Price Hedge				
(BOA: Bank of America)				
(GP: Gazprom)				

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2nd Assumption, the case and the accounting records that will occur when the price of Gazprom is predicted as 1 USD/Sm³ and hedged:

(As of 8 January 202X)

1 USD/Sm³ × 9,989,078 Sm³ × 5.9594 CBRT exchange rate

= 59,528,911.43 TL

When the forecast is made, the record:

08.01.202X				
950 OFF-BALANCE SHEET ACCOUNTS PAYABLE	59,528,911	43		
950.01 Accounts Payable from Hedging Transactions				
951 OFF-BALANCE SHEET ACCOUNTS				
RECEIVABLE			59,528,911	43
951.01 Accounts Receivable from Hedging				
Transactions				
BOA Merrill Lynch GP Price Hedge				

Assuming that all imported gas is sold, the SCT is paid in two parts. The first part shall be declared and paid to the related tax office with a specific HS code (Customs Tariff Statistical Position) with the SCT1 declaration. The journal entries for the declarations in the first 15 days and the second 15 days are shown below.

The fixed price per unit of excise duty on natural gas delivery in table A in list 1 of Annex 1 of Special Consumption Tax Law numbered 4760:

Others (Gaseous): 0.0230 TL/Sm³

According to the example, assuming that natural gas consumption is similar in both periods of January, if 9,989,078 Sm³ gas is declared as 5,000,000 Sm³ in the first 15 days and the remaining 4,989,078 Sm³ is declared in the second 15 days, 0.023 TL should be paid for each gas unit as the fixed SCT.[1]

[1] Note: The amount of gas imported and sold (delivered) between 1 January and 15 January shall be declared and paid to the related tax office until the 25th day of the month within 10 days following the first-15 days SCT declaration. Likewise, the amount of gas imported and sold (delivered) between 16 January and 31 January shall be declared and paid to the related tax office until the 10th day of the month within 10 days following the first-15 days SCT declaration.

Statement for first 15 days	5,000,000 Sm³	×	0.023 TL/Sm³	=	115,000.00
Statement for Second 15 days	4,989,078 Sm³	×	0.023 TL/Sm³	=	114,748.79
Total	***9,989,078 Sm³***	×	***0.023 TL/Sm³***	=	***229,748.79***

The 1 January-15 January accounting record for the first 15 days of the SCT declaration and payment is as follows. Payment takes place on Monday, 27 January 202X, which is the deadline.

27.01.202X

360 TAXES AND FUNDS PAYABLES	115,000	00		
360.02 SCT Account Payable				
102 BANKS			115,000	00
102.01 - Ziraat Bank TL Payable				
January / 202X 1st Term SCT Payment				

Based on the invoice issued by Gazprom on 5 February 202X, the 381 Expense Accruals Account is used in the accounting record to be made on 31 January 202X. (Total invoice amount is 10,000,000 USD and the CBRT exchange rate is 5.9716 TL.)

31.01.202X

153 COMMERCIAL GOODS	59,716,000	00		
153.01 Natural Gas				
381 EXPENSE ACCRUALS			59,716,000	00
381.01 Accruals Account for the				
Purchase of Commercial Goods				
Gazprom Invoice accrual record of purchase of goods				
CBRT Exchange Rate: 5.916 TL × 10,000,000 USD				

Assuming that the sale is made with the purchase cost +10% profit and considering the cost recording is made immediately (in accordance with the continuous inventory method) in accordance with the monthly reporting, the accounting records are as follows:

Cost of Purchase 5.9716 TL × 10,000,000 USD = 59,716,000.00

Sales Amount 59,716,000.00 × 1.10 = 65,687,600.00

Total SCT to be paid 9,989,078 Sm^3 × 0.023 TL/Sm^3 = 229,748.79

VAT (65,687,600 TL + 229,748.79 TL) × 0.18 = 11,865,122.78

The basis of the SCT's entry into the VAT base in these transactions is the "tax" word mentioned in Article 24/b of the VAT Law. The criticism is that the tax has a tax.

31.01.202X				
120 CUSTOMERS	77,782,421	57		
120.01 İstanbul Enerji Ticaret A.Ş.				
600 DOMESTIC SALES			65,687,600	00
600.01 Natural Gas Sales Account				
360 TAXES AND FUNDS PAYABLES			229,748	79
360.02 SCT Account Payable				
391 VAT CALCULATED			11,865,122	78
Sales invoice A-000521				

Cost recording of sold gas according to the continuous inventory method

31.01.202X				
621 COST OF COMMERCIAL GOODS SOLD	59,716,000	00		
621.01 Natural Gas Sales Cost Account				
153 COMMERCIAL GOODS			59,716,000	00
153.01 Natural Gas				
Sales invoice no A-000521 Record of sold cost				

The share and the license fee shall be paid to the EPDK. Provision is made for the related expenses to be paid in the following year on the basis of periodicity and accrual. It is calculated as 5/1,000,000 (5 per million) of the calculated amount of natural gas sold in kWh paid as a license fee and 5/10,000 (5 per ten thousand) of the “Net Sales" amount in the income statement paid to the EPDK as share, according to declared license fees by the EPDK (EPDK, 2017).

In the example,

9,989,078 Sm^3 × 10.64 =106,283,789.92 kWh

106,283,789.92 kWh × (5/1,000,000) = *531.42 TL License Fee*

Since there are no items like overseas sales, refund, or discount in our example, Net Sales = Gross Sales; so the related rate is applied to the amount in the 600 accounts, which is the amount of sales made on this occasion:

65,687,600.00 TL × (5/10,000) = *32,843.80 TL Share*

Since natural gas shares paid to EPDK are expenses, they are recorded in 760 accounts.

Related accounting records are as follows:

31.01.202X					
760 MARKETING, SALES, AND DISTRIBUTION					
EXPENSES		33,375	22		
760.01 EPDK Participation Share	32,843.80				
760.02 EPDK License share	531.42				
381 EXPENSE ACCRUALS					
381.02 - Payment to EPDK				33,375	22
January / 202X period EPDK expense provisions record					

On 31.01.202X, in the natural gas purchase record, a debit entry was made to 153 accounts and credit entry to 381 accounts. Upon receipt of the invoice from Gazprom, 381 accounts are closed and 320 accounts are credited.

05.04.202X					
381 EXPENSE ACCRUALS		59.716.000	00		
381.01 Accruals Account for the					
Purchase of Commercial Goods					
320 SUPPLIERS				59.716.000	00
320.01 Gazprom					
Customs Declaration no. 18061600IMXXXXXX					

Table 3. VAT and SCT Calculation Table

Quantity (Nm^3) Normal m^3	10,000,000.00
Calorific Value	9145.0009
Quantity (Sm^3) Standard m^3	**9,989,078.00**
Net Invoice Fee (USD)	10,000,000.00
CIF[2] (Cost, Insurance, and Freight) (USD)	10,000,000.00
Exchange Rate (USD Sales 10 January 2019 (Central Bank Exchange Rate)	5.8916
CIF (TL)	58,916,000.00
Stamp Tax on Customs Declaration	119.00
Other expenses	5000.00
VAT Base	58,916,000.00
VAT (18%)	10,605,801.42
TOTAL VAT TO BE PAID	**10,605,801.42**
TOTAL SCT TO BE PAID ***0.023***	229,748.79

There are no discounts on the invoice data in the table. In addition, freight and insurance costs are not available. In addition, the stamp tax in the table can be followed in 621 accounts as well as in the 770 account. Since the income statement does not affect the net profit/loss amount, the account recorded as 621 or 770 does not result in tax loss. Since it is related to the periods during which there are no imports and the related amount is low, it is more appropriate to follow up by writing expenses in the 770 General Management Expenses Account.

Since "Value added tax shown on invoices and similar documents of goods at the beginning of the accounting period according to the inventory issued for those who enter the real taxation system while being taxpayers subjected to the tax on a lump sum or compensatory basis" is expressed as paid VAT, there can be discounts in the period when it is paid. Taxpayers reduce the VAT by making the related VAT payment in the month when the customs declaration is opened according to the 2 November 1984 dated Law on VAT (KDV Kanunu, 1984).

[2] The seller undertakes the insurance premium, freight, and loading costs and risks and brings the goods to the specified location.

01.02.202X				
191. DEDUCTIBLE VAT	10,605,801	42		
360 TAXES AND FUNDS PAYABLES			10,605,801	42
360.01 - VAT Payable at Customs				
Customs Declaration no. 20061600IM0XXXXX VAT 18%				

16 January - 31 January, the second 15 days,

Special Consumption Tax declaration, 4,989,078 Sm^3 × 0.023 TL/Sm^3

= 114,748.79

10.02.202X				
360 TAXES AND FUNDS PAYABLES	114,748	79		
360.02 VAT Payable at Customs				
102 BANKS			114,748	79
102.01 - Ziraat Bank TL Payable				
January / 202X 2nd period SCT payment				

Accounting record of collection from buyers

19.02.202X				
102 BANKS	77,782,471	57		
102.01 - Ziraat Bank TL Payable				
120 CUSTOMERS			77,782,471	57
120.01 İstanbul Enerji Ticaret A.Ş.				
XX No. Transfer with Incoming Receipt				

Accounting record for payment to Gazprom (Seller)

20.02.202X				
320 SUPPLIERS	60,581,000	00		
320.01 - Gazprom				
102 BANKS			60,581,000	00
102.02 - Ziraat Bank USD Payable				
Payment by Swift Message				
CBRT Exchange Rate: 6.0581				

Exchange rate on the date of purchase 5.9716

Exchange Rate on Payment Date 6.0581

Negative exchange rate difference 0.0865

Foreign Exchange Loss = 10,000,000 USD × 0.0865 = 865,000.00 TL

20.04.202X				
656 FOREIGN EXCHANGE LOSSES	865,000	00		
656.02 – Current Account Exchange Rate Expenses				
320 SUPPLIERS			865,000	00
320.01 Gazprom				
Record of Exchange Rate Loss Due to Swift Message				

1st Assumption, from Hedging transactions according to the 1st assumption When Gazprom payment is made:

Estimated price 1.1000 USD/Sm³

Actual price 1.0011 USD/Sm³

Difference 0.0989 USD/Sm³

BOA-Merrill Lynch 0.0989 USD/Sm³ × 9,989,078 Sm³ = 987,919.81 USD
It will be paid as hedge loss

When the forecast is made, the record:

(As of 8 January 202X)

1.1 USD/Sm³ × 9,989,078 Sm³ × 5.594 CBRT exchange rate

= 65,481,802.58 TL

The record to be made regarding hedging closure:

20.02.202X				
951 OFF-BALANCE SHEET ACCOUNTS RECEIVABLE	65,481,802	58		
951.01 Accounts Receivable from Hedging Transactions				
950 OFF-BALANCE SHEET ACCOUNTS				
PAYABLE			65,481,802	58
950.01 Accounts Payable from Hedging				
Transactions				
BOA Merrill Lynch GP Price Hedge Closing (Reverse)				
Recording				

The record to be made when the difference amount is paid after the hedge commitment record is closed is classified as a security since hedging is a financial instrument. The loss incurred on this occasion is recorded in the securities sales losses account.

BOA-Merrill Lynch 0.0989 USD/Sm³ × 9,989,078 Sm³= 987,919.81 USD *It will be paid as hedge loss*

987,919.81 USD × 6.0581 = 5,984,917.00 TL (20 February 202X CBRT exchange rate)

Recording of losses arising from hedge transactions:

20.02.202X				
655 MARKETABLE SECURITIES SALES LOSSES	5,984,917	00		
655.01 - Losses from Hedge Transactions				
320 SUPPLIERS			5,984,917	00
320.02 Bank of America Merrill Lynch				
Hedge Losses				

When the negative difference is paid:

20.02.202X				
320 SUPPLIERS	5,984,917	00		
320.02 Bank of America Merrill Lynch				
102 BANKS			5,984,917	00
102.01 Ziraat Bank TL Payable				
Hedging loss payment record				

2nd Assumption, from hedging transactions according to the 2nd assumption When Gazprom payment is made:

Estimated price 1.0000 USD/Sm³

Actual price 1.0011 USD/Sm³

Difference and Direction: 0.0011 USD/Sm³

BOA - Merrill Lynch 0.0011 USD/Sm³ × 9,989,078 Sm³ = 10,987.99 USD hedge profit

When the forecast is made, the record:

(As of 8 January 202X)

1 USD/Sm³ × 9,989,078 Sm³ × 5.9594 MBDA Rate = 59,528,911.43 TL

The record to be made regarding hedging closure:

20.02.202X				
951 OFF-BALANCE SHEET ACCOUNTS RECEIVABLE	59,528,911	43		
951.01 Accounts Receivable from Hedging				
Transactions				
950 OFF-BALANCE SHEET ACCOUNTS				
PAYABLE			59,528,911	43
950.01 Accounts Payable from Hedging				
Transactions				
BOA Merrill Lynch GP Price Hedge Closing (Reverse)				
Recording				

When the difference amount is collected after the hedge commitment record is closed, the profit to be recorded is followed in the securities sale profits account.

BOA - Merrill Lynch 0.0011 USD/Sm³ × 9,989,078 Sm³ = 10,987.99 USD hedge profit

10,987.99 USD × 6.0581 (20 February 202X CBRT exchange rate) = 66,566.34 TL

Recording profits from hedge transactions:

20.02.202X				
320 SUPPLIERS	66,566	34		
320.02 Bank of America Merrill Lynch				
645 MARKETABLE SECURITIES SALES				
PROFIT			66,566	34
645.01 Profits from Hedge Transactions				
Hedging profit record				

When a positive difference is charged:

20.02.202X				
102 BANKS	66,566	34		
102.01 Ziraat Bank TL Payable				
320 SUPPLIERS			66,566	34
320.02 Bank of America Merrill Lynch				
Hedging profit collection record				

For example, the VAT of natural gas imported and sold in the January / 202X period is paid on 26th day of February on Wednesday, 26 February 202X as import VAT. The accounting record of the payment is as follows:

26.02.202X				
360 TAXES AND FUNDS PAYABLES	10,605,801	42		
360.02 VAT Payable at Customs				
102 BANKS			10,605,801	42
102.01 - Ziraat Bank TL Payable				
19061600IM0XX no. Customs Declaration VAT payment				

6. CONCLUSION

In Turkey, the prices of natural gas are determined depending on the oil price and there is a simultaneous change in the same direction between oil prices and exchange rates. The impact of this on natural gas costs should be reduced and costs should be controlled within a certain band or fixed at a single price. Trading volumes in the natural gas market can have great risks. Therefore, the possible losses of transactions that are not hedged can be substantial. Hedging is seen as an important element of protection.

While natural gas continues to flow through the pipe non-stop, the end of the month is considered the end of the period in terms of periodicity. In the case when the natural gas is hedged, that is, at the stage where prices are fixed, these records are followed in off-balance sheet accounts. The 381 Expense Accruals Account is an account in which expenses with known amounts are monitored according to the document to be paid in the next months and strictly. Therefore, the 381 Expense Accruals Account must be used. In natural gas purchase, 381 accounts are credited and 153 accounts are debited until the invoice comes to the enterprise. Upon receipt of the invoice, 381 accounts are debited and 320 are credited.

According to the Special Consumption Tax Law No. 4760 Article 11 the natural gas is taxed through standard cubic meters. To determine the standard cubic meters of natural gas, the absolute pressure, temperature, and upper thermal value units in the billing principles issued by the EPDK are used. According to the Law on Value Added Tax No. 3065, natural gas is charged at the retail price.

The most important issue regarding taxation is that there is a second tax, which comes from SCT. Turkish consumers pay VAT for paid SCT according to Turkish taxation laws. It is clearly seen that the Turkish government takes a secondary tax from a tax that citizens have already paid, in contrast to global applications. The Constitutional Court in Turkey states that this second taxation is totally legal and valid according to VAT Tax Article 24/b.

The Republic of Turkey Central Bank’s selling currency rate on the date of the custom declaration has to be taken into account while calculating the VAT base. The billing amount being translated to Turkish Lira by using that currency rate and VAT base is obtained in this way. Other expenses also have to be included in this VAT base. After that addition the 18% VAT calculation is done.

Furthermore, the share and the license fee shall be paid in the sector to the EPDK. While the share of the EPDK is calculated from sold natural gas amount in kWh, the license fee is calculated from the “Net Sales” entry of the Income Statement. Because the share being paid to the EPDK has

expense qualifications, it is recorded in the 760 account as a liability. The 381 Expense Accruals Account works as receivable across to the 760 account and these transactions continue until the end of the year. Next year, account 381 is closed by recording receivable to the 336 Other Liabilities account. It can be observed that the 320 Suppliers account is used instead of account 336 but this is not a correct usage. It is much more correct to use account 336 for this kind of transaction.

Stamp tax subject to transactions can be followed in 621 accounts as well as in the 770 account. The recording of this tax in the expense accounts does not affect the amount of the income statement as Net Profit/Loss. For this reason, the fact that the account where it is recorded is 621 or 770 does not lead to tax waste. Since it is related to the periods during which there are no imports and the related amount is low, it is more appropriate to follow up by writing expenses in the 770 General Management Expenses Account.

Hedging is a financial instrument and therefore is considered in the securities category. Therefore, losses in foreign exchange differences arising from hedge transactions are debited to the 655 account while the profit is credited to 645 accounts. When the hedge is closed, off-balance sheet accounts are reversed and the transaction is completed.

Consequently, guessing potential changes in Brent oil prices today and processing them is a crucial process. Determination of the difference amount to be transferred from corporate to financial institute or from financial institute to corporate by depending on the direction of differences between real price and estimated price and recording all actual transactions in the natural gas sector in the accounting records and taxation processes caused by all these transactions constitutes a remarkable source for the academic community. On the other hand, it is crucial for natural gas sector actors to have more accurate calculations and accounting records systems.

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