



SOCAR TRADING – Trading Performance Review

Final Report

Geneva, May 2014

THE BOSTON CONSULTING GROUP

Agenda

Summary report

How did SOCAR TRADING extract the value?

SOCAR TRADING'S strategic journey

What methodology was used to calculate the value?

- Calculation: Marketing Azeri
- Data and model

Scope: BCG was asked to analyze SOCAR TRADING's performance since starting trading operations in 2008

Questions asked to BCG

1. By being active in trading market, how does SOCAR TRADING create value for Socar, esp. when commercializing Azeri crude?
2. How much additional value has been added to the value of Azeri crude compared to previous crude tendering?
3. How does the development of SOCAR TRADING compare to other oil-trading operations?

Study compilation

- BCG has conducted a three-week study to review the key questions asked
- BCG senior experts conducted interviews with SOCAR TRADING to understand the business models
- To assess SOCAR TRADING impact since 2008, Azeri Light has been benchmarked to competing crudes using BCG-proprietary refinery model
- The model was fed with data provided by SOCAR TRADING¹: market price data (mainly Platts quotations), selected freight routes, PnL of 3rd-party activities, crude assays, as well as deal overview of equity sales (incl. volumes and counterparty)
- BCG conducted experts interview to compare SOCAR TRADING against other trading houses
- BCG compiled this report to summarize the study findings and explained the model to ensure transparency on how the quantitative results were obtained

1. BCG did not audit the data provided by the client. BCG assumes that the data are sound and correct
Source: BCG analysis

Summary (I): SOCAR TRADING has significantly increased prices of Azeri crude through active trading/marketing

The establishment of SOCAR TRADING has enabled Azerbaijan to significantly increase the value it gets from its crudes on the international market

- BCG estimates that average increase in price realization has been around \$1.7/bbl¹ after the establishment of SOCAR TRADING, leading to an average gain above \$360M/year¹ since 2009
- On top of that, SOCAR TRADING is much more reactive and agile, adapting to short-term market opportunities/disruption in oil markets
 - As seen in 2011 during the Libyan crisis, SOCAR TRADING realized additional gains which would likely have ended in the hands of merchant traders if SOCAR had tendered its cargos

This value creation has been the result of a clear strategy

- *3rd party crude trading*: enabled SOCAR to increase its understanding of the oil market and the supply-demand balance of crudes of similar quality as Azeri Light
- *Direct marketing*: Allows to sell at maximum prices acceptable for the respective refiners by good understanding of availability/prices of alternative sweet crudes for Azeri Light customers
- *Supply-demand-balance*: By diverting cargos to Asia-Pacific, SOCAR TRADING avoids a surplus of sweet crude volumes in the Mediterranean and protects Azeri price premium

1. For insights into calculation, please refer to the later part of the report this report
Source: BCG analysis, based on information and data provided by SOCAR TRADING

Summary (II): SOCAR TRADING is creating value beyond Azeri crude marketing

In addition to marketing SOCAR equity crude, SOCAR TRADING has engaged in international 3rd-party trading

- Averaging \$25M/year of gross margin since 2010¹

Finally, SOCAR TRADING has exploited its asset position in Azerbaijan to originate profitable 3rd-party business in the region

- Including the transport of Turkmen, Kazakh, Russian crudes, Turkmen products and 3rd party crude with a \$90M/year² additional revenues impact since 2010

SOCAR TRADING is now considering expansions in international assets to

- Bring more optionality to its trading portfolio
- Increase its share of 3rd-party business and leverage its trading capabilities
- Remain competitive in asset-backed trading when the merchant traders are acquiring assets

1. Data has been provided by SOCAR TRADING. BCG did not audit the numbers 2. BCG analysis based on data provided by SOCAR TRADING.
Source: SOCAR TRADING data and BCG analysis

Summary (III): SOCAR TRADING has established a credible presence in short time

The setup of SOCAR TRADING has been done very effectively, compared to most of its peers

- Setup in 2008
- Full ramp-up in two years (already achieving \$108M¹ in 2009)
- Able to capture additional value during the Libyan crisis in year 3 (2011)
 - compared to other sweet crudes sold in Europe during the crisis

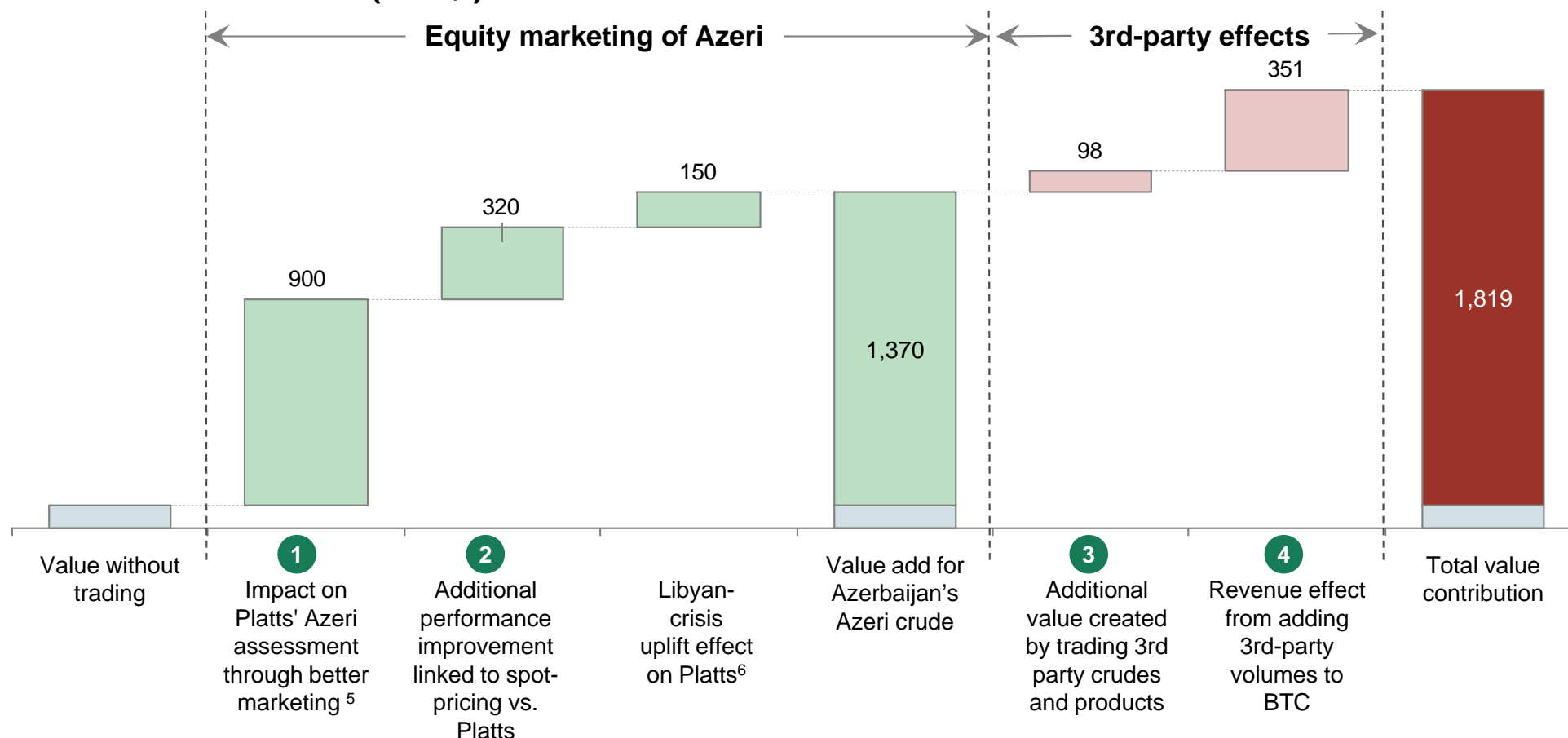
SOCAR has chosen an effective way to build up capabilities

- Joint venture with experienced traders
- Most successful energy trading companies have been created with experienced traders
 - Trafigura, Gunvor, Mercuria, EDFT
- Avoided attrition in early years (compared to others)

SOCAR TRADING is now a well established player in the oil trading market, respected by its peers and well positioned to grow its trading business, and thus strengthens SOCAR's commercial footprint

Sustainable contribution: SOCAR TRADING captures additional value for SOCAR and the state of Azerbaijan

Value added 2008-2013 (in M\$)



Main assumptions/sources/remarks:

- 1 Compared to the average price level 2005-2007; assessment methodology developed by BCG based on both SOCAR TRADING and proprietary data; Platts' price assessments provided by SOCAR TRADING, with the exception of Arabian Heavy and El Sharara (Bloomberg); Platts' product price assessments for key products (e.g. Prem10, Jet, Gasoil 0.1%, ULSD10) provided by SOCAR TRADING; Azeri crude assays provided by SOCAR TRADING, those of other crudes from company websites; Bloomberg freight cost assessments used
- 2 Based on a sample of cargoes differential for the year before and after the inception of SOCAR trading
- 3 3rd-party crude and product trading profits provided by SOCAR TRADING
- 4 Current BTC tariff, Turkmen volumes provided by SOCAR TRADING
- 5. Impact has been corrected by the Libyan crisis effect which has temporarily uplifted the value of light crudes. SOCAR TRADING could capture additional \$150M. The number is not shown here 6. One time effect

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Marketing Azeri: Direct marketing positively impacted Platts' assessment by over \$900M in five years

1 assessment by over \$900M in five years

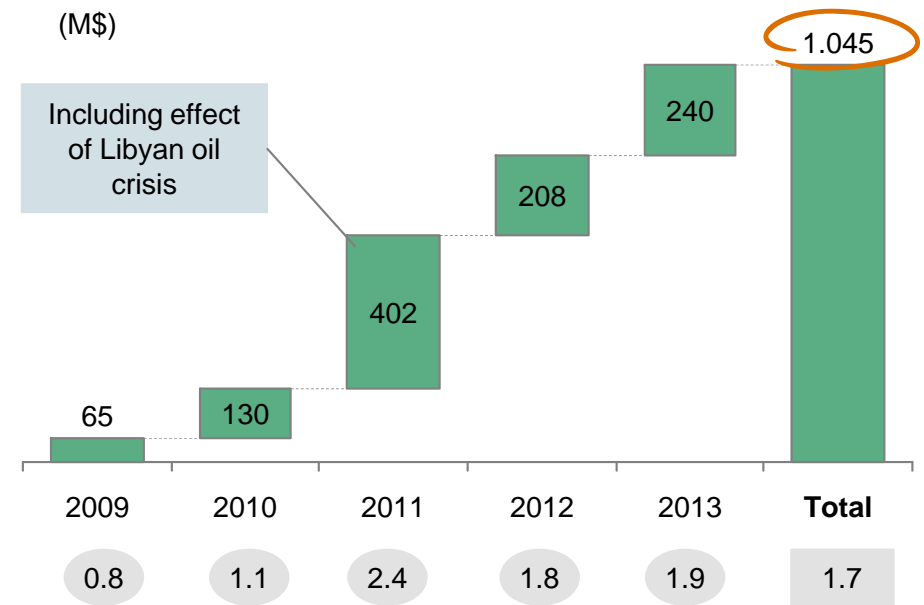
Description of value creation through better marketing of Azeri

SOCAR TRADING created added value by actively managing the sales of Azeri instead of tender offers

- Proactively developing profitable client relationships based on market knowledge
- Assessing optimal timing to sell crude based on refinery needs
- Increasing bargaining power of SOCAR by managing supply and demand in MED
- Positioning Azeri as premium light crude in the region

CIF trading instead of FOB sales allowed SOCAR TRADING to beat the market and protect a price premium for Azeri

Additional value created



Value created in \$/bbl

Note: Assessment methodology developed by BCG based on both SOCAR TRADING and proprietary data; Platts' price assessments provided by SOCAR TRADING, with the exception of Arabian Heavy and El Sharara (Bloomberg); Platts' product price assessments for key products (e.g. Prem10, Jet, Gasoil 0.1%, ULSD10) provided by SOCAR TRADING; Azeri crude assays provided by SOCAR TRADING, those of other crudes from company websites; Bloomberg freight costs assessments used

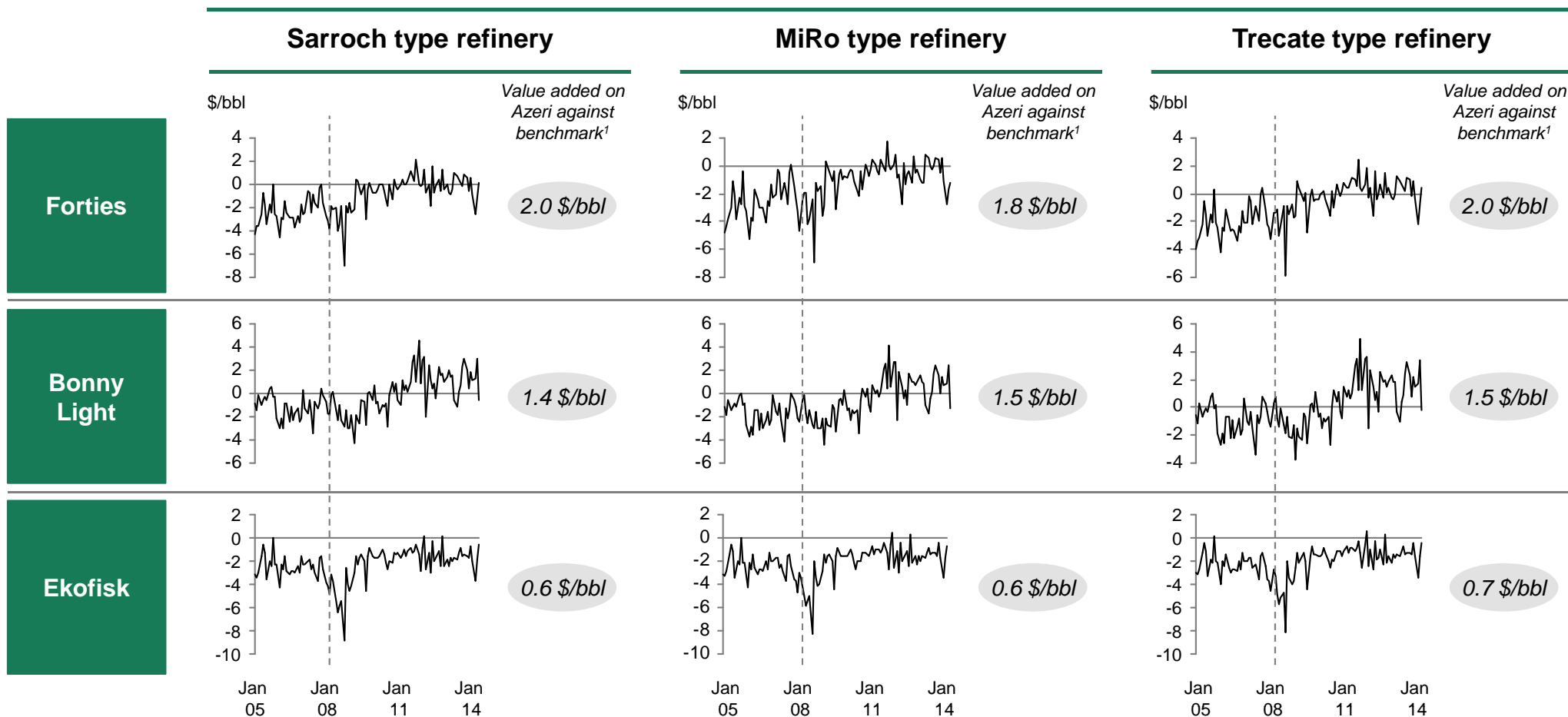
Source: BCG analysis

Marketing Azeri: SOCAR TRADING has improved the value of

1 Azeri Light Platts' quotation by \$1.7/bbl from 2008 to 2013

Selected crudes only

Increasing differentials between quoted prices and netback values vs. benchmark crudes
(eliminating impact of both crude quality differentials and contango/backwardation)



1. Average value added is calculated for time period 2008-2013 compared to reference years 2005-2007

Source: Assay data provided by SOCAR TRADING as well as Platts' market data, BCG netback calculation analysis leveraging refinery model to calculate the respective yields

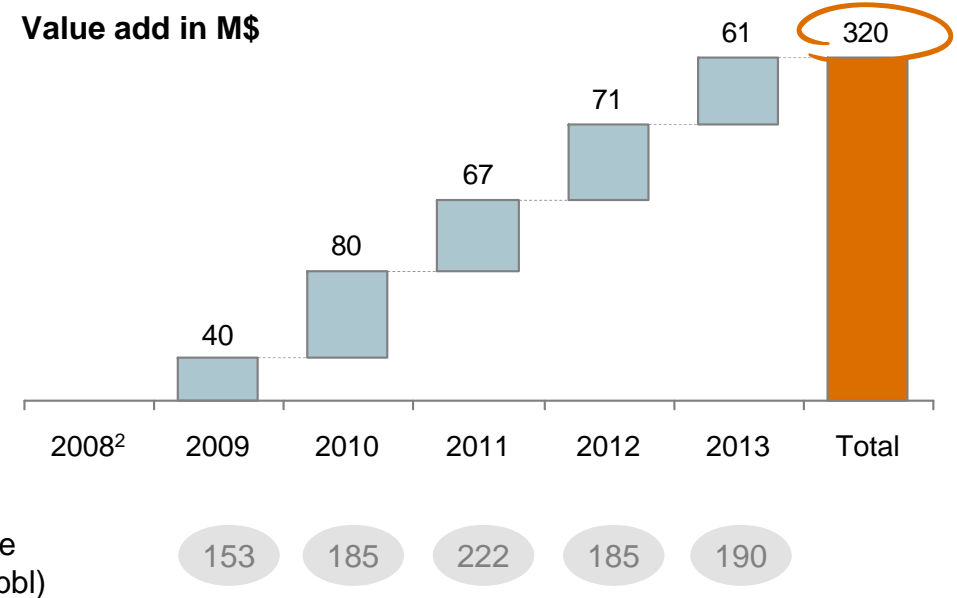
Premium: In addition SOCAR improved its marketing

② performance against Platts quotations

Description of activity

By negotiating directly with refineries, SOCAR TRADING is able to generate a high price for quotation for Azeri Light. This results in a premium above market price for Azeri

Realized additional premiums¹



1. Compared to tender approach employed until 2008 2. Transition year

NB: these differentials are abased on a representative samples of Cargoes for each year provided by SOCAR trading, BCG extrapolated the impacts of the evolution of differentials to all volume marketed by SOCAR

Source: Data provided by SOCAR, BCG analysis

Leverage logistics: Creates extra revenues adding Turkmen

4 crude volumes to BTC pipeline

Description

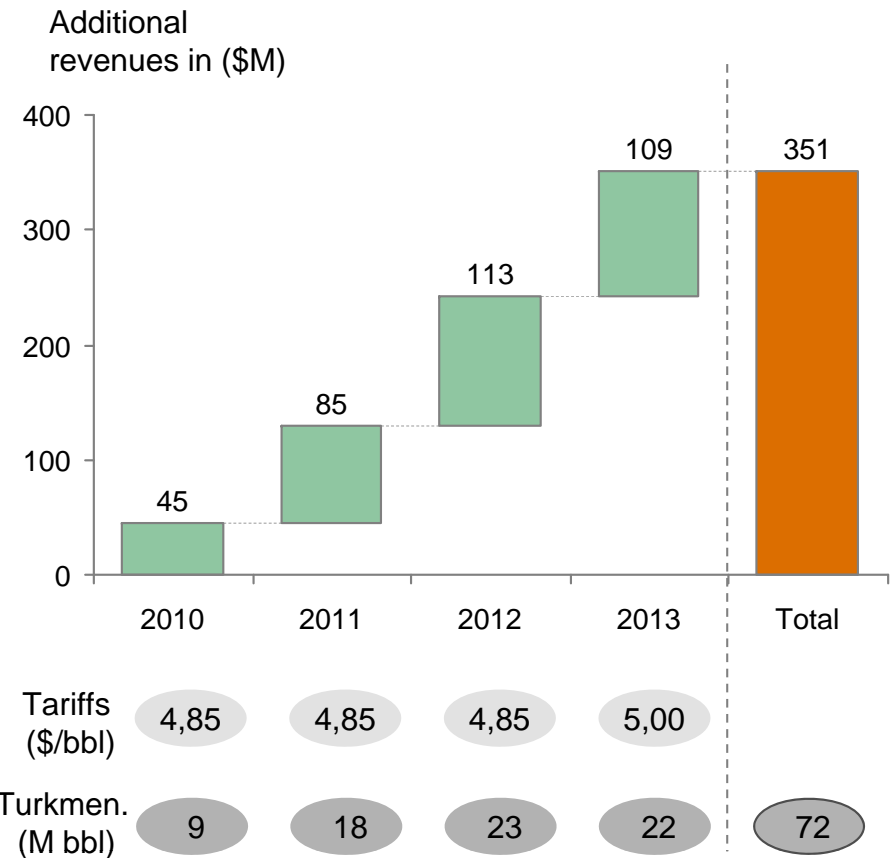
Since 2010, SOCAR TRADING has been buying extra crude volumes (~70M bbl) from Caspian countries (Turkmenistan, Russia, Kazakhstan)

Blended with Azeri, this crude flows through the BTC pipeline to Ceyhan and is sold as Azeri BTC

The Turkmen volumes increase the volume transported through the BTC pipeline

By receiving transport fees, extra revenues are generated for the state of Azerbaijan

Additional revenues



1. Azeri volumes going through BTC pipeline, belonging to SOCAR
Source: Data provided by SOCAR TRADING, BCG analysis

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***Trading strategy:* Active marketing and trading allows to realize additional margins and protect value of Azeri Light (I)**

Before starting its trading operations in 2008, SOCAR was mainly marketing its equity crude through tenders to merchant and refinery traders (like Vitol, Glencore, Arcadia, Trafigura, Total, BP, Litasco, OMV). The realized sales price was determined by the highest bid in each respective tender campaign

The winner of the respective tender either used the crude in their own refineries or sold it to 3rd party. When reselling the crude, they realized an additional margin on top of the paid tender price

As every refinery has a different configuration, each one uses a different mix of crudes to run optimally. The optimizers at the respective refineries can calculate the value (also referred to as netback value) of every crude offered to them

To optimally negotiate and price their crude, traders need to understand what type of crude slate is processed by each refinery, what alternative in crude supply do they have and what are the netback values for the alternative crudes of similar quality. Before 2008, SOCAR was lacking these capabilities

***Trading strategy:* Active marketing and trading allows to realize additional margins and protect value of Azeri Light (II)**

In case of temporary oversupply, a certain crude grade, not only the prices of "excess" cargos gets under price pressure but also the ones of similar crude qualities. I.e., as a producer and trader of crude, one is interested to keep the supply and demand of the respective grade qualities in balance

To maintain the right balance, traders need to constantly monitor the supply-demand balance of their grade qualities in their target market deciding whether to place the cargo in another region if the core market is saturated. To protect the value of Azeri Light, one would need to constantly monitor the amount of sweet crudes in the Mediterranean, and decide to target Mediterranean refineries or sell to Asia

By starting to trade, SOCAR was not only able to de-intermediate the merchant traders and get access to the trading margin beyond the tender price, but it also became a price maker of sweet crudes, ensuring a better market value for its Azeri Light, taking responsibility in matching supply and demand in the Mediterranean

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Marketing Azeri: What can the netback value analysis show us about the performance of SOCAR TRADING?

A crude has an intrinsic value based on its chemical property. The value fluctuates with the price of the produced refined products, and is different depending on the type of refinery configuration. The intrinsic value of a specific crude to a specific refinery configuration is called "netback value [NBV]".

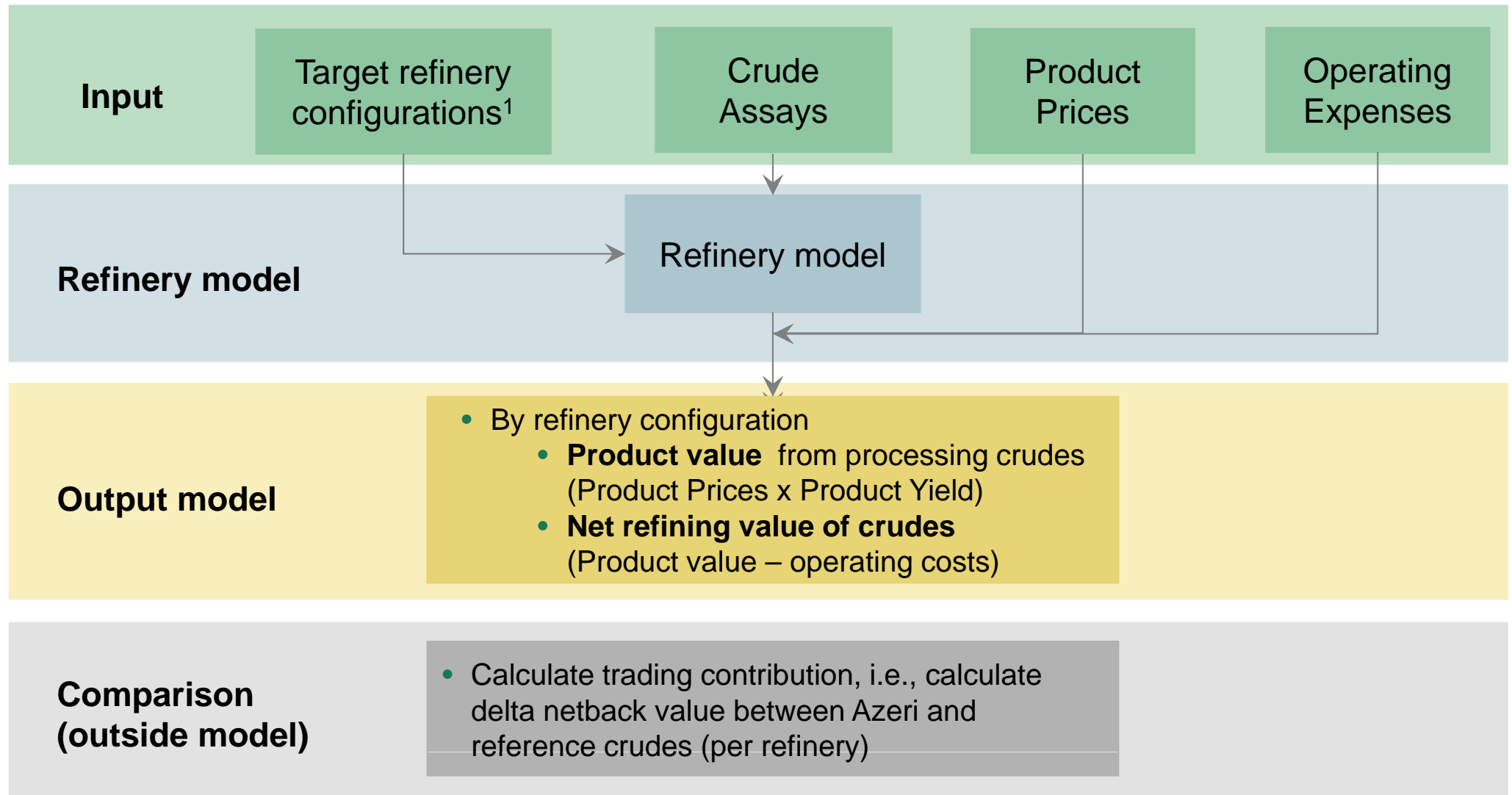
Refineries source their crude based on NBV calculation. The NBV varies over time according to the dynamics of the refinery sector. Under normal conditions, the quoted price (Platts) of crude should follow the development of the NBV. Extraordinary events (e.g., the Libyan crisis) can affect the quoted price independently of NBV development

By comparing the development of the quoted price to the development of the NBV, one can assess if some extra value has been created by trading activities. Comparing this value to the one of competing crude gives an estimate of the marketing performance of the crude producer.

What did we do?

- Identified the key types of refineries that SOCAR TRADING sales Azeri Light, namely Sarroch, MiRo, and Trecate. For each of the refineries the yields are calculated
- Based on the yields, the NBVs for a basket of crudes was calculated and compared for a reference period 2005-2007. I.e., we have used the spread between the 2005-2007 average, and the respective NBV as a sign of how much the direct marketing has influenced the Platts quotation

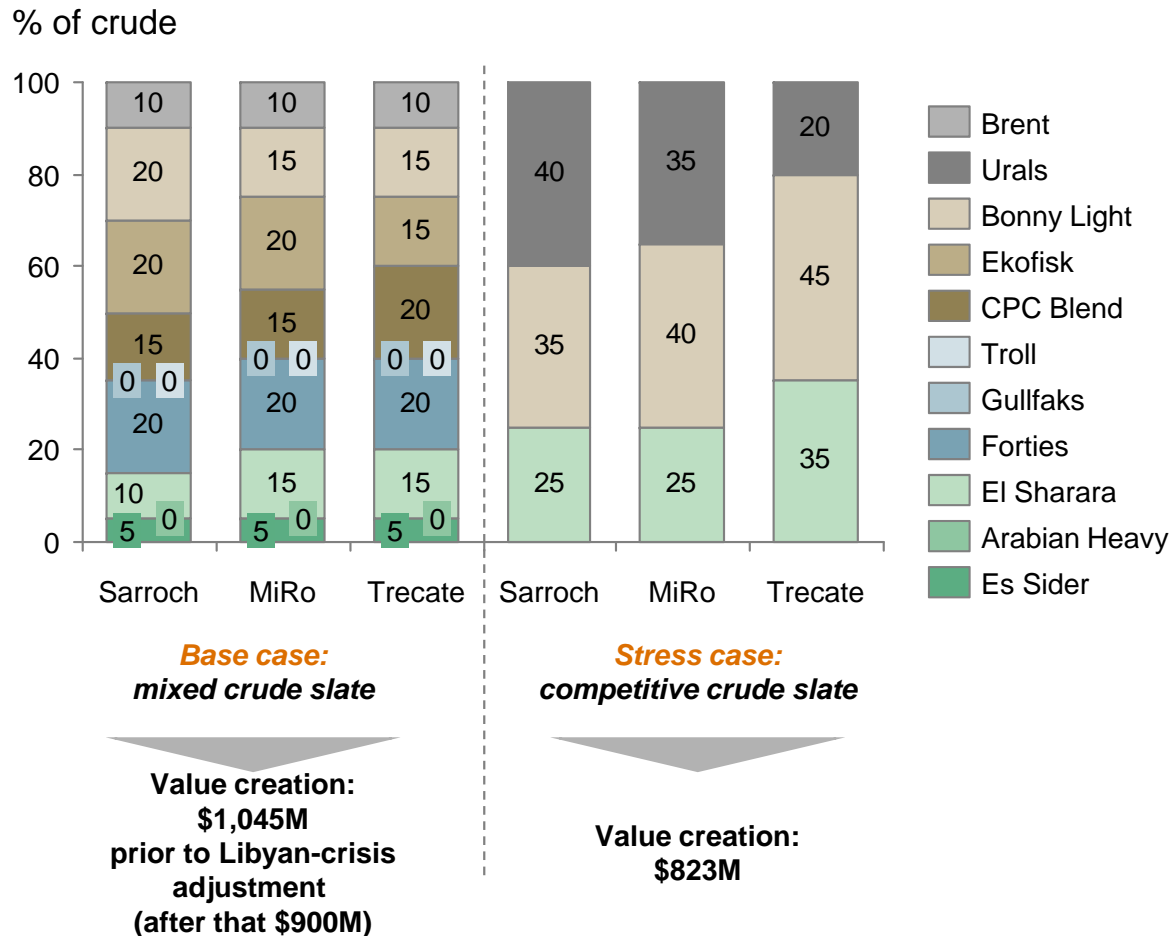
Marketing Azeri: Netback value were calculated using BCG's refinery model



1. Using theoretical process parameters
Source: BCG

Marketing Azeri: High added value proves robust compared

1 to different crude baskets



Added value estimated with both a base and a low case

Simulation with different crude slates to define realistic value-added range

Base case: mix of crudes of comparable and differing quality

- API: 32°- 45°
- Sulphur: 0.15%-1.80%

Low case: selective crude slate with most competitive crudes in the MED

- Urals
- Bonny Light
- El Sharara

Source: BCG analysis based on market and assay data provided by Socar Trading. Base case reference basket has been agreed with SOCAR TRADING. Methodology to calculate the value as described on previous page. Simulations were run for base and stress case crude basket separately

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Data and models: Commonly available market data and BCG proprietary models have been used in calculation

		Information/approach	Source
Crude price data		Time series (2005-14) of price assessments for (competing) crudes <ul style="list-style-type: none"> Azeri BTC, Azeri Light, Dated Brent, Urals, CPC Blend, Ekofisk, Bonny Light, Forties, Es Sider 	Platts (SOCAR TRADING)
		Time series (2005-14) of price assessments for other crudes <ul style="list-style-type: none"> Arabian Heavy, El Sharara, Gullfaks 	Bloomberg
Product market data		Time series of mean price assessment for key products ('05-'14) <ul style="list-style-type: none"> Prem10, Jet Gasoil 0.1%, ULSD10, FO 1%, FO 3.5%, Naphtha 	Platts (SOCAR TRADING)
		Complementary if missing in Platts assessments <ul style="list-style-type: none"> Time series ('05-'14) for key products from Bloomberg Calculated product prices based on BCG Pricing Model and other sources 	Bloomberg BP BCG
SOCAR TRADING volumes		Market equity crude volumes (Azeri Light, BTC) per deal, including <ul style="list-style-type: none"> Year Counterparts Load and discharge location 	SOCAR TRADING
Premiums		Realized price premiums on Azeri (Light, BTC) deals 2008-14	SOCAR TRADING
Modeling	Refinery model	Calculation of NBV (2005-14) based on proprietary BCG refinery model	BCG
		Crude assays for the modeling of product yields <ul style="list-style-type: none"> Azeri crude assays of different qualities (2007, 2008, 2013) Assays of competing crudes from company websites 	SOCAR TRADING, Statoil, BP, Totsa
	Modeling specifics	Contango/backwardation consideration for crudes outside of MED (e.g. Bonny Light, Forties, Brent, Ekofisk), using first-line, second-line and third-line contracts	ICE
		Varying quality of Azeri (before and after Turkmen) based on provided assays	SOCAR TRADING
		Freight cost according to distance traveled for delivery of crude to refineries	Bloomberg

Example of modeling tool on following slide

NBV: Netback Value
Source: BCG

Modeling: Excel model put in place to handle all required calculations and to assess SOCAR TRADING performance

Netback value calculation with crude and refinery as variable parameters

Consideration of logistics cost and contango/backwardation per crude and refinery

Netback Value Calculation Output

Product Yields	Crude	Operating Costs
10%	15%	4%
10%	20%	4%
10%	25%	4%
10%	30%	4%
10%	35%	4%
10%	40%	4%
10%	45%	4%
10%	50%	4%
10%	55%	4%
10%	60%	4%
10%	65%	4%
10%	70%	4%
10%	75%	4%
10%	80%	4%
10%	85%	4%
10%	90%	4%
10%	95%	4%
10%	100%	4%

Effects Calculation (Contango/Backwardation, Logistics)

Parameters: WDR/CR/Ref & Azon Crude	None	15% <th>20% <th>25% <th>30% <th>35% <th>40% <th>45% <th>50% <th>55% <th>60% <th>65% <th>70% <th>75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th></th></th></th></th></th></th></th></th></th></th></th></th>	20% <th>25% <th>30% <th>35% <th>40% <th>45% <th>50% <th>55% <th>60% <th>65% <th>70% <th>75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th></th></th></th></th></th></th></th></th></th></th></th>	25% <th>30% <th>35% <th>40% <th>45% <th>50% <th>55% <th>60% <th>65% <th>70% <th>75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th></th></th></th></th></th></th></th></th></th></th>	30% <th>35% <th>40% <th>45% <th>50% <th>55% <th>60% <th>65% <th>70% <th>75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th></th></th></th></th></th></th></th></th></th>	35% <th>40% <th>45% <th>50% <th>55% <th>60% <th>65% <th>70% <th>75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th></th></th></th></th></th></th></th></th>	40% <th>45% <th>50% <th>55% <th>60% <th>65% <th>70% <th>75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th></th></th></th></th></th></th></th>	45% <th>50% <th>55% <th>60% <th>65% <th>70% <th>75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th></th></th></th></th></th></th>	50% <th>55% <th>60% <th>65% <th>70% <th>75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th></th></th></th></th></th>	55% <th>60% <th>65% <th>70% <th>75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th></th></th></th></th>	60% <th>65% <th>70% <th>75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th></th></th></th>	65% <th>70% <th>75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th></th></th>	70% <th>75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th></th>	75% <th>80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th></th>	80% <th>85% <th>90% <th>95% <th>100%</th> </th></th></th>	85% <th>90% <th>95% <th>100%</th> </th></th>	90% <th>95% <th>100%</th> </th>	95% <th>100%</th>	100%
1. Location costs	42.33	42.33	42.33	42.33	42.33	42.33	42.33	42.33	42.33	42.33	42.33	42.33	42.33	42.33	42.33	42.33	42.33	42.33	42.33
2. Contango/Backwardation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3. Logistics	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Feeds from several input sheets, e.g.

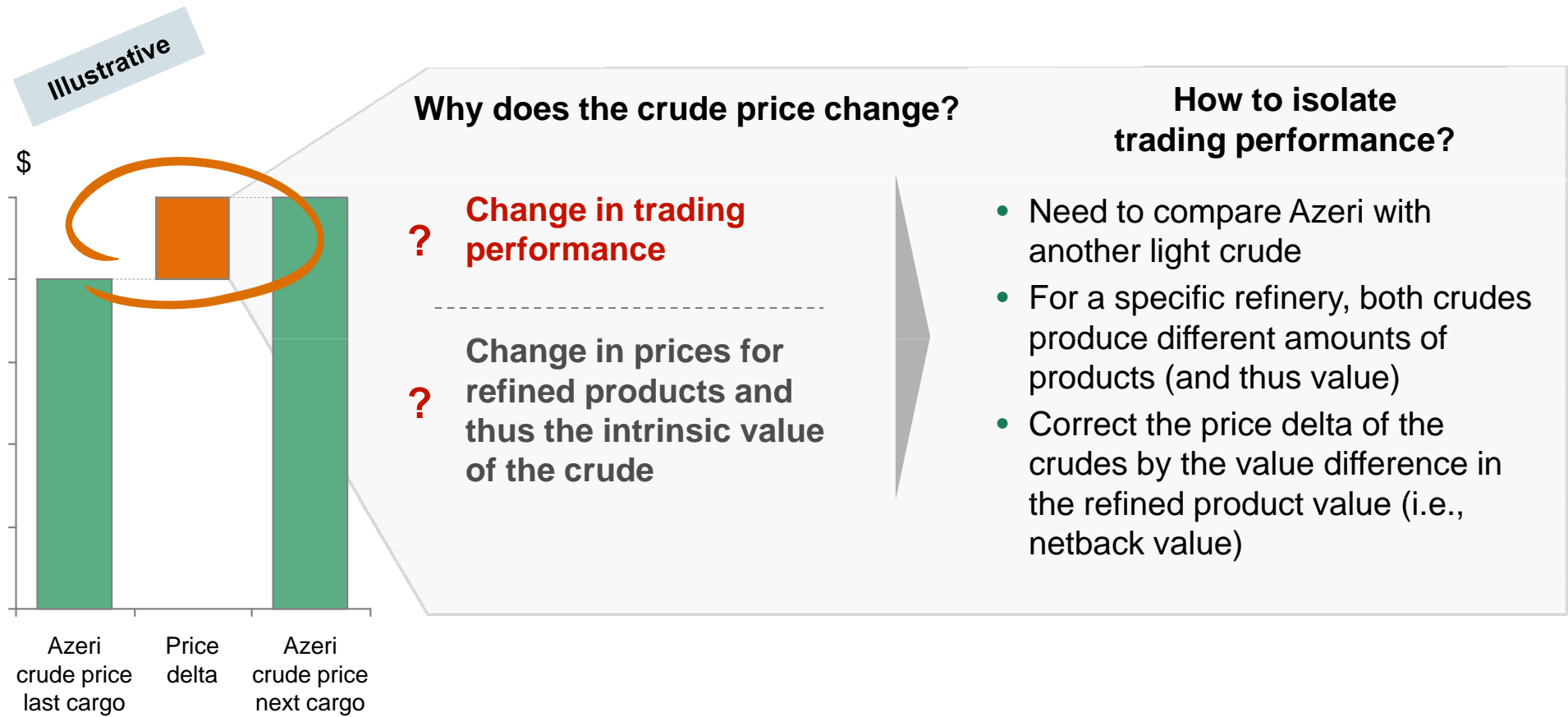
- Product prices
- Refinery parameters

Calculates netback values according to the configuration of the refinery

Logistics cost implemented on a per-route basis between crude origin and refinery

Contango/backwardation based on estimated journey between crude origin and refinery

Trading margin: Trading performance needs to be separated from effects influencing the crude price

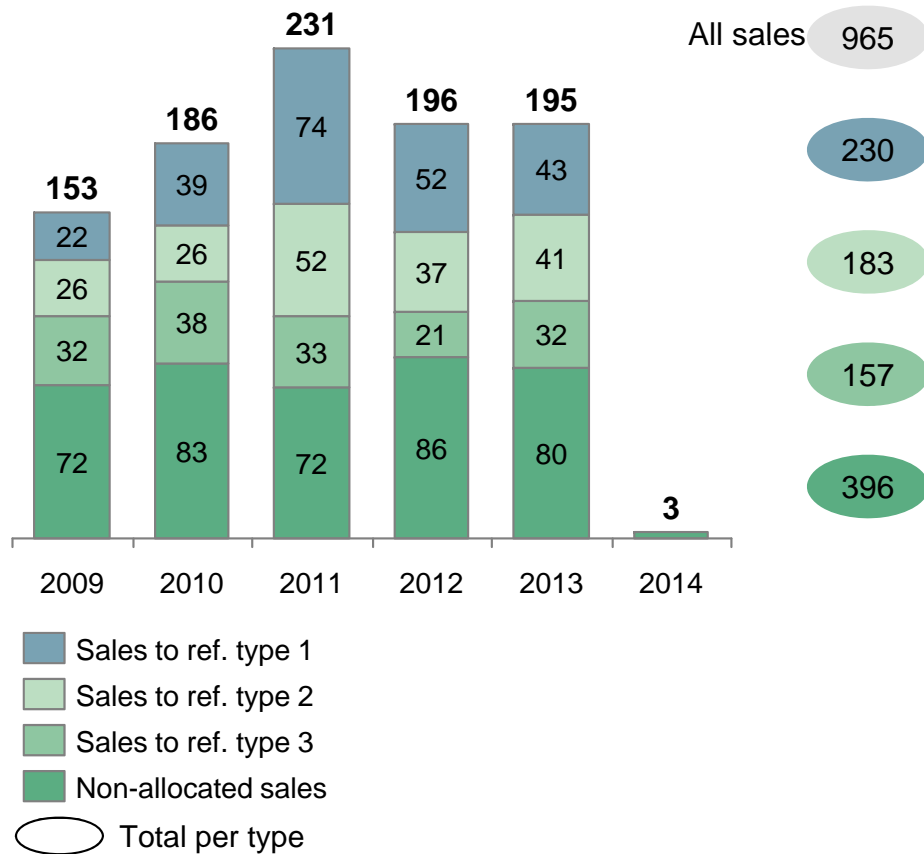


BCG approach: Trading performance was calculated by comparing Azeri Light with a basket of crude for different refineries

Netback value calculation: The reference refineries have been selected by detailed allocation of SOCAR TRADING volumes

Overview of volumes per type of refinery

SOCAR sales allocated per refinery type (M bbl)



List of refineries and types based on marginal configuration¹

Type 1: HCK	Type 2: VB/FCC	Type 3: FCC
Sarroch	Karlsruhe	Antwerp
Gonfreville l'Orcher	Cadiz	Huelva
Milazzo, Messina	Aliaga-Izmir	S. Martino Di Trecate
Melilli, Sicily (south)	Donges	Augusta, Siracusa
Tarragona	Sines	Aspropyrgos
Priolo, Sicily (north)	Haifa	Fos sur Mer
Alexandria	Schwechat	Castellon de la Plana
	Falconara	Rijeka
		Ashdod
		Sisak
		Busalla
		Bizerte

1. Classified in decreasing order of crude capacity

Note: HCK: hydrocracker, VB: visbreaker, FCC: fluid catalytic cracking

Source: Volume and counterparty allocation based on data provided by SOCAR TRADING. BCG proprietary data, BCG analysis

Managing supply and demand: Details on approach, assumptions, and NBV differentials

Approach and assumptions

Approach: We compare the netback value of Azeri to most likely competitors Bonny Light and CPC in order to estimate the premium obtained by SOCAR through managing supply and demand

Qualitative assumption: SOCAR would have to lower its price in order to sell in the MED the volumes currently sold to non-MED. This would negatively affect the price of a part of the other volumes

Quantitative assumption I: SOCAR would need to lower its price by the amount of the NBV differential to competing crudes Bonny and CPC.

Quantitative assumption II: The price of 20-30% of Socar volume is likely to be affected by the price drop, the rest being sold term or otherwise negotiated conditions

Remark: This value add is already part of the total value add calculated through the NBV differential analysis, as it is reflected in the quoted prices obtained by Azeri against its NBV benchmarked to other crudes

2014 is not included in the analysis due to reduced size

Overview on netback value differentials: Azeri vs Bonny light and Azeri vs CPC

	Ref type 1: SarrocH HcK		Ref type 2: MiRo VB/FCC		Ref type 3: Trecate FCC/Ref		Average
	Bonny Light	CPC	Bonny Light	CPC	Bonny Light	CPC	
2009	-1.8	0.3	-1.3	0.3	-2.0	-0.2	-0.8
2010	-1.8	0.1	-1.3	0.1	-2.0	-0.4	-0.9
2011	-1.9	1.0	-1.4	0.7	-2.3	0.0	-0.7
2012	-1.5	0.9	-1.0	1.0	-1.8	0.2	-0.4
2013	-1.7	0.9	-1.3	0.6	-2.0	0.0	-0.6
2014	-1.9	0.9	-1.3	0.7	-2.2	-0.1	-0.7
Average	-1.8	0.7	-1.3	0.6	-2.1	-0.1	-0.7

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