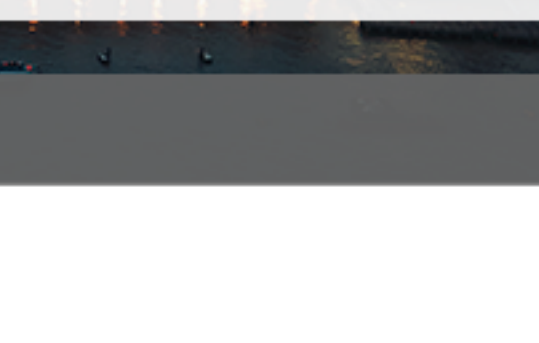
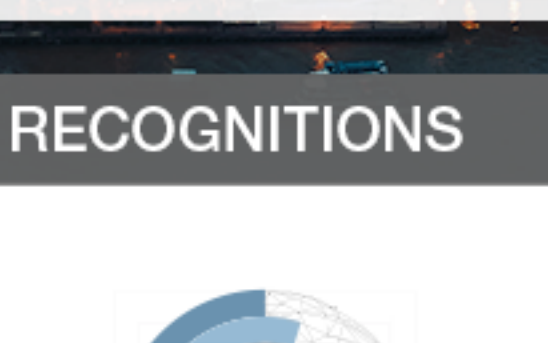


INTERNATIONAL CERTIFIED VALUATION SPECIALISTS

MEMBERSHIPS AND INTERNATIONAL CERTIFICATIONS



AWARDS & RECOGNITIONS



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1. Crude Oil Volatility and their Impact on Company's Forecasts

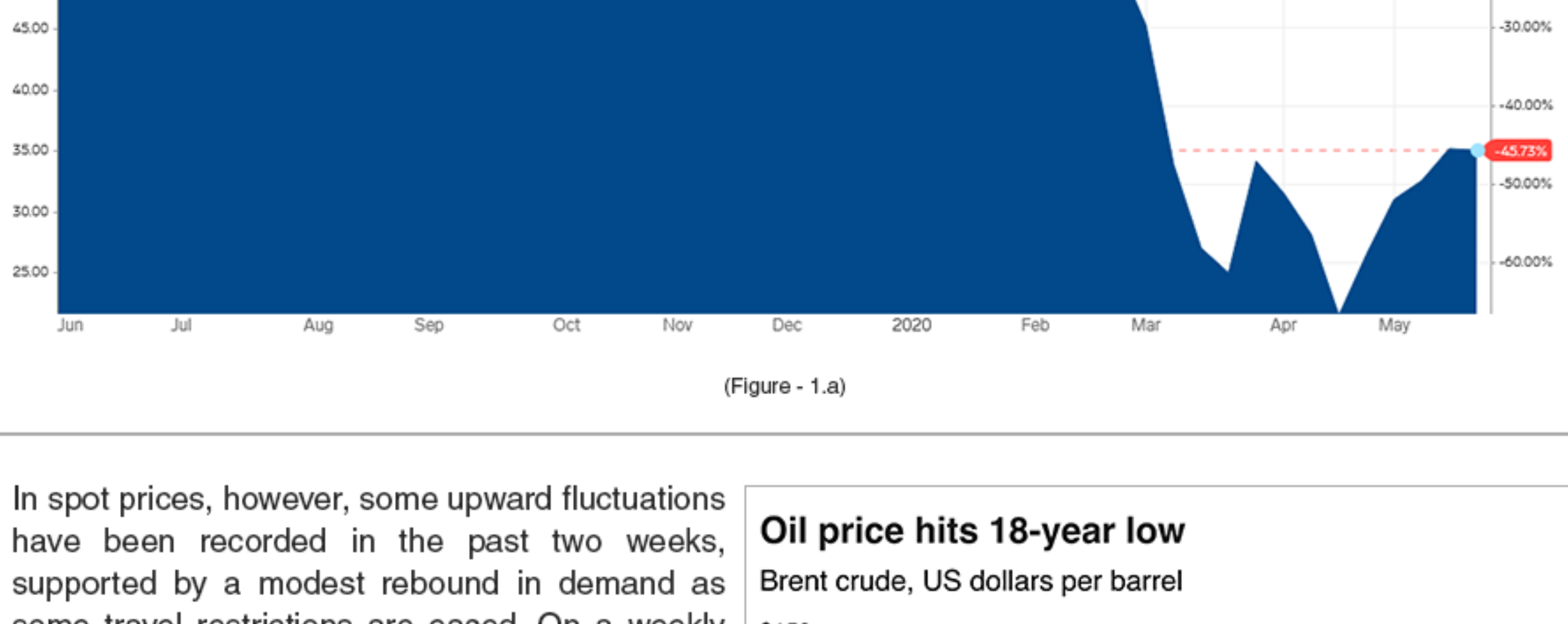
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1.1 Crude Oil Volatility and their Impact on Company's Forecasts

Brent crude oil spot prices averaged \$18 per barrel (b) in April, down \$13/b from March as global oil demand continued to fall and global oil inventories rose strongly. In particular, crude oil prices fell as concerns regarding the capacity of global oil storage to handle expected inventory builds increased.

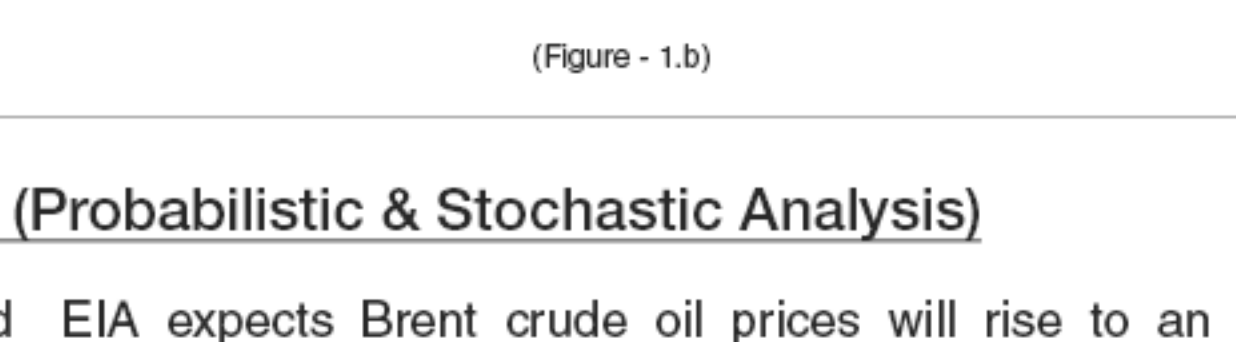
A "wild rollercoaster" is perhaps the best way to describe the latest fluctuations in oil prices. Happening against the background of the coronavirus outbreak, a drop in commodity's demand was worsened by a supply glut. In attempts to save the market, OPEC and its members have been abiding by an agreement to cut production.



(Figure - 1.a)

In spot prices, however, some upward fluctuations have been recorded in the past two weeks, supported by a modest rebound in demand as some travel restrictions are eased. On a weekly basis, Brent crude gained 8.1% on optimism about a potential COVID-19 vaccine, the easing of coronavirus-related restrictions, falls in US crude inventories and data showing the US rig count dropped to a record low for a third straight week.

However, investors are still concerned about an economic recovery and fuel demand after China refrained from setting a 2020 GDP growth target for the first time. In addition, investors are worried that tensions between Beijing and Washington could escalate further after the former announced it would impose a new national security legislation on Hong Kong following last year's pro-democracy unrest.

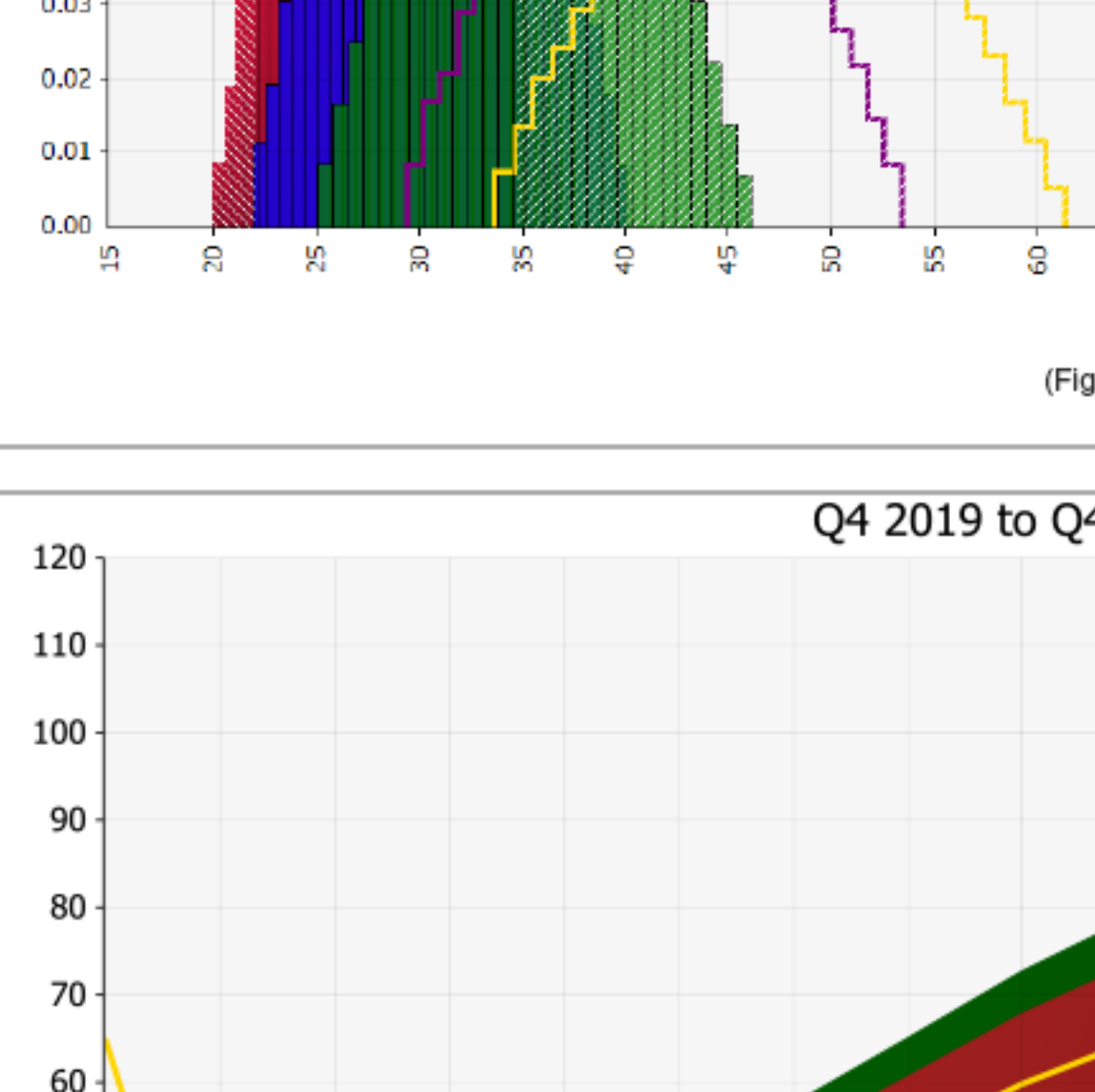


(Figure - 1.b)

1.2 Crude Oil Price Expectations (Probabilistic & Stochastic Analysis)

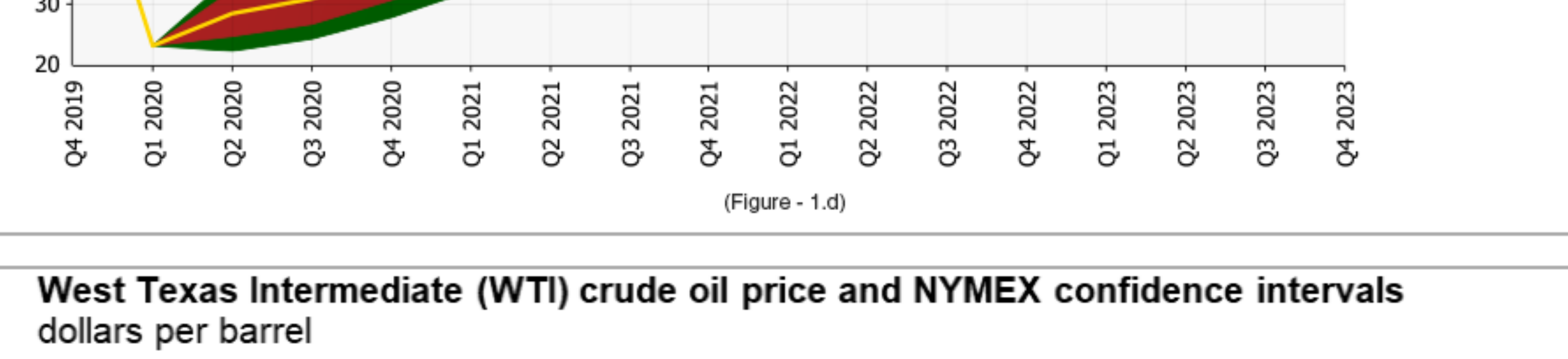
EIA expects that the rate of inventory builds peaked in April and May, and as oil demand begins to return and oil supply decreases, upward price pressures will begin to emerge. With global oil demand expected to exceed supply beginning in the 2nd half of 2020, prices could rise steadily beginning in the second half of this year. Although EIA forecasts significant inventory draws beginning in July, high existing inventory levels, high OPEC spare production capacity, and uncertainty about the trajectory of oil demand will likely limit, but not completely contain, upward crude oil price movements.

EIA expects Brent crude oil prices will rise to an average of \$32/b during the second half of 2020 and \$48/b on average in 2021, reaching \$54/b by the end of the year. However, this price path reflects an expected of global oil consumption to 97.4M b/d during the second half of 2020, along with relatively high compliance to announced OPEC+ production cuts, both of which are uncertain. Also, the degree to which the U.S. shale industry responds to the current low prices will affect the oil price path in the coming quarters.

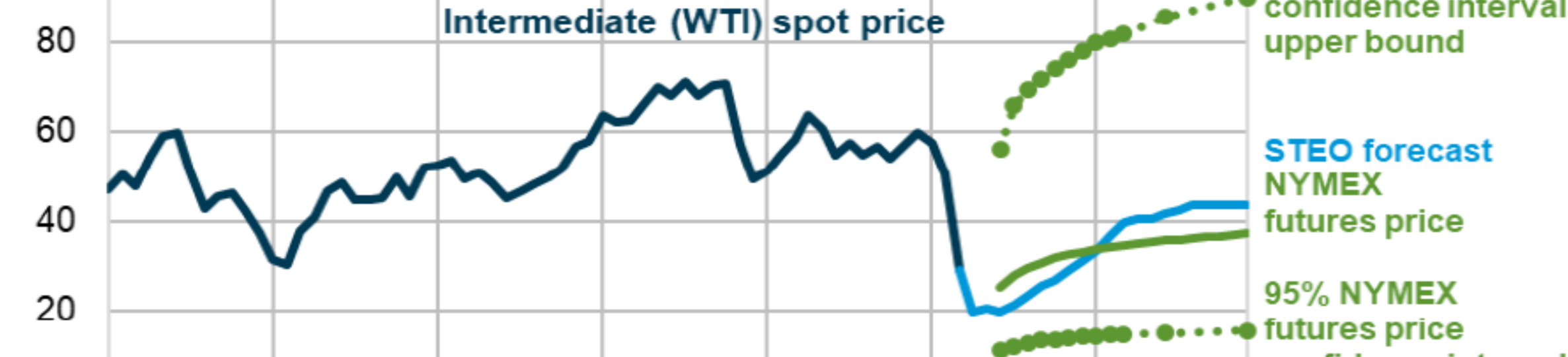


	Crude Price Stochastic / Q2 2020	Crude Price Stochastic / Q3 2020	Crude Price Stochastic / Q4 2020	Crude Price Stochastic / Q1 2021	Crude Price Stochastic / Q2 2021
Call	20.012	21.927	25.129	29.378	33.599
Minimum	36.857	40.022	46.097	53.303	61.337
Maximum	28.420	30.900	35.530	41.340	47.300
Mean	± 0.199	± 0.216	± 0.249	± 0.289	± 0.331
Mode	27.449	30.590	35.601	41.260	48.343
Median	28.413	30.890	35.520	41.324	47.287
Std Dev	3.816	4.148	4.770	5.549	6.350
Skewness	0.0001	0.0002	0.0004	0.0005	0.0007
Kurtosis	2.1461	2.1447	2.1458	2.1445	2.1446
Value	1000	1000	1000	1000	1000
Errors	0	0	0	0	0
Filtered	0	0	0	0	0
Left X	22.18	22.18	22.18	22.18	22.18
Left P	5.0%	0.3%	0.0%	0.0%	0.0%
Right X	34.64	34.64	34.64	34.64	34.64
Right P	95.0%	78.6%	43.7%	13.4%	0.9%
Diff X	12.451	12.451	12.451	12.451	12.451

(Figure - 1.c)



(Figure - 1.d)



(Figure - 1.e)

1.3 How to Calculate the Impact of Oil Volatility on Your Business

Many businesses are directly or indirectly correlated with crude oil price variations, which affect their raw material costs, finished product prices, margins, services, business cycles, so on and so forth. A market driven and stochastic forecast is necessary to anticipate shortfalls and mitigate risk. We summarise a list of steps you should consider to include market volatilities that might affect your forecasts:

There are simple tools that can be used to generate a dynamic forecast which includes all oil price probabilistic scenarios and their impact on your specific business. The benefits are huge for decision making in risk mitigation.

1. Calculate the correlation between the price of your raw material mix and that of the crude oil. Analyse how the trend has changed over the last 10 years.
2. In some cases, crude price variations do not affect other businesses immediately but only after some time. There is a lag to be considered.
3. Assess how the increase/decrease in raw material price affects the prices of your products and their respective gross margins.
4. Consider that in some cases, raw material price increases can only be passed on with a time lag.

Call us now for more information and we will work on your particular case.

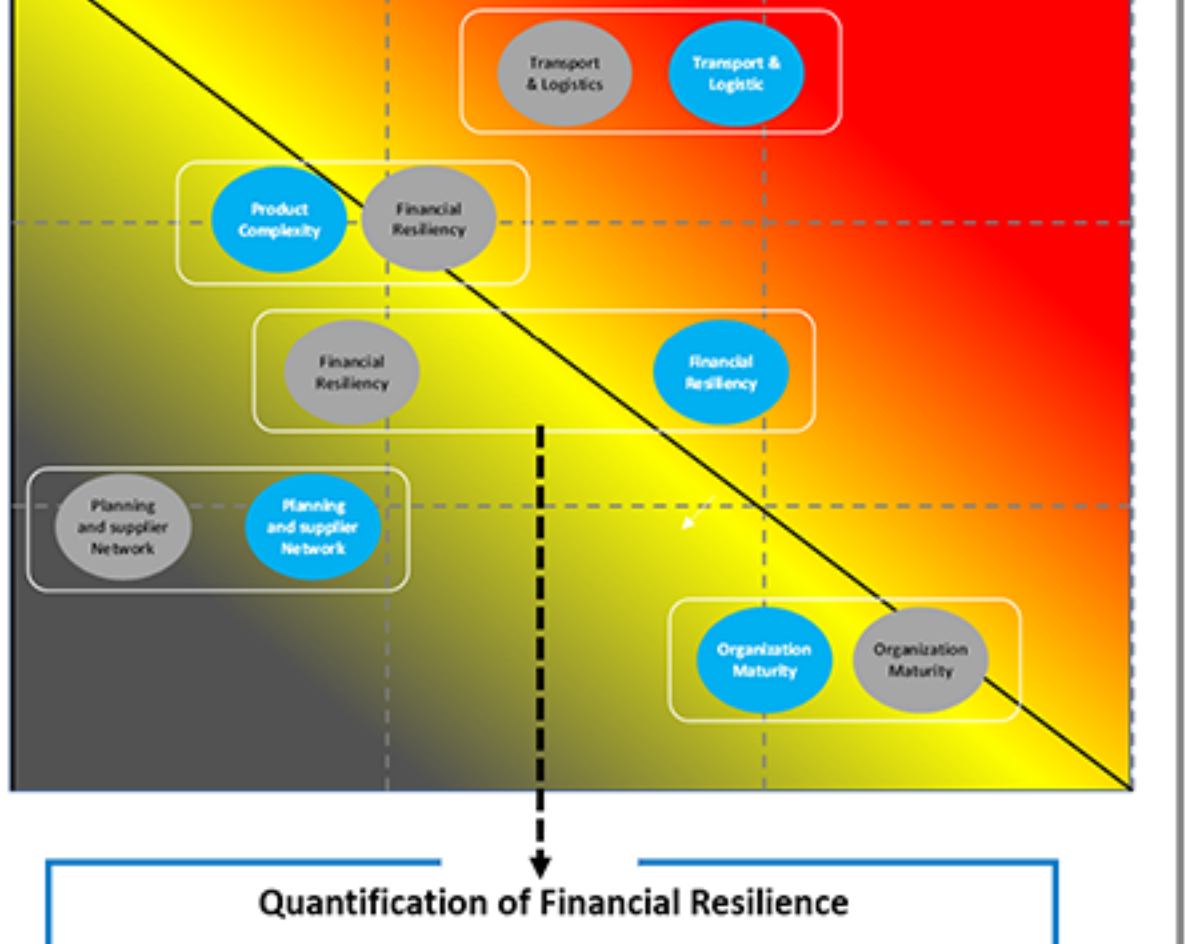
Once you have assessed all these drivers, you can start reviewing your company's forecast. The best way to do this is by using advanced probabilistic (stochastic) analysis where all the possible outputs are displayed with their respective probabilities.

(1) Stochastic or random process is a probability model used to describe business phenomena that evolve over time. More specifically, in probability theory, a stochastic process is a time sequence representing the evolution of business variables / drivers whose change is subject to a random variation (Models containing a random element, hence unpredictable and without a stable pattern or order). Most businesses and open economies are stochastic systems because their internal environments are affected by random events in the external environment. Such situations need to be measured using probabilities, volatilities and standard deviations according to the profile of each variable under assessment. On the contrary, traditional valuations are static (or non-stochastic) and therefore they are far from reflecting reality and not able to show you the flow of your business.

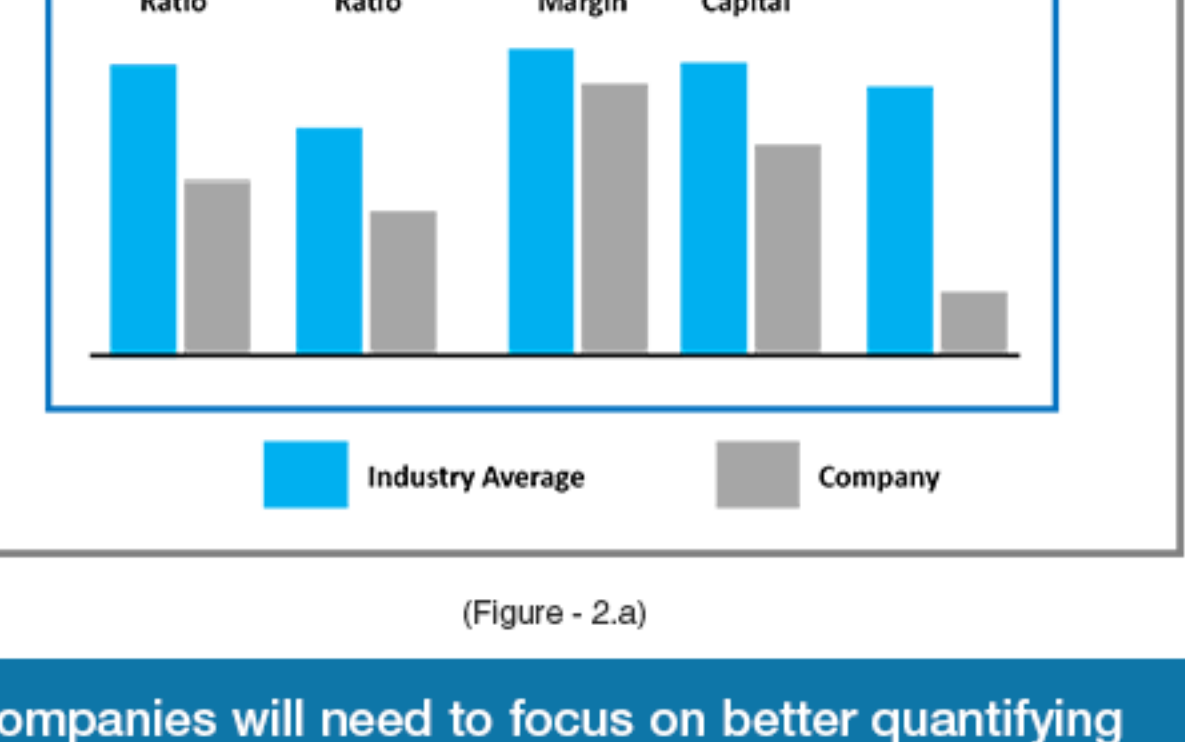
2. Assess Operational and Supply Chain Resilience to Mitigate Risk

2.1 Rethinking Operational Risk & Supply Chain (Lessons from COVID-19)

The COVID-19 outbreak is revealing vulnerabilities that many companies didn't realize they had. Organizations need a new approach to manage risk and build resiliency, in particular the operational risk to supply chain.



A comprehensive understanding of supply-chain risk considering two distinct elements: first, the underlying vulnerabilities in the supply chain that make it fragile, and second, the level of exposure or susceptibility to unforeseen events (or shocks) that exploit these vulnerabilities.



(Figure - 2.a)

- **Supply-chain vulnerabilities:** They include realities of inherent to an industry, such as high levels of cyclicity or long lead times, as well as active decisions, such as the level of inventory to maintain, or the approach to product development. Designs relying on single-source components are an obvious chokepoint.
- **Exposure:** Refers to unforeseen events that exploit a vulnerability and disrupt a supply chain. There are four main sources of exposure: force-majeure shocks (natural disasters), macropolitical (economic shocks), malicious actors (cyberattacks); and counterparties (fragile suppliers).

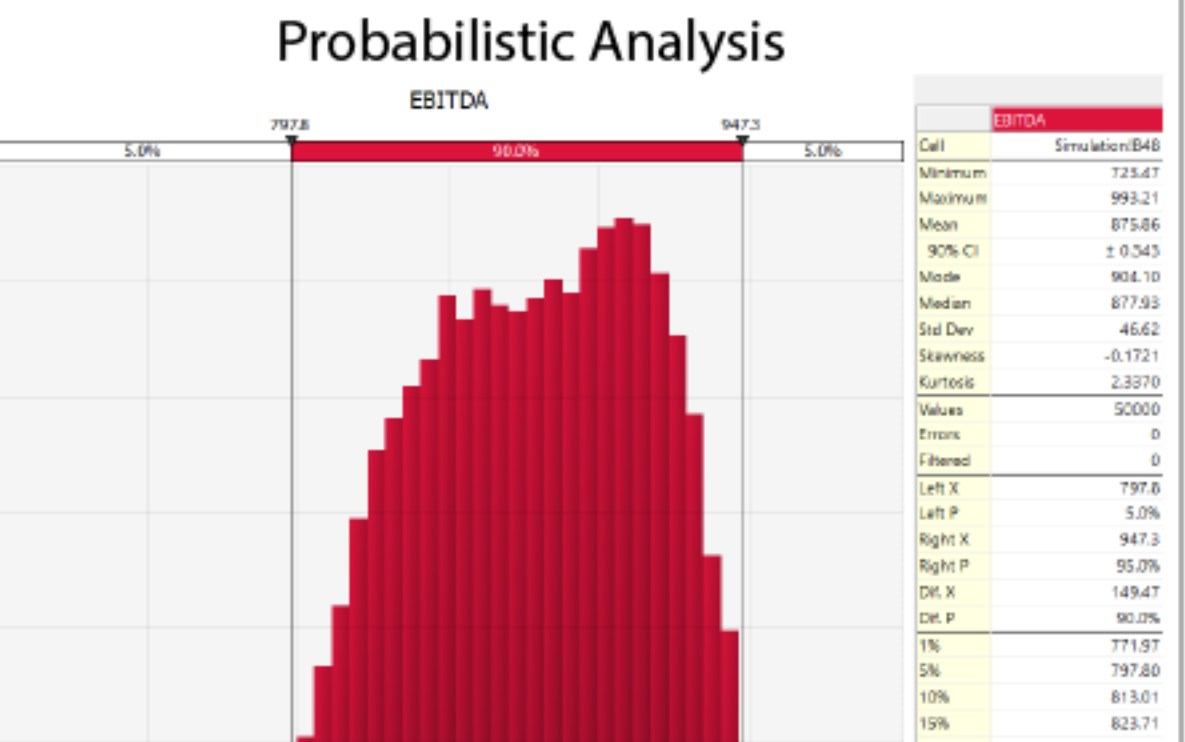
Companies will need to focus on better quantifying risks, with a mindset similar to buying insurance. Advanced businesses are modelling the size and impact of various shock scenarios to determine the actions they should take to rebuild their supply chains and mitigate future risks.

Creating a comprehensive view of the supply chain through detailed subtler mapping is a critical step to identifying hidden relationships and nodes of interconnectivity that invite vulnerability.

Risk is quantified by using probabilistic approaches, such as Monte Carlo simulation, and by redesigning business cases to include potential losses from a lack of resiliency measures.

2.2 How to Assess Operational Risk Using Advanced Analytics

For example, we assess the impact on a Firm's EBITDA from a supply shock that disrupts operations for 30 days (Figure 2.a). Building a series of scenarios and assessing the relative probability of each is critical for bounding the uncertainty to estimate the range of potential costs from unmitigated risks.



(Figure - 2.b)

Figure 2.b is a probabilistic distribution of the EBITDA, given different scenarios for distribution, raw material delivery, and shutdown. EBITDA is then affected according to several inputs:

Typically, companies struggle to quantify risks, and fall back on methodologies that generate a deterministic inputs with a range of outcomes. This approach is very limited in terms of information and often results in systematic over-optimism.

- Exposure to transportation, product complexity, supply network, financial resilience, and maturity.
- Distribution, Raw Materials Delivery, and Shutdown impact due to the exposure measured for each of the previous vulnerabilities.
- Vulnerabilities for stopping Distribution, Raw Material Delivery, and Shutdown (scenarios go from 0 to 30 days)

Figure 2.b also shows a tornado graph which from a sensitivity analysis display a ranking of the input variables that impact an output (the EBITDA in this sample). Inputs with the largest impact on the distribution of the output have the longest (and topmost) bars in the graph (Change in Output Mean).

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