

Vista Multiestrategia Fund and Vista Hedge Fund registered returns of 16.58% and 5.61% respectively in September and 39.23% and 13.15% respectively in 2021.

The result for the month was mostly explained by positions in commodities, long strategies in oil and uranium and in short positions in iron ore and copper. Hedging positions in dollars against emerging-market currencies and short positions on the US stock market had also contributed positively.

On the international scenario, many doubts appeared throughout this month. We will avoid going deeper due to the still relevant uncertainties and the focus of this letter on the oil investment thesis, a position that has been with us for over 3 years. Anyway, we briefly share some of our queries.

First, we intensely discuss the latest economic developments in China. The strong slowdown in the real estate sector induced by restrictive policies, a theme discussed in our previous letters, seems to be increasingly consolidated, but the repercussions of the new scenario are still open. There are also adjustments in the technology and education sectors and a growing distributional bias.

More relevant than the causes of the changes or the possible secondary consequences is the reason for the self-imposed adjustment.

Is this deviation a result of a model depletion and, thus, we are reaching a process that Japan has been

through a few decades ago, combining demographic decline and the bursting of the real estate bubble? Or, alternatively, will we have a new model of sustainable growth in China, without the excesses associated with the debt cycle of recent years? Has the strong growth in exports, as a result of the global boom in demand for goods since the emergence of Covid, which has even contributed to accentuating the ongoing energy rationing, made it possible for a centrally planned government to choose the sectors it intends to slow down and balance? Furthermore, is the focus on Common Prosperity a sign of a much deeper transformation in the Chinese economic and political model? Will the color of the cat matter now?

The American economy does not escape uncertainty. Over the past few years, we have repeatedly discussed the Fed's new monetary policy framework. The flexible average inflation targeting regime and the strong emphasis on creating "maximum employment" conditions would allow the FED to have a much more accommodating monetary stance for the same cyclical condition than in other periods of the modern central banks era. The ultimate goal of monetary policy would be to overheat the labor market and, anchored by decades of low inflation, smoothly navigate inflation above 2%.

Over the past few months, the persistence of inflationary pressures, aggravated by continuous maladjustments in relevant production chains, has weakened the narrative of the transitory nature of

inflation, fueled by the Fed. With the spread of supply restrictions also across the energy market and the excess of household savings, the inflationary limits of the new regime can be tested well before full employment.

Has the combination of aggressive cash transfer policies and supply restrictions been too much? Will the implicit or explicit choice to raise energy prices with less investment make the global economy less productive, despite ongoing technological advances? Are we heading towards a dangerous balance or will inflation cool down with the eventual normalization of production chains? With so many supply shocks at the same time, wouldn't we actually be facing a big demand shock?

With more questions than answers, the scenario of transitory inflation and persistently low interest rates, which are also important pieces of our long-term scenario, is in question.

An important part of this future equation lies in the energy price. Recent price hikes reinforce the transient nature of inflation issue. In this letter, we will delve into the matter, with special emphasis on oil, the fund's main position.

Without any ambition to forecast oil prices, we highlight some micro and macroeconomic fundamentals that, in our assessment, point to an asymmetry. As we will show below, the oil market seems tight enough to avoid a significant correction

from current levels and there are several open factors on the demand and supply side that, if materialized, would individually be enough to keep the price on an upward trajectory.

At the end of the day, oil makes up a historically important trait for relevant positions within the fund. Several factors that individually do not prove to be strong enough but together bring a relevant expected value. At the same time, this dispersion of vectors helps in the constant concern with hedging by diluting the thesis between risk factors.

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American Shale Oil

For over a hundred years, geological science understood that the layer of rocks of shale oil was only the place where the hydrocarbons originated, without the oil and gas present there being subject to exploitation before leaking into the reservoirs.

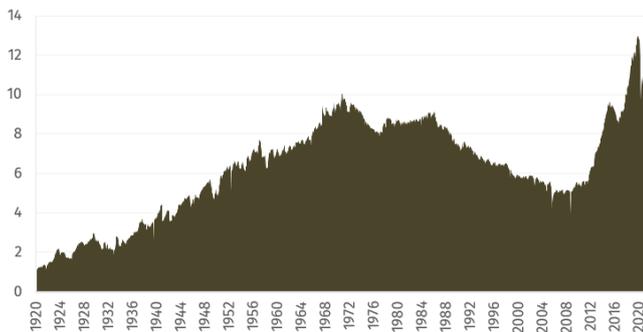
On the beginning of the 21st century, technological evolutions in hydraulic punching and horizontal punching had allowed the first steps. It became possible to fracture the source rock at a depth of more than three thousand meters – fracking – and laterally expand the area of contact with the fossil fuel. Exploiting the abundant volume of gas in pre-reservoir formations had become a reality.

From then on, it took another ten years of research before someone was able to extract not only gas but

also oil from these rocks. In 2009, EOG Resources, lead by Mark Papa, initiated the first production of shale oil of the world, in the basin of Bakken, North Dakota. It was not yet known how transformational this movement would be for the US and global energy policy.

The year 2020 marked ten years of the US shale oil boom, during which American capitalism did its job. The colossal volume of investments not only stopped more than thirty years of decay, but it doubled the American production, surpassing the record level of the 70s. The feat is impressive: between 2011 and 2020, shale oil accounted for nearly 60 percent of all global production addition, elevating the United States to the position of the largest global producer.

US oil production
in Mb/d



This American revolution impacted the energy market in its economic and political spheres. In 2014, OPEC tested the emerging industry's breath with an increase in supply that made the price of a barrel

migrate from 100 dollars to 50 dollars. The shock was felt and negatively impacted production and the drilling of new wells by American producers. However, the effects quickly dissipated. At the time, the combination of a low cost of capital, tolerance for leverage and the companies' ability to grow production kept the investment flow high and expanding.

Five years and many billions of dollars later, the American shale industry had positioned itself as the global marginal producer.

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At Vista Capital's five-year event, at the end of 2019, the investment thesis was a satellite position in the funds. On that occasion, we presented features that highlighted the complexity of American production and placed a spotlight on its economy.

On the operational side, the saturation of the most productive fields and the addition of new technologies that did not bring the same productivity gains as before would make it difficult to deliver the expected expansion. On the financial side, the price of a barrel necessary for an effective economic break-even was questioned¹.

¹Sustained commodity value that promotes positive NPV in the project, including costs of finding, developing and acquiring reserves (FD&A)

"Most people will ascribe the low U.S. (shale) growth to capital discipline. But I think the larger reason is what I've been talking about for several years: (1) the shift to Tier 2 and 3 drilling locations in all shale plays and (2) increasing parent-child issues in the Permian. I'll also note that this is likely not just a 2020 event."

- Mark G. Papa, ex-CEO da EOG Resources and Chairman da Schlumberger, 2019

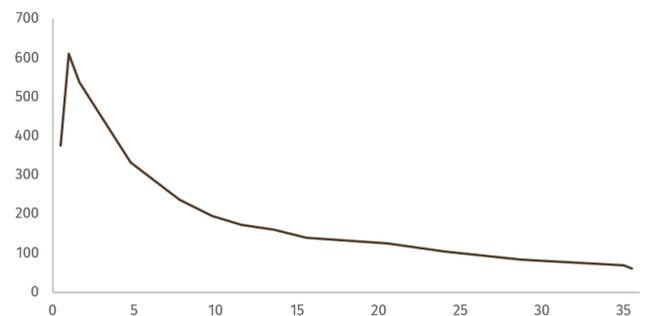
The answer is not the result of a simple subtraction equation, as the accounting expression of a company's financial-operational reality in some situations is blurred, making the work of analysts and investors more difficult. For this reason, it is common for companies from various sectors to publish their accounts or their assumptions for calculating the break-even and other managerial numbers.

In the case of shale companies, a dose of distrust about the numbers released by the companies supported the discussions.

Like any asset, all oil fields undergo a process of depletion of production capacity. Over time, if no new investment is made, production tends to fall due to factors that are endogenous or exogenous to the fields. The accounting reflex is a reduction in the value of permanent assets through a process called depreciation.

The depreciation rate varies significantly from field to field. While conventional offshore production has average depreciation rates of less than ten percent a year, that of shale oil exceeds forty percent.

Permian average well production curve (2020)
in b/d per month



This natural condition of unconventional American fields demands continuous and high investments just to maintain the production level. In simple terms, if after the initial investment a given well reduces its production capacity by 40% in the first year, it is necessary to reinvest 40% of the total resources originally invested just to maintain the original level of production.

Therefore, it seems to us unquestionable that investments aimed at offsetting depreciation should be accounted for as maintenance investment. It so happens that, in growing companies, the resources destined to the maintenance of assets are mixed in the consolidated accounting lines of investments with the resources destined to expansion.

For other companies and sectors, this relationship is cleaner and more trivial. The specific case with an accelerated depreciation, even without accounting

mistakes, exposes the discussion on the allocation of investments, especially in the decision between accounting break-even and economic break-even.

Accounting depreciation could then be the compass to determine the reduction in the value and production capacity of a given asset, but cases of mismatch with reality are common.

In the case of shale companies, the significant discrepancy between the depreciation indicated in the balance sheets - equivalent to a period of ten to fifteen years - and the effective depletion of the productive capacity of the wells - around 70% in just over two years - was repeatedly called a fraud by Jim Chanos.²

“The way to think about it is that, unlike other businesses, your assets literally get burned up.”

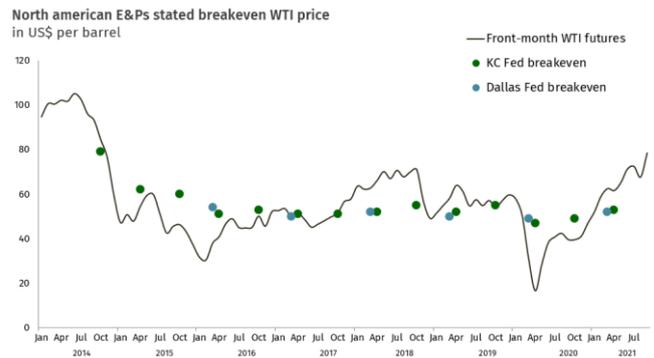
Jim Chanos

Over the past few years, under market pressure, booking depreciation numbers and the cost of replenished reserves have converged - with more reserves booked per dollar invested. Despite this, the question now lies in the quantity and longevity of these disclosed reserves.

If our deep attempt to determine the break-even through the financial statements seemed fruitless, a

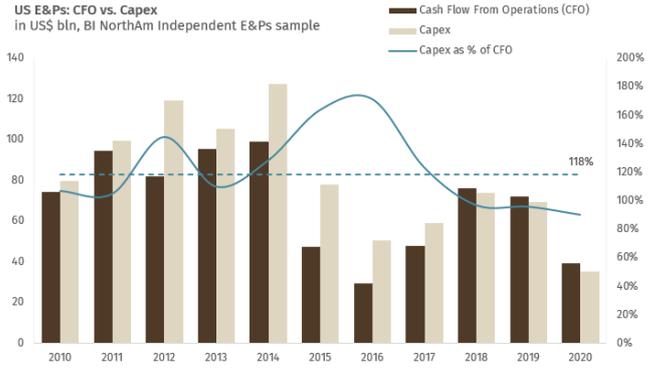
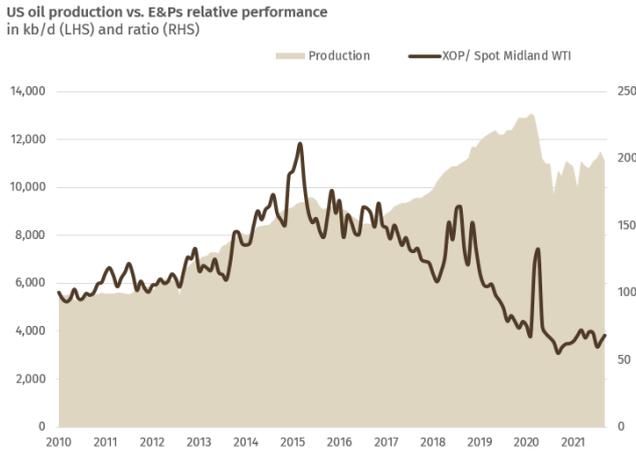
²Delivering Alpha Conference, in 2017, and other conferences where the thesis was revisited.

yellow light from the market was lit on the sector back in 2019.



The natural expectation is that investments in expansion, if done with adequate economy, lead to the generation of positive present value and, within a liquid and efficient market, to the valuation of companies on a growth trajectory.

With long-term oil above the break-even price announced by shale companies and the allocation of a significant volume of resources in investments to expand production, the expectation of companies' appreciation was real.

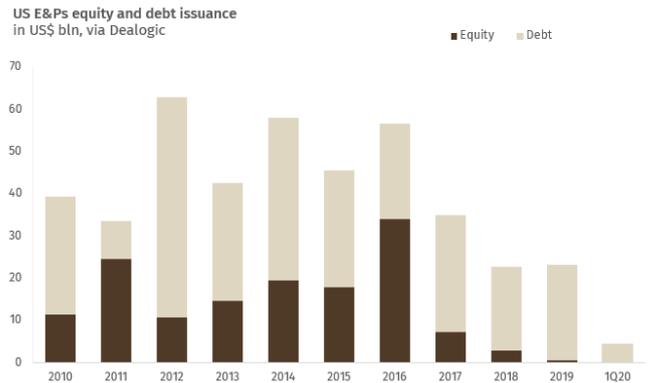


Despite the difficulty of isolating such factors within the numerous variables that impact their pricing, the strong debacle of shares and debt securities of shale companies drew attention and called into question the profitability of exploration.

Before the pandemic, what was the value generated by companies producing shale oil, with WTI trading above 50 dollars per barrel on 4 out of every 5 days during the decade?

Although it has grown significantly, shale production reached its peak without generating value for shareholders. In aggregate, the industry had negative free cash flows of US\$300 billion in the decade preceding the pandemic, recorded impairments – marking down the value of assets on the balance sheet – of more than US\$450 billion and witnessed more than 190 bankruptcies.³

During this same period, part of the listed companies invested almost 20% more than they generated in operating cash, presented growth sustained by equity and debt issues that surpassed 420 billion dollars between 2010 and the beginning of the pandemic.⁴



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The economic issues discussed in 2019 joined the ESG⁵ agenda, a new protagonist since 2020.

The effects of this global trend are still pending better quantification, but it is certain that the expected

³Deloitte LLC auditing report “The great compression: Implications of COVID-19 for the US shale industry”

⁴Dealogic study considering 38 listed North American E&P companies

⁵Environmental, Social, and Corporate Governance

return for an investment in new energy sources considered polluting rose and, along with it, the prices necessary to achieve economy rose.

“Why don’t we see new drilling in the US with oil at US\$ 70 a barrel? Because, relative to the ‘new economy’ options, the returns are still not satisfactory for the marginal investor.”

- Jeffrey Currie, Global Head of Commodities Research at Goldman Sachs, 2021

There are numerous examples of impacts on oil companies. Chevron and Exxon were reprimanded in recent months by climate activist minority shareholders, the latter having had 3 of its 12 board seats appointed by a shareholder who owned just 0.02% of its shares.⁶ Shell, in turn, lost a dispute on the speed of its reduction of carbon emissions and has even adopted the sale of assets as a way to comply with the new rules.

In the shale industry, large companies have opted to direct excess cash flow to reduce debt and increase shareholder returns, rather than investing in increased production, stimulated by a market hostile to new capital issues. From 2021, capital allocation rules were adopted that restrict reinvestments to up to 70% of operating cash flow (*versus* an average greater than 120% between 2016 and 2019) and

production growth to up to 5% against the previous year. Return on capital and free cash flow generation metrics also showed up for the main companies in the sector.

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After a victorious decade for the American shale oil industry, economic reality has imposed itself on several fronts. The movement against polluting sources of energy and the significant cash burn by companies during the expansion cycle drove investors away from the sector, creating an unprecedented shortage of capital. Those who decide to finance production demand higher returns.

The technological revolutions that brought unconventional production to the forefront have stabilized and the most productive fields are lagging behind.

Although American production is still the second largest on the planet, there are doubts about the effects of these changes on its volume.

We envision two potential paths with information about effective break-even. If production remains stable and cash generation is high – with a low investment rate – it will be a sign that the technology has resolved part of the reinvestment cost and the actual marginal cost of production is closer to that reported by companies, 10 or 20 dollars below the

⁶Engine No. 1 – “Reenergize ExxonMobil” and CNBC

current price of the barrel. If production is not sustained, it will be necessary to invest in replenishment just to keep the level of production stable and current cash generation will be short-lived, possibly indicating an economic break-even at levels even higher than the current price.

With the end of the supply of DUCs - drilled but uncompleted wells⁷ - it will be less complex to identify the real cost of exploration, leaving the uncertainty for the size of the expected return to invest in fossil fuels.

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Demand

Cyclical

The recovery of demand after the shock generated by the pandemic is important for short-term prices. Our opinion is in line with the consensus, which considers it a matter of time as vaccination progresses.

The reduction in oil demand compared to the pre-covid period is fully concentrated on the lower consumption of aviation kerosene, with emphasis on

⁷Wells that have been drilled but have not yet undergone completion activities and, consequently, require only part of the investment to start producing.

⁸ <https://www.bloomberg.com/graphics/2021-return-to-office/>

the reduction in international flights in regions such as Europe and Asia. This dynamic may soon change with the reopening of American airspace to more countries, starting in November. Airlines companies indicate strong demand for tickets for the end of the year.

Gasoline and diesel volumes appear normalized when looking at the total amount consumed. This recovery can be seen in road mobility. New York, for example, has levels of traffic jam in line with the same period of 2019. It is strange to us that this is happening with the occupation of offices at a level 50% lower than pre-covid times⁸. We have been questioning whether the more intense use of individual transport is a permanent change in behavior or, at least, longer lasting.

In Asia, in addition to the impacts of the Delta variant on transport, especially aviation, the reduction in crude oil imports by China draws attention. Chinese buyers are consuming low-priced accumulated inventories in 2020, as well as being impacted by new government-imposed restrictions on import quotas from independent refineries.⁹ This trajectory should be reversed by the end of the year with the reopening

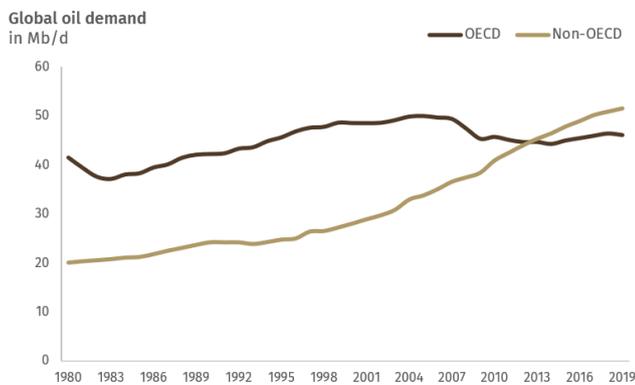
⁹In August, Beijing issued the lowest level of quotas for independent refineries since they were authorized to import oil in 2015, and in the year, the refineries have seen a 12% drop in their import quotas, leading to the burning of more than 100 million barrels from the domestic inventory compared with the peak seen in September 2020, back to pre-Covid levels.

after vaccination and the recovery of Asian demand for refined products. Another possibility is that this recent drop actually hides Iranian oil being imported by China under the radar.

Finally, the replacement of gas for oil in power generating plants can increase consumption by somewhere between 700,000 and 1.3 million barrels per day.

Structural

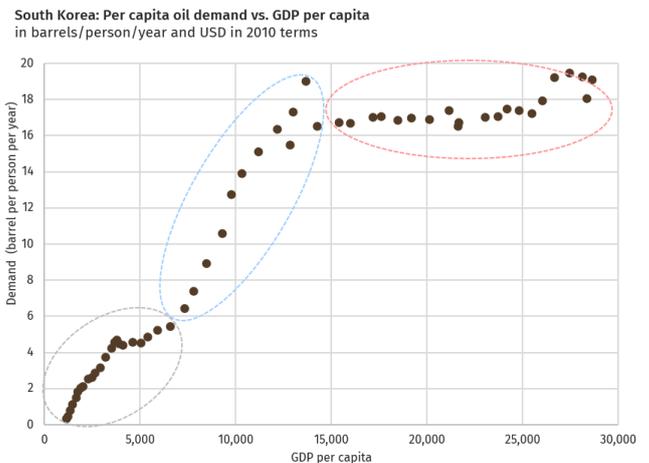
For the medium and long-term, timeframes that most interest us and we usually work with, all oil consumption projections point to reduced consumption in developed countries, supported by the energy transition, and moderate increase in emerging countries, in line with economic growth and evolution of GDP per capita.



Before presenting the reconciliation of these effects, such directions deserve individual analysis.

For emerging countries, leading research houses estimate oil consumption growth by applying a multiplier – beta – on economic growth expectations.

Reconciling forecasts, without any value judgment on the GDP growth numbers, we ask ourselves whether the beta used considers a potential non-linearity adequately – *S-curve* – in the relation between oil demand and a society's GDP per capita.



The shape of the curve is due to the strengthening of what is called a consumption society at a certain level of GDP per capita.

At the beginning of the economic development, the increase in income translates into sanitation, some degree of education, food and housing, generating little oil consumption. The second phase of income growth increases the quantity and variety of products consumed, especially petroleum products: transport, aviation, electronics and, as a consequence, fuels, packaging and fertilizers. This phase is responsible for boosting oil consumption, with a beta greater

than 1 to GDP growth. The third act is one of stability, as we see in European countries.

Some societies, in special Asians who answer for great part of the population of the planet, will possibly enter in the second phase and in a moment of strong acceleration. China, which is already the world's second largest oil consumer with nearly 15 million barrels a day, appears to be in the process.

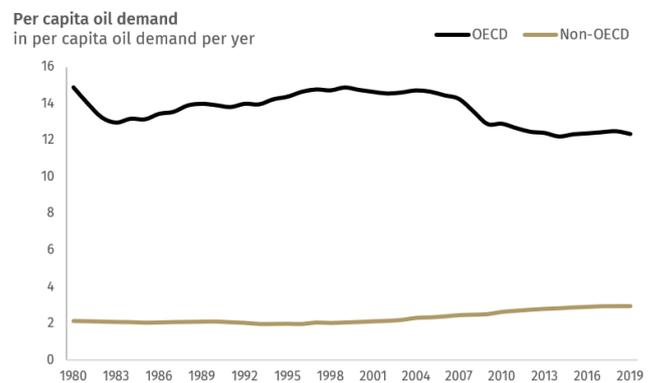
The Chinese government, which over the past decades has prioritized infrastructure investments, has possibly slowed down the country's evolution on the aforementioned S-curve. In recent years, there has been a growing emphasis on the importance of transitioning to an economy less dependent on investment, including properties, and more focused on consumption and exports of high added value. The shift in the state's direction towards a consumer society, which also coincides with the distributive agenda of the *Common Prosperity*, seems to be in line with the Chinese approaching the level of GDP per capita in which the elasticity of oil consumption increases.

This tail wind cannot be overlooked. In 2020, despite the decline in mobility and transportation due to the pandemic, China's oil consumption¹⁰ grew 220,000

barrels per day on an annual average, or 1.6% compared to 2019. The consumption of plastic, a petroleum product and a notorious representative of a consumer society, grew 12%.¹¹

In order to meet the demand increase, China is increasing the supply. In 2025, its refining capacity will reach 20 million barrels per day, compared to 17,6 million today.¹²

Looking from another perspective at the potential of growth in demand in emerging countries, despite having grown about 45% in the 2000s, oil consumption per capita of these countries – more than 80% of the global population – is still about a quarter of that observed in OECD countries.



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For developed countries, the IEA forecasts a steady demand for oil, with no growth between 2022 and

stream in Asia by 2027 will be turned to plastics. In addition to China, this includes several new factories in India and the Middle East.

¹⁰ BP Statistical Review 2021

¹¹<http://www.statista.com/statistics/1257739/plastic-product-consumption-growth-in-china/>

¹²China National Petroleum Corp. Economic and Technological Research Institute. According to Wood Mackenzie consulting around 70% to 80% of the new refining capacity that will come on

2027. This trajectory is heavily impacted by the speed of implementation of the energy transition to clean energy.

We are ESG movement enthusiasts in all its spheres and we recognize the importance of pushing society forward to evolve in the most relevant agendas. In the environmental sphere, which surrounds the issue of energy transition, we follow and hope for the success of the development of technologies – already existing or in research phases – that are candidates for promoting yet another revolution in the way of generating energy.

The green agenda is more of a consensus every year and it is important to consider that governments and companies have shown their execution ability at various times in history when they are aligned around a goal – the COVID vaccine is the most recent example.

Despite this recognition, we ask ourselves whether it is possible to replace a relevant portion of energy consumption from fossil fuels at the expected speed without increasing risks and impacting economic growth.

Renewable energy sources still do not have cost, efficiency and intermittency characteristics that allow their unrestricted use.

In August 2020, California faced blackouts during a period of high temperatures and high electricity consumption. One of the reasons for the difficulty in meeting demand was the high exposure – 23% of the supply¹³ – to wind and solar sources. Clean but reliant on nature's erratic and, in short periods, unpredictable behavior, these sources were partially interrupted by insufficient winds in the face of heat waves and the smoke created by fires that blocked sunlight.

The opposite happened at the end of the year, when extremely low temperatures impacted wind generators in Texas and damaged heating during part of the winter.

More recently, England, which used to have 25% of the energy consumed by wind farms¹⁴, is experiencing a moment of reduced winds with disastrous consequences in the energy market, especially represented by the uncontrolled increase in the price of gas.

In 2021 in Brazil, we once again witnessed the difficulty of operating energy systems based on sources that are dependent on nature. With another year of below-average rainfall, we are experiencing a water crisis that has led to higher risks of rationing and blackout. The biggest problem with renewable

¹³ California Energy Commission – “2020 Total System Electric Generation”

¹⁴ National Grid ESO, 2021

energies seems to be exactly what they are trying to fight, global warming.

The cost and supply capacity constraints in this sector are also becoming evident. The price of polysilicon, an input for the production of solar panels, jumped 200% in 2021 and led to the breach of contract by suppliers around the world. Other raw materials, such as cobalt, lithium and copper, used in batteries and electrical systems, are experiencing the same rising price dynamics.

The move towards renewable energy does not only face challenges in electricity grids. The replacement of fossil fuels in transport also faces obstacles.

In the second quarter of 2021, new passenger car registrations in the European Union show that battery-powered electric (BEV) vehicles continued to expand: their *share* in additions more than doubled - from 3.5% in the second quarter of 2020 to 7.5% this year. Plug-in hybrids (PHEV) represented 8.4% of all new sold cars¹⁵. The number was widely celebrated, especially given the disappointments of previous years, and the space that alternative energy sources for transport have been gaining in the category is undeniable.

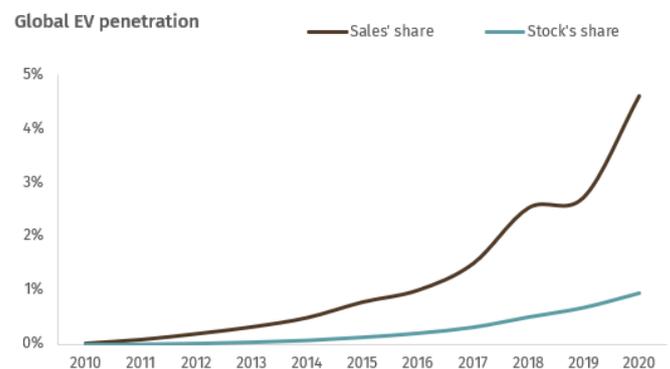
However, it is important to put into perspective the practical impact of this marginal change for the

¹⁵ European Automobile Manufacturers' Association

region's energy matrix and, ultimately, for the world. The *market share* of the electric class (BEV and PHEV) in the region's inventory has just surpassed 1%, according to the EIA.

Additionally, a study¹⁶ involving more than 100,000 PHEVs (plug-in electric vehicles, a type that represents more than half of the category), indicates that the portion of kilometers in which they use only an electric source (utility factor), on average, is around 37% for private and 20% for corporate cars.

For the world, the scenario is analogous: sales penetration also accelerates at the margin, but total penetration is still less than 1%, with around 1/3 PHEVs.



The operational feasibility of the expressive and accelerated adoption of electric cars is also questionable. Charging a Tesla car can take up to 3 days with a standard household outlet, 11 hours with an official charger, or 1 hour with a super charger.

¹⁶ *Real-world usage of plug-in hybrid electric vehicles: Fuel consumption, electric driving, and CO2 emissions* - P. Plötz, C. Moll, and Yaoming Li; G. Bieker, P. Mock (2020)

The use of the super charger is restricted to authorized refueling stations and a simple math on the turn shows that the required physical space would sometimes be higher than that occupied by gas stations in today's dense cities.

Although a promising future, which we share, allows charging in multiple locations, so that the inventory of electric vehicles exceeds that of fossil fuels and until the car fleet is completely autonomous, the time horizon seems different from the one discussed in this letter and from optimistic projections.

In the recent documentary *Long Way Up*, available on Netflix, there is a good example of where we are globally in terms of technological adaptation. The production portrays the attempt by two friends to ride electric motorcycles along the road between Los Angeles and the southern tip of South America. Problems appear quickly: the low load of the electric network, the effect of the cold on the charging and the insufficient autonomy of the motorcycles. The motorcycle duo ends up hiring a diesel truck, which transports a generator powered by diesel to accompany them on the journey, charging the electric vehicles.

If costs, recharge time and space in cities were overcome, time and technological development are still needed to ensure that there will be an effective environmental gain and viability of supply in the replacement of oil consumption by the consumption

of copper, cobalt, lithium, and other associated raw materials to green energies.

"[...] You'll have to drive another 13,500 miles (21,725 km) before you're doing less harm to the environment than a gas-guzzling saloon. [...] The model was developed by the Argonne National Laboratory in Chicago and includes thousands of parameters from the type of metals in an electric vehicle (EV) battery to the amount of aluminium or plastic in a car."

- *"Analysis: When do electric vehicles become cleaner than gasoline cars?"*, by Paul Lienert, published on Reuters on July 7th, 2021

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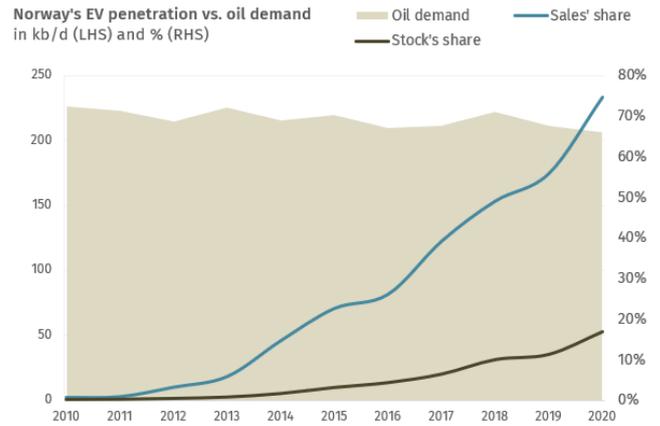
Looking at the market in a more consolidated way, the UN estimates that the global population should grow by around 750 million people by 2030. Less developed regions – in terms of the organization itself – will be responsible for virtually all the addition, a growth of more than 11% over the current population.

For the same period, the OECD projects real growth of around 30% for global GDP, with more than two-thirds of this growth coming from non-OECD

economies, which would grow more than 40% in this period.¹⁷

Extrapolating what we have observed in recent decades on these assumptions, the potential growth in oil demand coming from these economies would be more than 16 million barrels per day. To keep consolidated demand stable, the necessary counterpart would be a 30% reduction in consumption in OECD countries, either through efficiency gains or replacement of the energy matrix.

We foresee accomplishment difficulties. Even in developed countries that are more aggressive in the sustainability agenda such as Norway, which have already adopted rules and incentives for adopting electric cars since the beginning of the decade, the drop in oil demand so far has been marginal. On the energy side, 2021 marks the increase in fossil generation at the cost of renewables, as is the case in England.



Out of curiosity, Europe, which aims to reduce its carbon emissions by about 30% in 2019 by 2030, observed these emissions grow between 2019 and 2021. Long-term projections are starting to appear on the horizon, and they are no good news.

Thus, it does not seem to us to be insignificant that the chances of the projections for the coming years of a drop in consumption in developed countries being overestimated and an increase in non-developed countries underestimated.

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¹⁷Source: United Nations – “World Population Prospects 2019, Volume II: Demographic Profile” and EIA – “What drives crude oil prices: Demand Non-OECD, 2021”.

Supply

OPEC's role is the result of the usual questioning when it comes to supply and demand restrictions in the oil market. With overcapacity and a history of price stabilization, the question is fair and relevant.

The Organization of Petroleum Exporting Countries was founded in 1960 and currently consists of 12 countries: Algeria, Angola, Equatorial Guinea, Gabon, Iran, Iraq, Kuwait, Libya, Nigeria, Republic of Congo, Saudi Arabia, and the United Arab Emirates.

Since 2016, a group of 10 other countries led by Russia cooperate with the objectives of the original group by adhering to production limits. They are Russia itself, Azerbaijan, Bahrain, Brunei, Kazakhstan, Malaysia, Mexico, Oman, South Sudan and Sudan. Together with OPEC, they form a group that became known as *OPEC+*.

According to the entity's statute, the purpose of its existence is to "*coordinate and unify the oil policies of its member countries and ensure the stabilization of oil markets, in order to ensure an efficient, economic and regular supply of this resource to consumers, a stable income for producers and a fair return on capital for those who invest in the oil industry.*" The reality is far less romantic than the text of the statute.

The group accounts for 42% of global oil production, but it is the share of more than 60% of the volume of oil traded on the international market that makes it one of the most relevant cartels on the planet. Unlike

other countries, that consume as much or more than they produce, *OPEC+* members jointly sell two-thirds of their production. It is *OPEC+* that guarantees the supply to those in deficit.

It is no coincidence that its conduct has been a fundamental part of the decisions of other agents – companies and governments – since its creation. The impact of its reaction function on commodity prices is critical.

The goal of "*smoothing volatility and securing supply*" is unusual, to say the least, within cartels and monopolies. When considering the geopolitical position of OPEC member countries, it is difficult to trust that this is a reality. As the case of Iran and Saudi Arabia, which discuss production policy for days and, as they leave the room, they continue their proxy wars.

In April 2020, a (alleged) dispute between Saudi Arabia and Russia amid the demand shock caused by COVID, and consequently increases in inventories, contributed to the prices of a barrel of oil trading in negative values.

Here lies a question. *Was this a real dispute? Or did the main OPEC member states take advantage of the stationary world to prove to investors that the price of a barrel could be much lower than what they projected in their business plans?* Whether that was the goal or not, that was the final message.

The price at historic lows raised the cost of capital of new exploration and production projects and, consequently, the equilibrium price of marginal supply.

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Once the crisis dramatic moment has passed, the cartel has been able to implement a major reduction in inventories under the leadership of Prince Abdulaziz bin Salman, who last year declared that he intends to bring inventories to the average 5-year level and then tighten them even more.

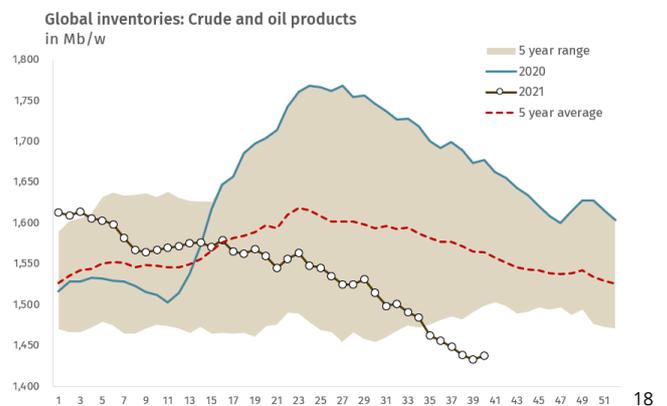
The first part is customary, but the second draws attention. *How far does OPEC want to squeeze the market? Why the standard change?*

The answer to these questions will only be known in 2022.

Although agents exhaustively contemplate about the group's meetings and seek to anticipate responses, the asymmetry of information generated by OPEC's access to information unknown by other agents in the sector - a result of its relevance in the global oil trade - makes it difficult to correctly interpret the movements.

The impacts in the market, in turn, are facts observed. Global inventory of oil and oil products - floating, American, OECD or any other - are on an evident

downward trajectory and, if the extent of the tightening promoted by the cartel is still unknown, the lack of competition and the objective of concentrating power in the hand of the group with control of a growing share of the remaining inventory are blatant.



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Considering that the ex-OPEC oil supply is stable, it is possible to project the production required by OPEC+ to meet market demand in 2022, when consumption normalization is expected. We can do some exercises:

On the demand side, OPEC sees a 4.4 million barrel increase through December 2022, while Goldman Sachs projects a 5.1 million barrel increase in demand. These numbers do not seem overly optimistic, given that they still embed 1 million barrels of lost demand in the OECD, largely due to the

¹⁸ EIA, PJK International, IE Singapore, PAJ, Genscape, FEDCom/Platts

supposed lack of normalization of international travel.

On the supply side, using volumes produced during the dispute in April 2020 as a proxy for maximum capacity, OPEC+'s idle capacity is at 6.2 million barrels.

So, starting from a current deficit of 1.4 million barrels a day, in the Goldman Sachs scenario for December 2022, even with cartel production at the limit, the world would still have a shortage of 300,000 barrels a day. In the alternative case of OPEC demand, an even more conservative scenario, we would have a surplus of 400 thousand barrels per day.

Faced with this scenario, it seems to us that the next move is to keep its effective production capacity unknown in the OPEC chessboard.

In recent communications, CEOs of private producers repeat that they will only return to investing in expansion when OPEC no longer has the capacity to increase the supply.

How and why invest in additional capacity at a cost of 40 or 50 dollars a barrel if OPEC still has enough room to increase production and meet demand at a cost of 15 dollars? If the secret is kept, the moment where this premise is not valid anymore will only be known when there is a shortage of oil in the world.

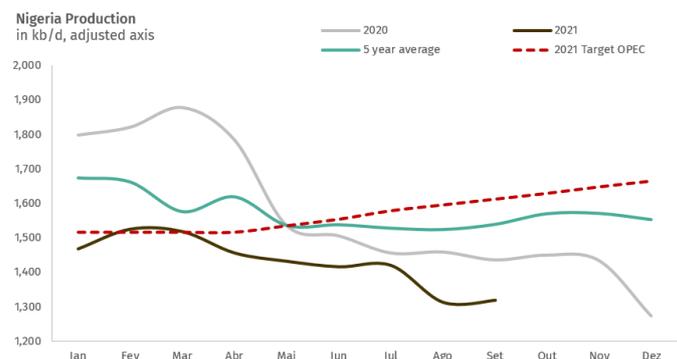
OPEC's spare capacity is the unknown information that supports its monopoly position.

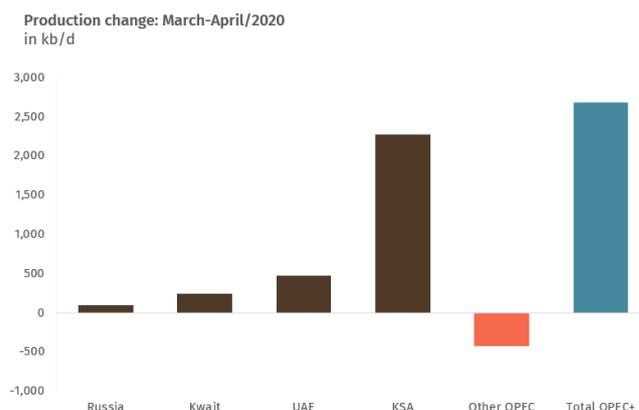
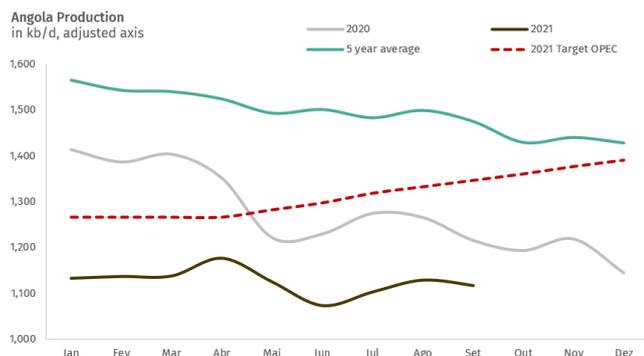
Today we may try to get some tips from the productive capacity of the cartel. With demand still below pre-covid levels, the production quotas of each member country – an arbitrary supply adjustment mechanism – are currently based on production carried out in 2018 and, therefore, well below the minimums.

It is noteworthy that the effective production of some of these countries, such as Nigeria and Angola, cannot reach such a quota. It is thought that the lack of investment in recent years, when oil was depreciated, has reduced the production capacity of the countries in question.

“We have no intention of adding incremental barrels until demand-side fundamentals improve and it becomes evident that OPEC+ spare capacity is effectively absorbed by world markets.”

Rick Muncrief, CEO Devon Energy, 2021





September 2021 (kbd)			
	Quota	Production	Δ
Saudi Arabia	9.704	9.704	0
UAE	2.795	2.795	0
Kuwait	2.477	2.474	-3
Core - OPEC	14.976	14.973	-3
Algeria	932	934	2
Gabon	165	179	14
Angola	1.347	1.117	-230
Nigeria	1.613	1.320	-293
Equatorial Guinea	112	106	-6
Congo	287	259	-28
Iraq	4.105	4.294	189
OPEC ex-exempt	8.561	8.209	-352

In the coming months, when OPEC+ production is expected to rise by 400,000 barrels a day each month, we will be able to see if other countries can increase their production as projected or if the extra capacity is concentrated in just 2 or 3 countries.

On the other hand, Saudi Arabia, the United Arab Emirates and Kuwait account for around 40% of OPEC+ production and did not show any sign of expansion problems when called upon to increase supply in 2020. The uncertainty will remain and next to it the monopoly of the cartel, as much for us from the financial market as for the American producers.

It seems important to note that, if there is a need to add production by traditional producers, the costs will not be the same as before.

Brazil, for example, is considered a future marginal producer given its high productivity and low relative cost. The recent investment decision in the Bacalhau field - formerly Carcará, whose seismic activities began in 2008 and had declared commerciality in 2019 - in the Brazilian pre-salt will require around 8 billion dollars to place 220,000 barrels per day of production capacity in 2024. A campaign of gigantic proportions, which shows the financial and operational challenges, as well as the time needed for production expansion. The production in Guiana, another production front of the American majors, has the same profile.

The exploration, development and ramp up time of an offshore field makes it possible to affirm that, on

¹⁹ OilX Research

this *front*, there is no relevant capacity to enter the market within the relevant horizon of this communication.

*

With this supply scenario, if demand recovery occurs according to market projections – which still seem timid, OPEC's maximum and potential capabilities will be tested soon.

For any perception of difficulty in increasing production, we expect relevant effects on prices. The situation reminds us of the exchange rate dynamics in the face of a speculative attack on the reserves of a central bank. If the sale of reserves represents a tiny amount close to the total reserves that a particular central bank holds, the effects of the operation are efficient in terms of exchange control. If there is a feeling that the reserves are close to running out, a countdown begins and the attack is accelerated. This shift in perception is usually accompanied by abrupt changes in currency pricing.

It still seems too early for this test to take place, but within five or six months the situation may change. An anticipation of the plan to increase production by 400,000 barrels a day each month to face the current gas crisis could accelerate the “moment of truth.”

* * *

Conclusion

First of all, we reaffirm here our optimism and excitement about the energy revolution underway in the coming decades. The future brings historic opportunities to change the matrix that has been with us for centuries, reducing the effect of emissions on the planet.

As investors, this does not prevent us from having concerns and uncertainties about the balance between supply and demand in the coming years.

Will American production be weaker due to the use of less productive fields, insertion of less transformational technologies and, especially, shortage of capital? Will there be encouragement coming from what has been the great producer of recent years?

In parallel, threatened by shale in recent years, member and non-member producers of OPEC+ possibly did not invest enough to increase or even maintain their productive capacities. The future challenges for expansion of the supply are big, expensive, and long-lasting.

On the demand side, emerging countries consume only about 20% of the per capita volume consumed in developed countries. Its growth in the coming years will be a demand force that may be underestimated, especially the consumption of petrochemicals. In rich countries, the energy

transition unfolds in a more challenging way than expected.

OPEC+, a traditional price moderator, is beginning to show different attitudes than before, and the risks of its capacity being fully utilized by the end of 2022 are growing.

Except for the risk of a new demand shock, keeping up with OPEC's production will be the most important agenda in the energy market. If this ability to offer additional supply ends, the focus returns to American production.

The traditional *Call On Opec* terminology, used to measure the cartel's extra production to account for the balance of supply and demand, could be replaced by *Call On Shale*, with the transfer of responsibility for balancing the market to American producers.

American private production does not have a regulatory inventory and will have a reaction function directly associated with the price of a barrel.

The question then remains: *what will be the price demanded by American companies that produce shale oil to resume investments in expanding oil production in a world increasingly hostile to fossil fuels?*

*

Thinking about economic policy and the portfolio in a broader way, we understand that the possible

scenario of rising energy prices brings an additional challenge to central banks and governments.

Inflationary pressure would be reflected in higher interest rates and reduced liquidity by central banks around the globe, bringing a more complex environment to risky assets.

Added to the scenario in China, this development makes us avoid a directional allocation of risk within the portfolio, but with a bias towards inflationary assets. No matter how hard the Fed has changed the extremely accommodating position, the fact of it remaining behind the curve keeps us aiming to allocate in finite and scarce assets, which is the basis of our macro scenario. The oil thesis fits this scenario, but it follows robust microeconomic fundamentals.

*

The risk allocation in the *long* oil investment thesis unfolds in four ways within the portfolio:

i) *Purchase of oil futures contracts (commodity).*

The backwardation-shaped curve embodies a scenario of tightness in the short-term and will remain in the coming years. We have the opposite view. The low implied volatility of options, given the flow of companies carrying out long *hedges*, makes their use interesting.

ii) *Purchase of production companies around the world* (Russia, Europe, Canada, and others). Given the expectation of a drop in future demand and investors' aversion to fossil fuels, these companies

are negotiated at highly discounted valuations. Most of them deliver double-digit dividends and generate more than that in cash.

iii) *Purchase of companies producing American shale.* This part functions as a long position and hedging strategy at the same time. If we are wrong and the break-even is lower than expected, these companies are undervalued.

iv) *Purchase of Petrobras.* Even though the political agenda overlaps in the short-term, the growing production reduces the weight of nationally controlled prices and the perceived risks already seem to be fully priced. On the other hand, the company has one of the best reserves in the world and only the Arabs compete in the quality and productivity of new wells. An asset even more relevant in the difficult production environment.

*

The usual concern with risks is always present, although the various positive vectors of the thesis remove the specific weight of one or the other and help mitigate the impacts of a surprise.

Technological advances that reduce the cost of batteries and the discovery of clean, reliable – not intermittent – and plentiful new energy sources are most important.

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The closest to these is the nuclear energy revolution. The topic is in heated global debate, is present in the portfolio, as a hedging strategy and as a long position, and will be the subject of a future letter.

We are focused on analyzing alternative energy sources and open to discussions with clients. The speed of the inevitable energy transition will possibly be the focal point of the global macro scenario in the coming years.

A new technological revolution in the American shale is also on the list of important risks, as well as an above-expected growth in OPEC+ production capacity. Lastly, the negotiations for the nuclear agreement with Iran and the consequences for the country's production are closely monitored and are relevant, despite our skepticism about its implementation.

The portfolio also has protections with short positions in emerging-market currencies, credit, and the US stock market.

We remain at your service.

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