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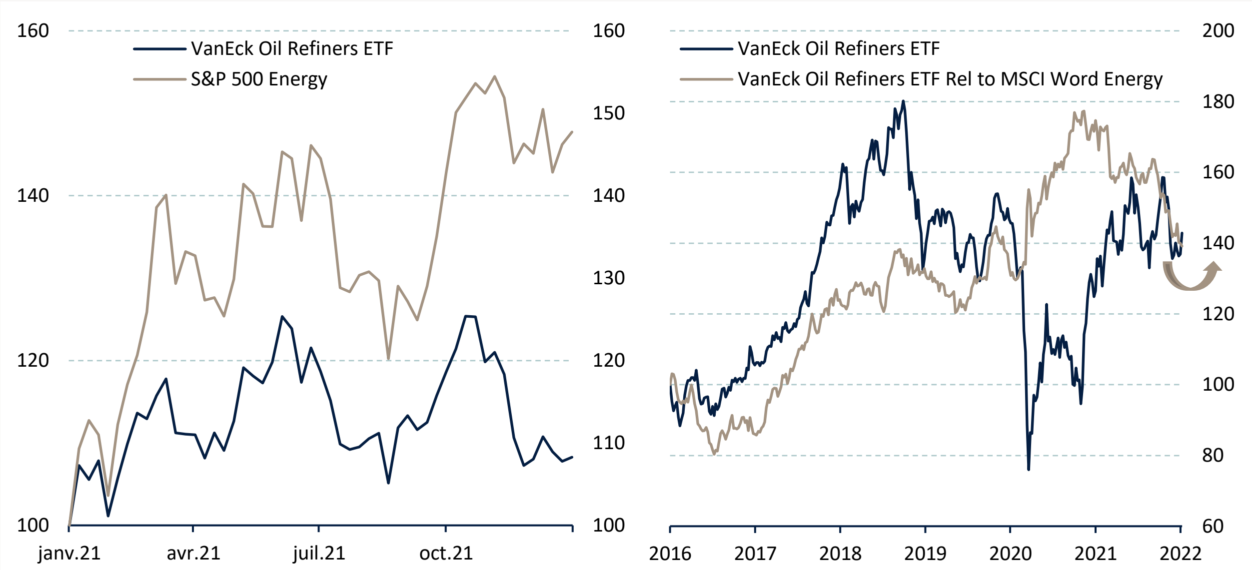
Weekly Investment Focus

10 January 2022

"REFINERIES RETURN TO GROWTH ! "

- The industry suffered from Covid variants and the erratic reopening of the economy
- Refiners are big polluters but still essential
- Their options for reducing greenhouse gas emissions are limited
- Refinery conversion leads to concentration that benefits the sector

CHART OF THE WEEK: "Refinery underperformance is primarily cyclical".



Source: Bloomberg, Atlantic Financial Group

ANALYSIS OF FINANCIAL MARKETS

Oil refiners have massively underperformed the market and the energy sector, rising by only +8.3% (US CRAK) compared to +47.7% for the S&P 500 Energy Index in 2021 (see Chart of the Week). As in previous crises, **the sector has suffered from a drastic decline in demand as regulatory costs rise and the price of crude oil becomes more volatile.**

- The industry suffered from Covid variants and the erratic reopening of the economy

Going into 2020, North American oil and gas companies involved in refining were enjoying strong margins, a buoyant economy and robust demand. The only cloud on the horizon was the potential impact of the energy transition.

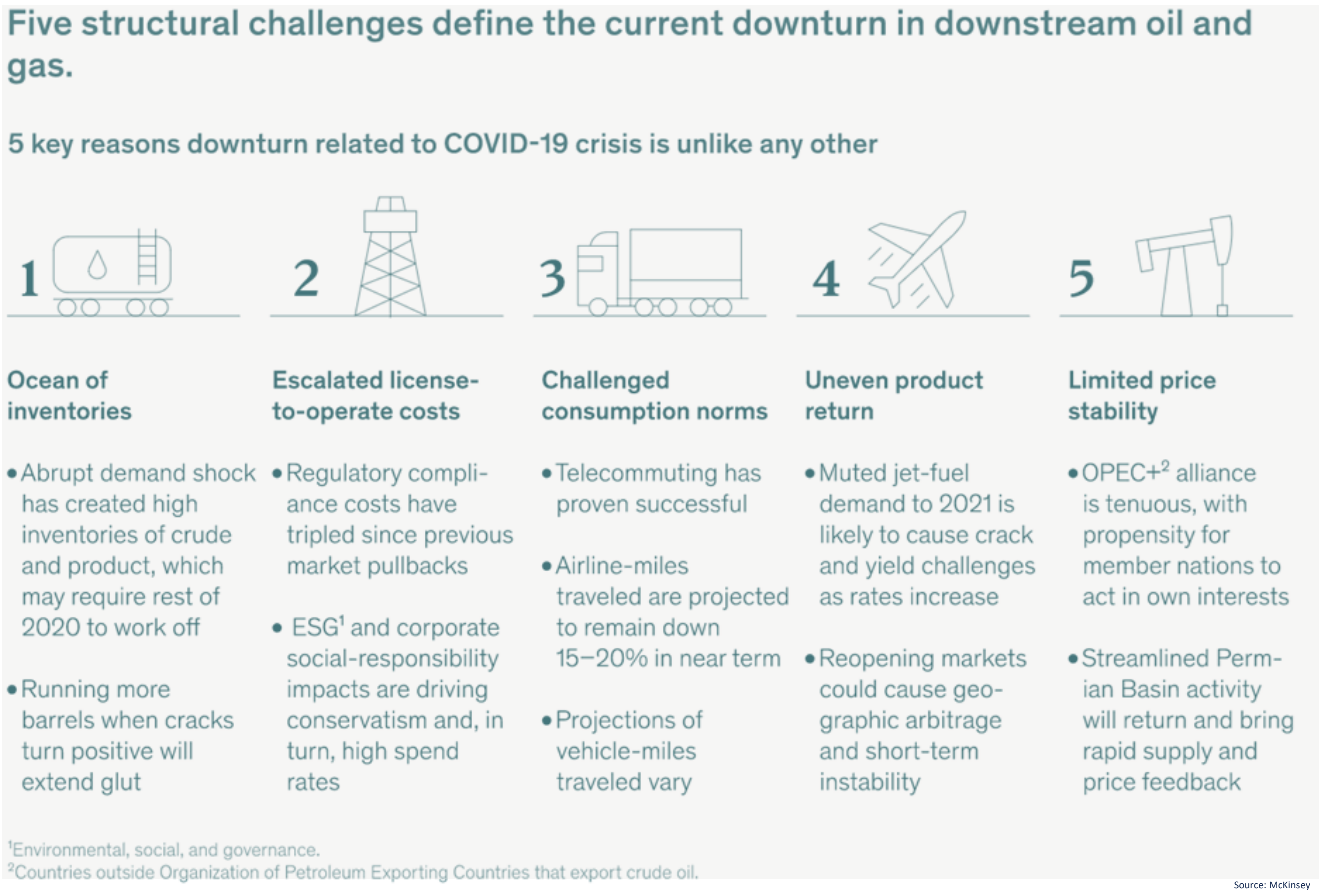
Major players in the oil refining market include Saudi Aramco, Reliance, Marathon Petroleum, Phillips 66, Valero, Neste, SK Innovation, ENEOS, etc.

The decline in demand due to Covid-19 has accelerated the closure of smaller refineries and those under **increased regulatory oversight**, mainly in California or Oregon. (see Fig. 2)

Marathon Petroleum and Phillips 66, for example, have had to close refineries near San Francisco as carbon reduction mandates are expected to make refining in the state even more difficult.

HollyFrontier's Cheyenne plant, Marathon's Dickinson plant and CVR Energy's Wynnewood plant have seen their margins squeezed by tightening crude oil price differentials.

Fig. 2 - The main challenges following the Covid-19 pandemic

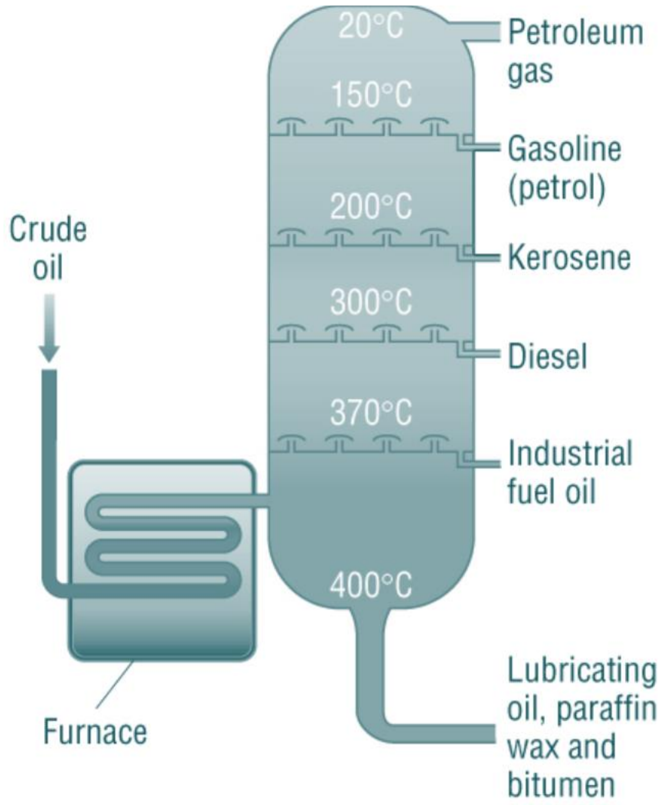


Source: McKinsey

- Refiners are big polluters but still essential

Oil refining is one of the largest greenhouse gas emitting industries in the world. Heavy crudes emit more because they are more labour intensive. Typically, 66% of emissions are related to the cracking and hydrocracking stages, compared to only 11% for distillation and 23% for all other processes.

Fig. 3 - Principle of operation of a crude oil distillation tower



Source: ©Energy Knowledge, Atlantic Financial Group

Oil refineries break down crude oil (which can be more or less sulphurous and viscous, depending on the grade), into various relatively light components known as 'intermediates' which are then assembled to produce a variety of finished products with standardised content, the best known of which are petrol, diesel and kerosene (jet fuel). (see Fig. 3)

This is done in several stages, each of which aims to extract more useful hydrocarbons from the crude oil. The part that withstands all refining efforts forms fuel oil, a dense and viscous industrial fuel, and petroleum coke, a solid coal-like residue.

In this very mature industry, research and development efforts are generally focused on issues such as increasing yields and energy efficiency rather than on entirely new processes.

Although the energy transition is well underway, population growth, industrialisation coupled with urbanisation in emerging countries, and increased transportation needs should see demand for refined petroleum products increase in the coming years.

North America and Europe are expected to show moderate growth due to increased awareness of renewable energy and natural gas use. Asia-Pacific is expected to grow rapidly, followed closely by the Middle East. The presence of oil-based economies is expected to drive growth in these markets. China has become one of the major importers of crude oil, which has driven the overall oil refining market. **Demand for refined oil products is expected to grow at the fastest rates in Latin America and Africa.**

Finally, the International Energy Agency (IEA) itself estimates that **global oil demand will continue to rebound to pre-Covid-19 levels,** not far from 100 million barrels per day by the end of this year.

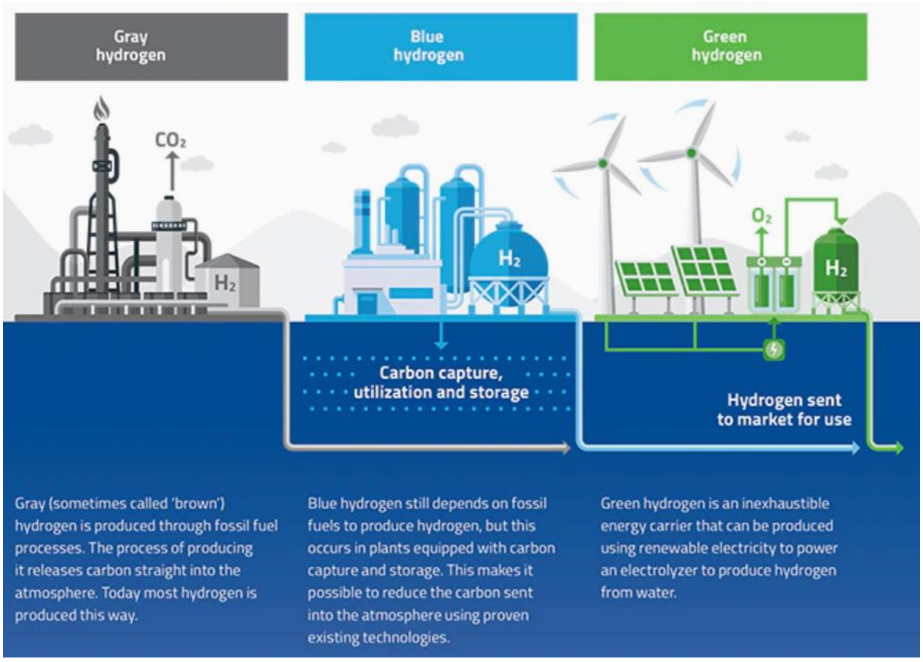
♦ Options for reducing greenhouse gas emissions are limited

Faced with stricter regulations, refiners are making investments to reduce their carbon emissions (e.g. Esso's Fos-sur-Mer refinery in France, where nitrogen oxide emissions have been significantly reduced).

Reducing emissions is a difficult task, because **the efficiency gains achieved are often offset by a growing demand for lighter, cleaner fuels, which require additional refining steps and greater energy expenditure.**

Approaches to reducing greenhouse gas emissions revolve around various efficiencies and integration with the surrounding region to sell surplus heat and purchase hydrogen produced using renewable energy. However, the impact of these measures is likely to remain limited. **Carbon capture and sequestration remains the most frequently mentioned means of reducing the carbon footprint of refineries.** Several refinery processes produce concentrated streams of CO2 that are particularly suitable for capture, but the future of this practice remains uncertain.

Fig. 4 - Blue hydrogen as a solution to refinery decarbonisation



Source: Worley.com

Refiners are at the heart of the emerging hydrogen economy race (see Fig. 4) **and efforts to develop additional carbon capture, utilisation, and storage projects.** Europe has taken the lead in this market, developing a series of hydrogen clusters in the Netherlands, Germany, and the UK, each seeking to rapidly integrate new hydrogen production capacity. Investment in the sector continues to grow and hopes are high that gas will become a fuel of choice in the near future.

Hydrogen is hailed as a game-changer for the energy sector. Production, storage and transport issues still need to be solved. While green hydrogen should be favoured at term, **blue hydrogen (by-product of the refining process) dominates the market. Any development of this market will require cooperation and**

integration with the major refiners until the supply of green hydrogen takes over - which may still take several decades.

♦ Refinery conversion leads to concentration that benefits the sector

The pandemic has led to the conversion of several refineries. The investments required for these conversions are supported by government subsidies and could change the refining landscape in the coming years.

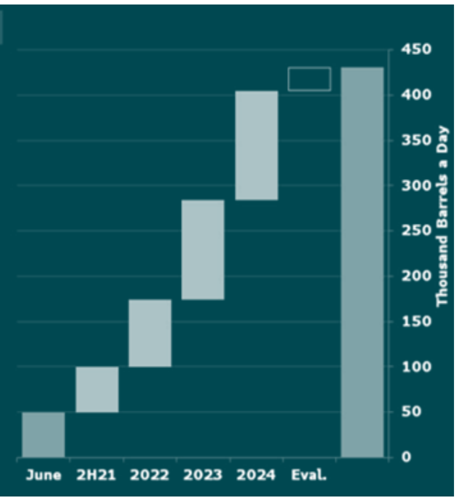
TotalEnergies, for example, is considering ceasing refining and converting some sites to the production of bioplastics from plants, or the production of recycled plastic.

Neste, a Finnish energy company, has shifted its historical assets from oil refining and marketing to biofuel processing.

Other refineries have converted to produce renewable diesel, a hydrocarbon, chemically identical to petroleum diesel, and largely produced by hydrotreating. It contains fewer impurities than biodiesel, making it the cleaner alternative.

Fig 5- Increase in US renewable diesel refining capacity by 2025

Location	Operator	Capacity (b/d)	Start-Up
Dickinson, ND	Marathon Petroleum	12,000	1Q 2021
San Francisco, CA	Phillips 66	8,000	2Q 2021
St. Charles, LA	Diamond Green Diesel	26,093	4Q 2021
Wynnewood, OK	CVR Energy	6,500	•4Q 2021
Hugoton, KS	Seaboard Energy	6,500	2021
Las Vegas, NV	Ryze Renewables	7,500	2021
Bakersfield, CA	Global Clean Energy Holdings	15,000	1Q 2022
Artesia, NM	HollyFrontier	7,800	1Q 2022
Cheyenne, WY	HollyFrontier	5,900	1Q 2022
Great Falls, MT	Calumet Speciality Product Solutions	9,000	2Q 2022
Port Westward, OR	NEXT Renewable Fuels	37,500	2022
Mobile, AL	Vertex Energy	14,000	•1H 2023
Port Arthur, TX	Diamond Green Diesel	30,700	1H 2023
Geismer, LA	Renewable Energy Group	16,300	2H 2023
Martinez, CA	Marathon Petroleum	48,000	2023
San Francisco, CA	Phillips 66	44,000	1Q 2024
Port Allen, LA	Koch, Fidelis Infrastructure	60,000	2024
Caldwell Parish, LA	Strategic Biofuels	17,350	2024
2021-2024 Capacity Additions		372,143	
Coffeyville, KS	CVR Energy	8,200	Unknown
Chalmette, LA	PBF Energy	17,500	Unknown



Source: US Environmental Protection Agency, Bloomberg Intelligence, Atlantic Financial Group

Renewable diesel production units show a return on capital of around 30%, a figure that includes government subsidies, some of which will decrease as renewable diesel comes on stream and feedstocks (cooking oil, animal fats...) increase. The US could have a capacity of over 400,000 barrels per day by 2025 (see Fig. 5).

There is no risk of overproduction, as renewable diesel has the same properties as regular diesel and can be used directly in existing infrastructure, unlike biodiesel.

Conclusion:

As in previous economic downturns, refineries are reducing their workforces, reviewing their operating expenses, and limiting their capital expenditure. These incremental changes are a start. To emerge from this difficult period with the capacity to deliver another decade of long-term growth, companies will need to go much further. They will need a strong market outlook and a clear strategic vision. Oil refining processes are set to evolve as the sector faces a number of constraints that are forcing operators to change their production focus. The most complex, energy-efficient and low-carbon refineries will be the winners in this new crisis.

RETURN ON FINANCIAL ASSETS

Markets Performances (local currencies)	Last Price	Momentum Indicator (RSI)	1-Week (%)	1-Month (%)	2022 Year-to-Date (%)	2021 (%)	2020 (%)
Equities							
World (MSCI)	743.2	46.59	-1.5%	-0.2%	-1.5%	19.0%	16.9%
USA (S&P 500)	4 677	47.41	-1.8%	-0.1%	-1.8%	28.7%	18.4%
USA (Dow Jones)	36 232	54.06	-0.2%	1.5%	-0.2%	20.9%	9.7%
USA (Nasdaq)	14 936	38.43	-4.5%	-4.7%	-4.5%	22.2%	45.1%
Euro Area (DJ EuroStoxx)	478.6	53.73	0.0%	0.7%	0.0%	23.5%	0.8%
UK (FTSE 100)	7 485	61.94	1.4%	2.1%	1.4%	18.4%	-11.4%
Switzerland (SMI)	12 798	56.04	-0.6%	2.3%	-0.6%	23.7%	4.3%
Japan (Nikkei)	28 479	46.14	-1.1%	0.2%	-1.1%	6.6%	18.3%
Emerging (MSCI)	1 226	49.00	-0.5%	-0.6%	-0.5%	-2.5%	18.8%
Brasil (IBOVESPA)	102 720	42.57	-2.0%	-4.5%	-2.0%	-11.9%	2.9%
Russia (MOEX)	3 772	47.13	-0.4%	-1.7%	-0.4%	21.9%	14.8%
India (SENSEX)	59 745	60.70	2.6%	3.7%	2.6%	23.2%	17.2%
China (CSI)	4 822	39.51	-2.4%	-2.0%	-2.4%	-3.5%	29.9%
Communication Serv. (MSCI Worl	107.30	35.51	-2.7%	-2.6%	-2.7%	10.8%	24.2%
Consumer Discret. (MSCI World)	403.0	42.57	-1.8%	-3.3%	-1.8%	9.2%	37.0%
Consumer Staples (MSCI World)	290.4	60.76	-0.4%	4.1%	-0.4%	11.7%	8.8%
Energy (MSCI World)	202.6	71.77	7.3%	6.1%	7.3%	37.5%	-27.7%
Financials (MSCI World)	156.4	69.55	4.0%	4.4%	4.0%	25.1%	-3.1%
Health Care (MSCI World)	352.3	36.41	-4.6%	0.4%	-4.6%	18.0%	15.4%
Industrials (MSCI World)	330.6	53.20	-0.4%	0.6%	-0.4%	16.6%	11.8%
Info. Tech. (MSCI World)	547.6	38.85	-4.7%	-3.8%	-4.7%	27.6%	46.2%
Materials (MSCI World)	366.0	58.76	0.1%	2.7%	0.1%	15.4%	21.6%
Real Estate (MSCI World)	226.2	43.00	-3.7%	-0.4%	-3.7%	23.6%	-5.7%
Utilities (MSCI World)	159.6	52.50	-2.0%	2.3%	-2.0%	11.1%	4.8%
Bonds (FTSE)							
USA (7-10 Yr)	1.76%	30.35	-2.3%	-2.7%	-2.3%	-2.4%	9.3%
Euro Area (7-10 Yr)	0.31%	25.46	-0.8%	-2.4%	-0.8%	-2.9%	4.5%
Germany (7-10 Yr)	-0.04%	23.10	-0.7%	-2.6%	-0.7%	-2.7%	3.0%
UK (7-10 Yr)	1.18%	23.95	-1.7%	-3.5%	-1.7%	-4.9%	5.4%
Switzerland (7-10 Yr)	0.01%	20.70	-1.2%	-2.4%	-1.2%	-2.3%	0.4%
Japan (5-10 Yr)	0.14%	22.31	-0.3%	-0.5%	-0.3%	0.0%	-0.1%
Emerging (5-10 Yr)	5.03%	26.68	-1.5%	-2.0%	-2.0%	-2.3%	5.2%
USA (IG Corp.)	2.55%	32.55	-0.8%	-1.7%	-1.9%	-1.0%	9.9%
Euro Area (IG Corp.)	0.59%	28.09	-0.2%	-1.0%	-0.4%	-1.0%	2.8%
Emerging (IG Corp.)	4.82%	21.99	-1.0%	-1.9%	-1.2%	-3.0%	8.1%
USA (HY Corp.)	4.60%	39.49	-0.9%	-0.1%	-0.9%	5.3%	7.1%
Euro Area (HY Corp.)	3.32%	63.20	0.1%	0.3%	0.1%	3.4%	2.3%
Emerging (HY Corp.)	7.46%	30.69	-1.1%	-1.7%	-1.2%	-3.2%	4.3%
World (Convertibles)	426.6	33.09	-2.7%	-2.8%	-2.7%	2.4%	38.8%
USA (Convertibles)	572.7	33.91	-3.4%	-3.5%	-3.4%	3.1%	54.5%
Euro Area (Convertibles)	4 079	43.55	-0.6%	-1.4%	-0.6%	-0.3%	6.1%
Switzerland (Convertibles)	185.0	19.96	-0.5%	-0.9%	-0.5%	-0.5%	0.5%
Japan (Convertibles)	200.2	47.10	-0.3%	-0.2%	-0.3%	3.3%	2.8%
Hedge Funds (Crédit Suisse)							
Hedge Funds Indus.	713.0	68.94	n.a.	-2.2%	n.a.	6.2%	6.4%
Distressed	959.5	72.78	n.a.	-0.8%	n.a.	11.6%	3.8%
Event Driven	810.2	73.74	n.a.	-1.8%	n.a.	12.6%	7.0%
Fixed Income	388.4	73.05	n.a.	-0.5%	n.a.	3.9%	3.6%
Global Macro	1 164.3	64.37	n.a.	-3.1%	n.a.	5.9%	6.5%
Long/Short	900.6	63.24	n.a.	-3.0%	n.a.	5.2%	7.9%
CTA's	340.9	62.39	n.a.	-3.9%	n.a.	8.0%	1.9%
Market Neutral	284.6	62.31	n.a.	-0.5%	n.a.	4.2%	1.7%
Multi-Strategy	682.4	69.96	n.a.	-1.4%	n.a.	4.7%	5.6%
Volatility							
VIX	18.76	48.19	8.9%	-14.3%	8.9%	-24.3%	65.1%
VSTOXX	20.62	48.59	7.0%	-17.1%	7.0%	-17.6%	67.5%
Commodities							
Commodities (CRB)	581.8	n.a.	0.5%	2.3%	0.6%	30.3%	10.5%
Gold (Troy Ounce)	1 797	48.03	-1.8%	0.7%	-1.8%	-3.6%	25.1%
Oil (WTI, Barrel)	78.90	62.01	2.5%	9.5%	2.5%	58.7%	-20.5%
Oil (Brent, Barrel)	81.92	64.56	5.8%	9.5%	5.8%	51.4%	-23.0%
Currencies (vs USD)							
USD (Dollar Index)	95.719	44.97	0.1%	-0.7%	0.1%	6.4%	-6.7%
EUR	1.1360	53.95	-0.1%	0.8%	-0.1%	-7.5%	9.7%
JPY	115.56	37.57	-0.4%	-1.7%	-0.4%	-10.2%	5.1%
GBP	1.3588	65.05	0.4%	2.6%	0.4%	-1.0%	3.1%
AUD	0.7181	47.20	-1.1%	0.9%	-1.1%	-5.6%	9.6%
CAD	1.2643	57.34	0.0%	0.0%	0.0%	0.7%	2.1%
CHF	0.9188	51.32	-0.6%	0.7%	-0.6%	-3.0%	9.4%
CNY	6.3778	47.78	-0.3%	-0.2%	-0.3%	2.7%	6.7%
MXN	20.401	65.01	0.6%	3.1%	0.6%	-3.0%	-5.0%
EM (Emerging Index)	1 732.0	53.41	-0.1%	0.3%	-0.1%	0.9%	3.3%

Source: Bloomberg, Atlantic Financial Group

Total Return by asset class (Negative \ Positive Performance)

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