

Post Covid-19 in the Downstream oil sector

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Benchmarking Covid-19

- History tells us that a pandemic is no new phenomena.
- During the middle ages the Black Death decimated Europe.
- During the 19th century a number of pandemics hit the world.
- Early in the 20th century we have had the Spanish Flu (50 million dead).
- Recently we had MERS and SARS.

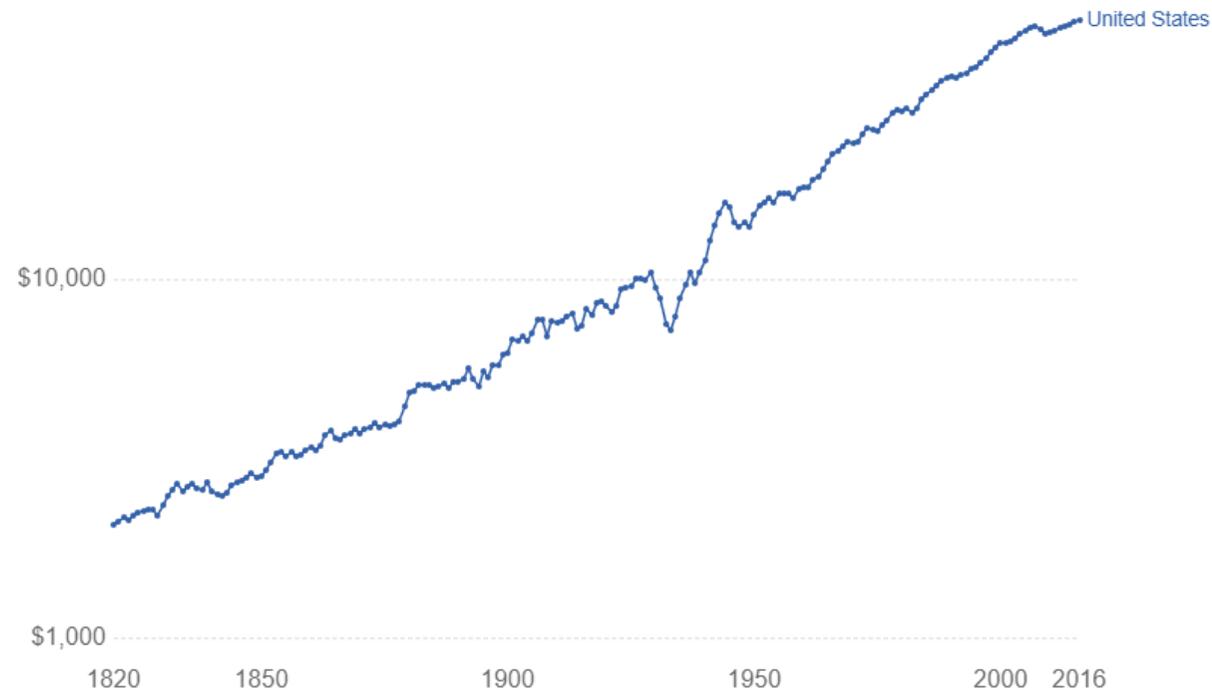
Benchmarks - 2

- In every case the world bounced back and the long term trajectory of growth was maintained.

GDP per capita

GDP per capita adjusted for price changes over time (inflation) and price differences between countries – it is measured in international-\$ in 2011 prices.

Our World
in Data



Source: Maddison Project Database (2018)

Note: These series are adjusted for price differences between countries using multiple benchmark years, and are therefore suitable for cross-country comparisons of income levels at different points in time.

OurWorldInData.org/economic-growth • CC BY

Benchmarks - 3

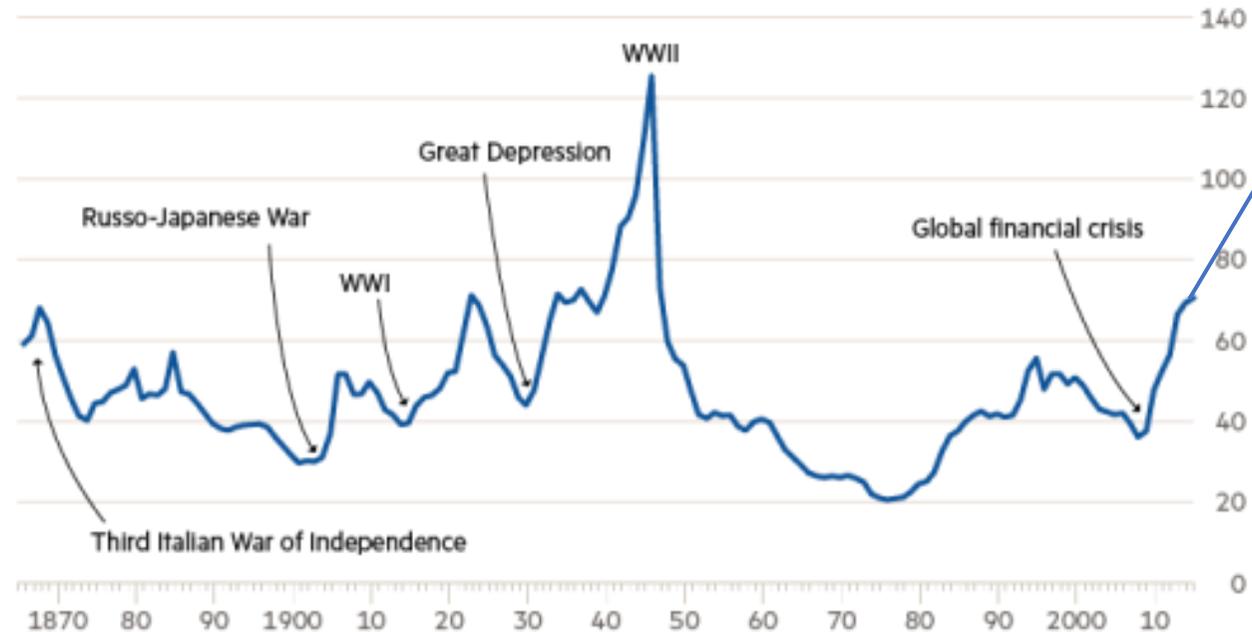
- As can be seen from the previous chart for the USA there is only one major dip and that was during the great depression of 1930. However the best benchmark for the scenario today is global indebtedness.
- The next chart will show that the global indebtedness will increase to near WWII levels but not exceed them. We recognise that interest rates are low but debt will need to be repaid or deflated.
- This is the level of impoverishment that will affect global oil and energy demand.

Global Borrowing

Major indebtedness was in WW11

Global debt at its highest level in peacetime

Median debt to GDP percentage of a 12-country sample*



* Includes US, Netherlands, Japan, Germany, France, UK, Italy, Australia, Canada, Spain, Switzerland and Sweden
 Source: Deutsche Bank
 © FT

Resultant change

- In WWII there were clear winners and losers. The USA and Canada and the neutrals did relatively well as their assets and machinery were not destroyed.
- The Marshall plan lifted Europe by effectively investing in new technology and higher productivity.
- The UK did badly as it had incurred the largest debt pile of all in order to pursue the war.
- So from there the future was up again but it took a good forty years for the debt to be brought down to decent levels.

Comparison with WWII

- We are at war again against an unseen enemy.
- We are asking swathes of our industry to convert to manufacturing war material, this time not guns but PPE equipment, ventilators and medicines.
- We are effectively *demand* rationed, no gasoline or diesel consumption, no flying, no cruising or holidaying.
- Food and drink is rationed by bars and restaurants being closed.
- Our medical facilities have been severely stretched, with many of the hospital staff exhausted.

Scenario without a vaccine

The effect on aviation

- To remain healthy we are told we must maintain social distancing. This will restrict the provision of goods and services (another form of rationing).
- Flying is the first to be hit severely.
- Forget the packaged and sardine packed planes of last year.
- What possible load factor can be obtained, if social distancing on planes is demanded?
- This could be done, but fares will need to double.

Aviation Industry

Possible nationalisation

- When I first wrote this paper I said that in order for airlines to survive, the national state would need to subsidise or take over the major airlines.
- Prior to the 1980's apart from the USA most airlines were state owned. Names such as Sabena, KLM, BOAC, BEA, Swissair and Alitalia are names that were familiar to passengers. Today these names have been absorbed and privatised.
- The nimble smaller newcomers such as Ryanair, Easyjet, Virgin, Wizz and Norwegian soon made rapid inroads into the major airlines.
- All the airlines are now already facing up to this challenge with swinging job and salary cuts?

Airline Fuel demand

What will be the future

- Apart from the issue of higher fares, how will the public react to being put into an aluminium tube for a number of hours, with a lot of people they do not know.
- They will fear contagion due to proximity and the myth that air in planes circulates germs will certainly discourage them.
- Thus a lot of discretionary travel will be curtailed.
- Staycations will be more of the norm. This will result in a drop in demand for jet fuel in the short to medium term.

Gasoline and diesel demand

- Staycations will result in more internal travel.
- A lot of people are also concerned about travelling by public transport.
- Therefore families are likely to go by car.
- Hotels may also be seen as possible areas of contagion, so camping or caravanning may become more popular.
- Motor homes will also probably rise in popularity.
- The net effect will be an increase in demand for motor fuels.

The Shipping Industry

- How many people would like to go on a cruise after the experiences of the Diamond Princess at Yokohama and the Westerdam in Cambodia.
- A number of cruise liners are laid up in various parts of the world. Will they ever be filled again?
- The advertising for cruises is now showing 2022 as availability.
- The days of large cruise liners may be numbered.

Shipping Industry - 2

Globalisation effect

- If planes do not fly who will carry the cargo previously shipped in their holds? (Passenger planes conversion to cargo?)
- We might have to go back to the days of the reefer (refrigerated hold) to carry frozen meat and food.
- The fears generated by Covid-19 on the global dependence on goods will require production to be nearer to home. Just in time economics may have been blown.
- The effect of this could mean an overall reduction in bunker fuel demand.

Primary energy demand

- The lockdown initially meant an increase in demand for light and heat, especially in March and April.
- However as shops, bars and restaurants closed so power demand shrunk.
- The result was further compounded by industrial closures.
- The result of all the demand cutbacks was an overall reduction in atmospheric pollution.

Chemicals

- However, demand for Chemicals and therefore their feedstock, is unlikely to be hit, as goods are still being bought. The on-line shopping growth also demands more packaging.
- This will at least provide an outlet for LPG and naphtha that could be surplus in the refineries.
- The combination of the demand changes will have a profound impact on refinery economics.

Climate Change

- This is still the 'elephant in the room'.
- Will the world now wake up to what it is like to be without fossil fuel pollution and like what they see?
- How can GHG emissions be brought under control.
- My preferred view is that only a market led initiative will cure this ill.
- At USD 50/bbl/ oil, some wind and solar renewables are cheaper than oil. The major area of resistance is transport fuels; only when there is (i) surplus marginal renewable electricity generation and (ii) a further R&D technical step will alternative energy fully replace ICE vehicles.
- COVID-19 has given the world chance to draw breath – and I believe will cause the world to embrace this change with greater vigour.

Emissions and climate change

COP 26

- For the market to create the technology to deal with carbon emissions there needs to be a financial incentive.
- This can only be in the form of a suitable price for carbon reduction.
- Carbon Capture and storage and or reconstitution are well known technologies.
- Batteries for grid scale storage, to smooth the intermittency of wind and solar and similar technologies are very advanced. All they need is an Emissions trading system that is genuine and realistic. Will COP 26 take note.

Refinery economics

What are the changes

The major changes we identified are:

- Increase in gasoline
- Decrease in jet
- Increase in diesel
- Decrease in bunker fuel
- Possible increase in LPG as a chemicals feedstock

Refinery economics - 2

- Simple hydro-skimming refineries will almost certainly experience reduced crude runs.
- Hydrocracker severity will change to reduce jet fuel make and increase diesel production.
- Cat crackers and reformers will be maxed out to meet the increased demand for gasoline.
- Residual bottoms will need to be low sulphur to meet bunker fuels.
- Coking will still give the best returns as heavy fuel will need to be destroyed.

Conclusions

- Without a vaccine we will still be operating at a reduced rate with fuel demand below historic highs.
- Some increase in demand for gasoline and diesel as we take staycations.
- Cruise liners and airliners will be less busy.
- The drive to solar and wind will accelerate as will the development of the electric car.
- The future has to be 'Green and Sustainable' and thus fossil fuels will have a finite time as the means of driving economic growth.

Conclusions

- Crude oil exploration has been very successful in finding new large deposits around the planet.
- The question is will they be stranded? (specifically sour crude production, it will all be about light low sulphur low cost of production)
- We are currently seeing oil demand peaking and possibly regressing.
- Therefore no amount of posturing by OPEC and Russia will change the equation. If demand is not there and all storage is full, there will be no nominations to lift the oil.
- Thank you.

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