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IMO 2020: Economic Prospects

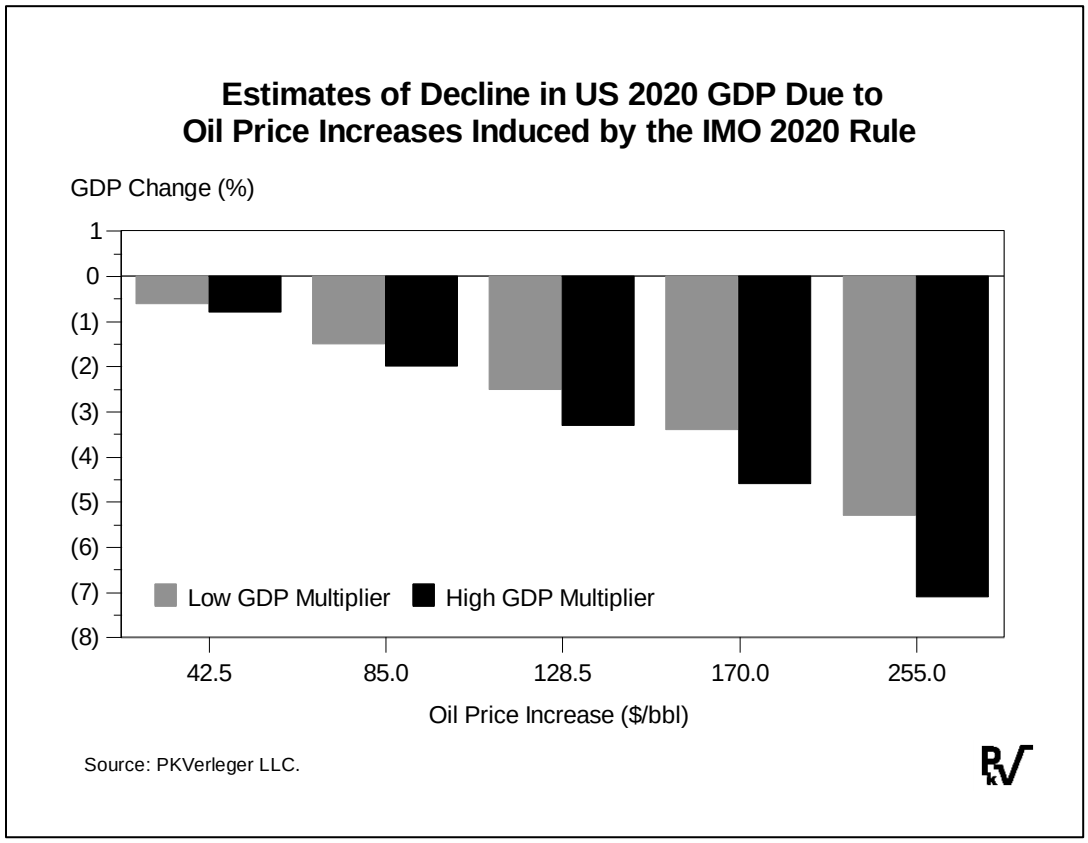

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Table of Contents

List of Figures

List of Tables

Summary

The restriction on shipping fuel sulfur content promulgated by the International Maritime Organization, which is scheduled to take effect in January 2020, has been the subject of hundreds if not thousands of articles. Many have addressed the rule's impact on refineries. Many have examined the prospects for compliance. Many have focused on the economics of ship operations. Some have presented calculations of the supply imbalances created in petroleum markets. A few have offered tentative suggestions regarding the effect on crude oil prices. No one, though, has tried to forecast the impact on economic growth.

This report offers a first attempt to fill that gap. Our initial conclusion is that the regulation will likely cost the global economy a full year's growth. Measured in current dollars, the cost exceeds $4 trillion, given the current rate of global growth and the World Bank's $80 trillion estimate of the current global GDP. The $4 trillion is a nontrivial sum based on any calculation.

Diesel fuel forms the foundation of our analysis. Many of the studies presented by organizations such as the International Energy Agency, Goldman Sachs, and Morgan Stanley address the supply-and-demand imbalance the IMO rule will create. A consensus of global diesel supply falling short of global demand by one million barrels per day seems to have formed.

The shortfall, though, is an ex ante gap, not an ex post gap. Markets clear in the absence of regulation. The global market for low-sulfur gasoil and diesel will clear in 2020 because it is not regulated. It will clear because prices will rise.

Increases in the politically sensitive retail price of diesel fuel will bring ex post consumption in line with ex post supply. The price increases must be large because the price elasticity of diesel fuel is very low. In the worst case, the retail price in the United States will need to rise one hundred forty percent.

The estimated increases are based on a simple model of demand for diesel in fifteen countries accounting for sixty-two percent of global distillate consumption.

Prices of other petroleum products will be pulled up by the rise in diesel prices. There is general agreement that gasoline prices must increase. Prices of other key products will rise except for heavy fuel oil. The product price increase will pull up crude prices.

There is a historical precedent for such increases. Early this century, new regulations were introduced requiring the removal of sulfur from diesel fuel. Prices rose when shortages developed. An economic recession followed.

Professor James Hamilton of the University of California San Diego published a detailed analysis of how higher oil prices in 2007 contributed to the economic recession that, according to the National Bureau of Economic Research, began in December 2007. We use the approach employed by Professor Hamilton here to estimate the IMO 2020 rule's potential impact on the US economy.

We examined this impact under three different supply-and-demand gap scenarios: the consensus case of one million barrels per day, a smaller gap of five hundred thousand barrels

per day, and a larger gap of 1.5 million barrels per day. We calculated changes in diesel prices for each gap using two different price elasticities: -0.1 and -0.05. The price increases associated with the gaps range from $30 per barrel to $180, with the lowest increase occurring with a price elasticity of -0.1 and a gap of five hundred thousand barrels per day and the largest increase with a gap is 1.5 million barrels per day and an elasticity of -0.05.

GDP losses range from -0.6 percent to 7.1 percent of 2020 GDP, clearly a very wide range. Our cover graph shows the GDP decline under two different multipliers that relate the change in consumer spending to changes in GDP. Note that the graph shows five rather six cases because two of the cases we examined produced identical results.

The wide range of the simulations was dictated by uncertainty concerning the IMO regulation's impact and the strength of global economic activity in 2020 when the rule takes effect. The economic effect will be more severe in 2020 if the global economy is growing rapidly, as it was in early 2018 or in late 2007. It will be less severe if an economic slowdown is under way.

While it is obviously too early to estimate the IMO 2020 impact with any precision, one can say that the regulation will likely have a very noticeable and memorable effect if the analyses of the diesel supply-and-demand gap completed by various organizations are close to being correct.