

Links between oil prices and the stock market



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Sections Notes

the theoretical transmission relationship between oil prices and the stock market

The mechanisms through which oil prices affect the stock market are:

- Valuing a stock (production cost)
- Inflation and interest rates
- Income effect
- Fiscal policy
- Uncertainty about the above channels (not

written)

This
makes oil
price a
common
variable
that affect
all stock
prices.

Three 1-Mixed
strand of result on the
literature effect of oil
examine price change
the effect and the stock
of oil market.
prices 2-Information
change on diffusion
the stock hypothesis.
market. The market
(from underreact to
Phan et al. oil price
2014) news.
3-Asymmetric
effect on

stock returns.

Oil price

increase have

high effect on

macroecono

mic variables

compared to

price

decrease.

The

market

reaction

to news

because

of news

attention

to a topic.

For

example,

if there is

high

number of

newspape

r articles

written

about oil
prices is
changing
interest
rate
means
that oil-
consumer
company
reaction is
going to
be
negative.

Yuan

Phan et al. - Oil
2015 price news
contains
information
for both oil-
consumer
and oil-
producer
firms. Making
investors
reaction to

oil-news
sector-
dependant
and
interpretation
of those news
may vary.

- Not
necessarily
under-
reaction to
new
information
about the oil
price but also
to what the
market
participants
are expecting
from this new
information.

Is it Finding out
because what
oil price newspapers
news or are talking

stories about along
that could oil changes is
be also
imbedded important to
with oil identify the
news underlying
cause of
stock price
movements
in response
to oil price
fluctuations.
In other
words, when
news are only
talking about
fundamentals
this means
that oil price
change would
only affect
oil-related
companies
however,
when oil-
related news

are talking

what could

possibly

happen after

oil price

change.

My 1- How are
original oil-related
research narratives
questions: determined?

2- Has the
narrative
around oil
changed over
time and
across
countries?

3- Do oil-
related
narratives
affect the oil
market?

4- Do oil-
related

narratives
affect the
stock market?

5- What
determines
whether a
particular
narrative
affects
traders?

- The link mechanism between oil price and the stock market

A large body of literature argue that crude oil prices affect the real economic growth by both supply and demand (see Rasche and Tatom (1977, 1981), Kim and Loungani (1992), and Rotemberg and Woodford (1996)). The supply side effect is related to crude oil to be a basic production input, whereas the demand side effects is related to consumption and investment. Generally, a rise in oil price reduces stock market returns but the effect is heterogeneous based on classification of firms to be either a consumer or a producer of oil, or whether a country is an oil exporter or importer (see Oberndorfer, 2009; Mohanty and Nandha, 2011, Narayan and Sharma 2014 among others). As a result, the effect of oil price changes could be transferred to the stock market through different channels.

The first channel is the influence of oil prices on the stock value. When valuing as stock price the expected cash flows are discounted. The discount

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rate is based on many factors including oil prices, thus, any changes in the oil price could affect the firm's cash flows either negatively or positively and the change depends if the firm is an oil-producer or consumer (see Oberndorfer, 2009; Mohanty and Nandha, 2011). For oil-consumer firms, higher prices lead to higher production costs which means decrease in future cash flows, whereas for oil-producer firms higher oil prices means higher profits and thus higher future cash flows (Bohi 1991; Mork, Olsen, and Mysen 1994; Hampton, 1995; Brown and Yucel 1999; Filis *et al.*, 2011). Intuitively, we would expect that positive news about oil for oil-producer firms' price would exhibit bullish behaviour, whereas reverse holds true for oil-consumer firms.

The second channel is through interest rates and inflation. As mentioned higher oil prices lead to higher production costs those costs then are transferred to retail prices and thus rising expected inflation (Hamilton 1996, 1988). Expecting that the central bank would respond to the high inflation pressures and increase the short-term interest rates (Basher and Sadorsky, 2006). The effects of this monetary policy when imposed means higher commercial borrowing and higher borrowing costs lead to fewer positive net present value projects (low cash flows). Due to increased interest rates and/or lower cash flows the price of the stock would decrease in value. However, it is worth noting that this monetary policy change depends on the central bank's timing of the response and credibility to stabilize inflation. High credibility central bank would maintain inflation expectations to remain stable despite oil price increase and thus close to the inflation target. If this holds true, we do not expect a significant inflation increase because of oil

price increase. On the other hand, in a low credibility central bank case, inflation expectations would be volatile, and this results in greater change of inflation expectation, following an oil price increase, which leads to an even worse impact on the stock market prices. Furthermore, monetary policy response depends on the time of the oil price change either during demand or supply shocks (Krichene, 2006).

The third is the income effect channel. According to this channel, fluctuations in oil prices would result in changes in both production costs and income (see Hamilton, 1983; Hamilton, 2003; Kilian, 2008a, 2008b; Hamilton, 2009a). The production cost effect has been discussed above, thus the income effect will be discussed in this section. Positive oil prices tend to lead to lower the discretionary income of households, because of the changes in retail prices (as a result of increased production costs), and also because of the increase of gasoline and heating oil prices (Bernanke, 2006; Edelstein and Kilian, 2009). Lower income leads negative wealth effect. In particular aggregate consumption mostly spent on gasoline and thus affecting the aggregate demand of other goods and services which further leads to lower labour demand. Such developments tend affect the stock markets negatively. The lower aggregate demand leads to lower expected cash flows for firms, and thus lower stock market prices. However, this effect may only hold for oil-importing countries. For oil-exporting countries, they will experience the same production cost, but the income cost would be beneficial given the increased oil revenues as the value of export demand for raising oil prices, leading to higher aggregate demand and consequently higher output. The benefit will occur only if the production costs not as high

as the income costs. In this case, the stock markets will respond positively as a result of increased output, and it will boost the expected cash flows of the firms operating in that country.

The fourth effect is changes in oil prices may cause changes in the fiscal policy. This effect is primary concern for oil-exporting countries, because of oil revenue that is used to finance infrastructure in those countries (see, Ayadi 2005; Farzanegan 2011; Emami and Adibpour 2012). Oil price tend to transfer wealth from oil-importing to oil-exporting countries (Dohner, 1981) which means that the oil revenue is used for government spending. If we assume that consumption and government spending are considered complements, then spending will lead to higher household consumption. Therefore, private firms are expected to increase cash flows and thus profitability which potentially push stock prices to higher levels.

In addition to the oil prices change caused by fundamentals (such as global supply and demand) on the economic growth, there are many exogenous variables that also contribute in oil price shocks. This relationship may also be examined based on the underlying cause of those shocks (Cunado and da Gracia (2014); Kilian and Park (2009)). Some shocks are caused by non-fundamental factors such as financial crises, geopolitics, US dollar exchange rates or even speculation which alter the behaviour of oil prices and subsequently the stock market returns. Those underlying causes may intensify the effect of oil prices on stock markets (Ajmi, El-montasser, Hammoudeh, & Nguyen, 2014). The US stock market response to oil prices changes before, after and during the GFC is heterogeneous. Similarly, stock market response to oil prices changes varies in the US and European

countries during times of political instabilities in the Middle East such as the two Iraq wars or during the civil unrest in Iraq in 2006 (Kollias et al. (2013) and Bharn and Nikolovann (2010)). Overall, the stock market reaction to changes in oil prices is associated with uncertainty that revolves around oil market.

Oil-related news and the stock market

The different dynamics that oil price have suggest that news about oil may affect the stock market differently over time. Market efficiency implies that investors reaction to fundamentals is immediately absorbed in the stock price however, oil price news may contain more than change in fundamentals. As discussed above changes in oil prices could be caused by several underlying factors and those factors has consequences on the stock market. Put differently, there are factors directly affect the oil price and oil-dependent industries such as wars, whereas other industries are susceptible to what changes in oil price may entail. Identifying the story behind

Investors tend to underreact to oil price news (see Driesprong et al. 2008 and Jones and Kaul (1996)). This lag is attributed to the gradual diffusion hypothesis proposed by Hong and Stein (1999) and Hong et al. (2007) which states that under reaction by investors when oil price news arrive. Different sectors react to oil news at different speed (Narayan and Narayan (2017)) which appear that the market absorb information differently and new information about oil may contain more than news about fundamentals. Making investors reaction to oil-news sector-dependant and interpolation of those news may vary. This may also mean that investors' slow reaction to oil

news could be because what are they expecting from this new information because as mentioned above oil news may affect the whole economy.

Oil prices have asymmetric effects on macroeconomic variables (Mork, 1989) and on fuel prices (Bacon 1991). Mork (1989) shows that increase in oil prices has a higher influence on macroeconomic variables when compared to a decrease in oil prices. Several studies support this asymmetric relationship and show this effect is transferred to the stock market through the macroeconomic channels discussed (see for example Sadorsky, 1999; Kilian and Park, 2009; Arouri, 2011). Nonlinearity between oil price and the stock price also explain the lagged reaction to oil price change. Whether oil price change would economic activity, shows that investors may have difficulty in assessing the impact of information on the value of the stock market, and when they react to information at different points in time (Phan et al. 2015). For example, newspapers' attention to what changes from oil price could have on the interest rates possibly explain the late reaction to oil price changes. Moreover, this also explained by the mixed reaction in the literature when examining the oil-stock relationship across sectors or firms (see examples for both sector and firm level Elyasiani, Mansur, & Odusami, 2011, 2013; Narayan & Sharma, 2011; Gupta, 2016; Narayan & Narayan, 2014; Narayan & Sharma, 2011; Phan et al., 2015; Sadorsky, 2008; Tsai, 2015).

Oil-stock relationship varies over time because of many internal and external causes affecting the oil prices (Ajmi, El-montasser, Hammoudeh, & Nguyen, 2014) and because oil price is considered as macroeconomic variable that potentially affect all stocks (see Birz and Lott (2011), Flannery and

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Protopapadakis (2002)). Time variation makes news about oil to be time-dependant as well. Therefore, over the time oil-related news could contain relevant information to oil-dependent companies, but those information may be irrelevant to other companies. Identifying what newspapers are talking about along with oil changes is also important to identify the underlying cause of stock price movements in response to oil price fluctuations. In other words, when news are only talking about fundamentals this means that oil price change would only affect oil-related companies however, when oil-related news are talking what could possibly happen after oil price change. Analysing the effect of news content disentangle exogenous and endogenous factors and understand which news are really important and how they incorporated in prices. In order to identify different stories or topics underlying those movement carrying a topic modelling and find which story is trending and find its effect on the stock market.

- Explain the commonalties between oil market and the stock market in terms of liquidity correlation.
- The importance of energy commodities especially oil as an alternative speculative investment.
- They share the same events that affect both markets.

KRICHENE, M. N. 2006. *World crude oil markets: Monetary policy and the recent oil shock* , International Monetary Fund.