THE OIL PRICE SHOCKS IMPACT ON STOCK MARKET RETURNS IN DEVELOPED OIL-EXPORTING AND OIL-IMPORTING COUNTRIES

by

Amir Tussupov

Dissertation for Master of Finance

Advised by:

Paulo Jorge Marques de Oliveira Ribeiro Pereira
Natércia Silva Fortuna

2016

Biographical note

Amir Tussupov was born in Kazakhstan on the 16th October 1991. He completed his bachelor degree in Public Administration at E.A.Buketov Karaganda State University, Kazakhstan, in 2008. Later, he enrolled in the master degree in State and Local Government at the same university and the bachelor degree in Jurisprudence at Karaganda Private University, both in Kazakhstan during 2012-2014. Finishing, in 2014 Amir has been awarded by European Commission scholarship to obtain Master in Finance degree at the University of Porto under Erasmus Mundus TOSCA II programme.

Amir is a member of "Eurasian Economic Club of Scientists" Association, author of 23 published scientific and practical papers in Kazakhstan, Russia, Czech Republic and Ukraine. He finished high school with honors and won state scholarships to obtain bachelor and master degrees at E.A.Buketov Karaganda State University. In 2011 year he received a Presidential scholarship and in 2013 – scholarship of the Fund of the First President of Kazakhstan.

In 2011 and 2012 Amir was awarded by “Top moderator” and “Top 5 participants” diplomas respectively, provided by the “Astana Club of Nobel Laureates” Corporate Foundation during the Astana Economic Forum.

During summer 2015 Amir has been accepted as an intern at Continental AG in the world headquarters located in Hannover, Germany. Functions performed have been related to Financial controlling duties.

Acknowledgements

I would like to express my deepest gratitude to my supervisor Paulo Pereira and co-supervisor Natércia Fortuna for their dedication and support in the process of writing the dissertation. Without their guidance and valuable comments, dissertation would not have turned out as a finished research.

It was very difficult to find a person who could supervise even if the chosen field of studies is not his profile. That is why I am very thankful to Professor Paulo Pereira, he took an initiative to guide me since the beginning till the end of my master. It deserves a huge honor from his side to delegate time and efforts for knowing new literature and approaches, providing relevant feedback and remarks.

I would like to devote an individual attitude to Professor Natércia Fortuna for her tremendous patience and recommendations all the way through investigations. Having a busy schedule, she still provided me thorough instruction dealing with econometric regressions and their interpretations. It was important to have an econometrician in the team, who is familiar with a specific methodology.

It was a pleasure to work with them and I hope our collaboration will continue afterwards. I will be remembering FEP and supporting University of Porto throughout all my life on the right of its alumnus.

Abstract

This work aims to study the stock market returns response to the oil-price shocks of a sample of several developed oil-exporting and oil-importing countries. A structural vector autoregressive model for crude oil market proposed by Kilian (2009) and Kilian and Park (2009) has been used. We found mixed results of the stock market responses which can be explained individually while considering each country specific characteristics, such as economy dependency on crude oil commodity, crude oil production, net position in the global market, import and exports percentages of oil production, external balance on goods and services as a percentage of GDP. A global aggregate demand shock is reported to be the only shock that has a permanent and persistent impact on real stock market returns regardless of what kind of country it is.

Key-words: oil price shocks, stock market, **S**VAR model.

JEL-Codes: Q43, G12, C32

Index

List of acronyms used

ADF – Augmented Dickey-Fuller unit root test

AIC – Akaike Information Criterion

CPI – Consumer Price Index

DAX 30 – Deutscher Aktien Index 30, Germany

EXCH – Exchange rate shock

FPE – Final Prediction Error

GDP – Gross Domestic Product

HQ – Hannan-Quinn information criterion

INT_R – Interest rate shock

IRFs – Impulse response functions

KPSS – Kwiatkowski–Phillips–Schmidt–Shin unit root test

Ktoe – Thousand tons of oil equivalent on a net calorific value basis

LR – Sequential modified Likelihood ratio test statistics

NIKKEI 225 – NIKKEI index for Tokyo stock exchange, Japan

OMXC 20 – OMX Copenhagen 20 Index, Denmark

OSEAX – Oslo Stock Exchange All share index, Norway

PP – Philips-Perron unit root test

PRODC – Global oil supply shock

REA – Aggregate demand shock (or real economic activity shock)

RPO – Oil-specific demand shock

S&P 500 – Standard&Poor's 500 Index, United States

S&P/TSX Composite - S&P/Toronto stock exchange composite index, Canada

SC – Schwarz Information Criterion

SVAR – Structural Vector Autoregressive model

TPES – Total Primary Energy Supply

US – United States

VAR – Vector Autoregressive model

1. Introduction

Modern world represented by carbon and technology-based economies forced to purchase energy resources to maintain and expand their activities. It is obvious that economies do not concentrate on one direction, but mix them taking into account available mainland characteristics. However, carbon-based resources are still the most required sources of energy and its further replacement by alternatives in such necessary volume sounds impossible at the closely time.

Oil price changes affect the global economy and establish conditions in the market to trade. Particularly, oil price changes affect directly those countries, where the carbon-based products represent a substantial part of the budget receivables or expenses.

Contemporaneously, the economic literature shows that not many economists dedicated their interests to the impact of oil prices changes on the stock market, preferably paying more attention to the relationship with macroeconomic indicators, such as output, unemployment, interest rates, wages, aggregate economic activity and others. Recently, the topic started to attract more proponents. As a result, Kilian (2009) developed a structural vector autoregressive model for the crude oil market and Kilian and Park (2009) used the model to discover oil price shocks effect on stock market returns.

The present study aims to investigate the relationship between oil price shocks and real stock market returns within a sample of six developed oil-exporting and oil-importing countries. The research obtains much relevance due to the high oil dependency for world economies. Therefore, it is important to understand how different causes of oil price shocks affect stock market returns. Another caution is to monitor stock market responses in oil-exporting and oil-importing countries in groups, do they vary or not. All together this probably will improve stock returns forecasting accuracy, provide relevant information for investors, build a diversified portfolio, and for companies, to determine risk management strategy.

The study contributes new empirical evidence to economic literature applying 4-variable Kilian and Park (2009) SVAR model and fills an existing gap constructing a new model by adding interest rates and exchange rates as explanatory variables. Using SVAR approach, we address limitations of the common studies who consider oil prices as exogenous, allowing also for reversal causality. Under support from Sims *et al.* (1990) and Lütkepohl

(2011), we included systems I(0) and I(1) variables into SVARs in order to capture all relevant information of the interrelationship between variables. To note, Kilian (2009) and Kilian and Park (2009) also used variables at levels.

The results of stock returns response are mixed with regards to the oil-supply shock, oil-specific demand shock, interest rate and exchange rate shocks. Nonetheless, an aggregate demand shock and own shock effects on stock markets are shown to be positively statistically significant for all countries in a sample. We also suggest that for better understanding how and in what degree oil price shocks affect real stock returns one has to investigate each country specific characteristics. Our results also report that addition of the interest and exchange rates to the SVARs have an impact on the final results of the responses. More details in the main body of the dissertation.

Besides this chapter, the dissertation is structured as follows. The Chapter 2 provides a literature review of the studies on oil price shocks impact on macroeconomic variables and the stock market. In this section, existing literature based on SVAR model is separately analyzed. The Chapter 3 describes theoretical frameworks of the applied methodology. Following, Chapter 4 says about data and countries selection process. Empirical findings are also included and consist of impulse response and variance decomposition analyses. The Chapter 5 states concluding remarks of the dissertation and possible further research directions.

2. Literature review

For each scientific study, it is important to understand the evolution and logics of the previous studies in order to take into consideration wider knowledge on the topic, analyze and explain different findings as well as determine white-spots available for researchers to investigate.

The literature review of the actual work is structured in a way to be chronologically clear. To have the best view on academics' thoughts evolution, first, we present short summaries of studies devoted to the impact of oil price shocks on macroeconomic indicators, such as aggregate economic activity, wages, employment *etc*. (Section 2.1). Then, we summarize findings of the most relevant studies that are directly related to our focus zone - the oil price shocks impact on stock market returns, while those of them who used SVAR approach are presented separately in the Section 2.3.

2.1. Oil price shocks impact on macroeconomic variables

To date, economic literature has a wide range of scientific articles devoted to the oil price shocks. Nonetheless, the majority of them focused on their impact on the economy at macro level, its main indicators, while not many decided to study the stock market responses. A summary of a few existing literature is organized and presented below.

The oil price shock, following by the deep recession in the United States (US) 1973, became a catalyzer for economists to conduct researches on energy commodities' prices in order to understand the nature of them and to be able to offer the society relevant explanations what happened and its causes.

One among of the first authors who studied the relationship between oil prices and economic activities were Rasche and Tatom (1981). They analyzed six countries data (United Kingdom, Japan, Canada, Germany, France and United States) and became to result that sharp increases in energy prices (relatively to the output prices, most important in 1974 and 1979-1980) have reduced economic capacity. Hence, there is an inverse relationship between oil price increases and aggregate economic activity.

Hamilton (1983) argued a negative relationship between oil price changes and output during 1948-1980 for United States by rejecting common at that time hypothesis that correlation represents a historical coincidence and all factors responsible for recessions happen at the time when oil prices shocks appear by luck.

Gisser and Goodwin (1986) concluded that crude oil prices have a significant impact on the US macroeconomic indicators, even more, changes in the oil prices always have had a stronger effect than fiscal policy and often stronger than monetary policy. No dramatic impact on macroeconomy in the sequence of 1973 OPEC embargo is argued by authors.

Davis (1987) argued that oil price changes lead to cross-sectoral workforce dispersion while real business cycle models, those that take into consideration oil price shocks allocative effects, can explain the significant production and employment declines followed by oil price increases in the postwar period. Performing its own research, Daniel (1997) ended up with the conclusion that oil price shocks had a substantial impact on the U.S. industrial production.

Some economists started to develop specific models in order to be more reliable. For instance, Raymond and Rich (1997) developed a generalized Markov switching model of GDP to evaluate the relationship between oil price shocks and United States' output fluctuations. Their econometric model was designed to measure the impact of the real oil price increases on the shifts in the mean of GDP growth as well as to predict switches between the low-growth phases to high-growth ones and the opposite. At the end, authors did not confirm the ability of the real oil price to change the GDP growth forcing its phases mean, so oil price shocks have not been a principal factor even if they explained GDP growth changes at the recession times during 1973-1975 and 1980.

Likewise, Carruth *et al.* (1998) developed an econometric model with a purpose to analyze unemployment rate affected by the real price of oil and the real rate of interest. Hence, economists elaborated an efficiency-wage model affected by input prices and came up with the ending that their model was able to track the evolution of unemployment rate from 1979 through 1995 significantly outperforming forecasts of professionals. It is relevant to notice that the strongest role in the model's success belonged to the real oil price.

Some years later, Muellbauer and Nunziata (2001) developed a comprehensive 1-year ahead forecasting model of U.S. GDP for 1955-2000, examining several variables while the

oil price was among them being prominent. Originated model was successful in predicting 2001 recession in the country.

Another group of researchers decided to question oil price impact on real wages. The paper written by Keane and Prasad (1996) conducted the following statements to consider: 1) oil price increases unambiguously lead to real wage decreases at the aggregate level and over all sectors; 2) oil prices increases lead to absolute value wage cuts, however, better-skilled workers become receiving higher salary relatively to less skilled workers; 3) oil price increases do not reduce aggregate employment in the long run.

Backus and Crucini (2000) documented how dramatic was the impact of oil price changes on the prices of international trade between major industrialized countries, such as Australia, Canada, France, Germany, Italy, Japan, United States and United Kingdom, during the period from 1972 to 1987.

Lee and Ni (2002) reported that oil price shocks not only have a negative relationship with almost all industries outputs but also determined that shocks mostly affect the supply of oil-intensive industries and the demand of other industries (especially automotive industry). In addition, they found that increased operating cost of durable goods and heightened uncertainty were major reasons for oil price shocks to induce recessions.

Hamilton (2003) pointed out that the best way to predict GDP growth is to use the nonlinear function of the oil price changes. Another conclusion by author represents an opinion that decreases in oil prices have less importance for predicting GDP than increases while forecasting after volatile oil price period has more difficulties to be successful.

2.2. Oil price shocks impact on stock market

To date, economic literature does not have a consensus on the relationship between oil price shocks and the stock market. Therefore, existing evidence is classified into three main groups according to their concluding remarks: positive impact proponents, negative impact proponents, no impact proponents.

Authors that belong to the first division argue that the relationship between oil price shocks and the stock market is significantly positive. For instance, Faff and Brailsford (1999) using augmented market model analyzed Australian stock market during the 1983-1996

period and came to the conclusion that oil price increases cause stock returns' increases for oil and gas industry as well as for diversified resources industries. El-Sharif *et al.* (2005) pointed out the significantly positive relationship between oil prices and UK companies' equity returns that operate in oil and gas industry.

Not long ago, Park and Ratti (2008) reported the positive response of the real stock returns to oil price shocks for Norwegian stock market. The same findings are presented by Arouri *et al.* (2010) concerning to Qatar, Oman, Saudi Arabia and UAE. Narayan and Narayan (2010) stressed out significantly positive oil price impact on Vietnamese stock prices in the long run. Fayyad and Daly (2011) confirmed economic theory rationalities arguing that oil-exporting countries, such as Oman, Qatar and United Kingdom, meaning their stock markets, are positively correlated with oil price shocks.

Further, Ono (2011), using two series[1] and BRICs countries as a sample, provided results of a positive oil price impact on Russian and Indian stock market returns[2]. Taking Chinese stock market as a sample location, Zhang and Chen (2011) applied ARMA-GARCH and ARJI($-h_t$)-EGARCH models disentangling oil price fluctuations to expected, unexpected and negatively unexpected components. At the end, they came up with a not strong response from Chinese stock market to the world oil price shocks, but significantly positive feedback to its expected component.

The second division suggesting a negative impact of oil price shocks on the stock market represents a quite large group of proponents. Kling (1985) stated that crude oil price increases lead to stock market decline, especially strong negative effect was processed for industries that use oil as input factors. Data for the research taken for US within 1973-1982.

In like manner, Jones and Kaul (1996) documented a strong negative correlation between oil price changes and stock prices due to their direct impact on the current and expected real cash flows. Data taken for US stock markets during 1947-1991, Canadian stock markets for 1960-1991, Japanese stock market for 1970-1991 and United Kingdom for 1962-

[1] Ono S. (2011) used two series to proceed with research in order to capture different in value exchange rates and CPI effects of each country in a sample. National oil prices are calculated as a multiplication of world oil prices and appropriately selected exchange rate.
[2] Russian stock market returns were significantly positive for both series while Indian one only in case of world oil price shock.

1991. Another outcome proposed by authors is that "the postwar oil shocks appear to have generated volatility in the Japanese and United Kingdom stock markets that is in "excess" of what can be explained by existing rational models" (p. 483).

Sadorsky (1991) using VAR approach concluded that "…oil price shock has a negative and statistically significant initial impact on stock returns…", "…oil price and oil price volatility both play important roles in affecting economic activity…", "…changes in oil prices impact economic activity, but changes in economic activity have little impact on oil prices…" (p. 458).

The third division academics recommend no correlation between oil price shocks and stock market or simply do not have any evidence to oppose that. For instance, Chen *et al.* (1986) "examined the impact of an index of oil price changes on asset pricing and found no overall effect" and concluded that stock prices "exposed to systematic economic news … priced in accordance with their exposure" (p. 402). Huang *et al.* (1996) using VAR approach understood that there is no correlation between oil futures returns and stock market returns. In its turn, Wei (2003) tried to evaluate the effect of energy price increase in 1973-1974 on the market capitalization of United States firms and came up with negligible impact.

More recently, Arouri *et al.* (2010) performing an investigation of the GCC countries' stock markets documented no significant impact of oil price shocks for Bahrain and Kuwait. Kapusuzoglu (2011) ended up saying that international oil price does not have any explanatory power on the Turkish stock market.

2.3. SVAR empirical evidence

The importance of structural vector autoregressive (SVAR) approach lies in its capacity to investigate in more details the "oil price – stock market" relationship to answer questions corresponded with non-uniform results after oil price shocks. The point is that by elaborating SVAR model authors are successful in showing that different causes of oil price changes lead to the different effects on the stock market. This and other findings inspired the author to continue the topic by applying the same model to get results and compare them with previous studies, proceed with the model modification.

It is important to mention Kilian (2009) as one among the first authors who focused on the causes of oil price shocks while previous literature concentrated more on impact existence or non-existence. Thus, Kilian (2009) explored that causes of oil price shocks do matter in terms of direction and scale of their effects. He decomposed oil price to components providing variety possibilities for the further investigations.

Following, Kilian and Park (2009) applied developed by Kilian (2009) crude oil market SVAR model and investigated oil price shocks impact on US stock returns: "response of US real stock returns to oil price shocks differs substantially, depending on the underlying causes of the oil price increase. Shocks to the production of crude oil are less important for understanding changes in stock prices than shocks to the global aggregate demand for industrial commodities or shocks to the precautionary demand for oil that reflect uncertainty about future oil supply shortfalls" (p. 1285-1286). At the end, authors documented that the observed demand and supply shocks jointly account for 22% of the long-run variation in United States real stock returns 1973M01-2006M12.

Kilian and Park' findings (2009) were surely appreciated by other researchers, and consequently some authors decided to follow their approach. Apergis and Miller (2009), Wang *et al.* (2013) and Lin *et al.* (2014) applied Kilian and Park' SVAR model without any changes while Basher *et al.* (2012) adjusted the model by adding exchange and interest rates.

By analyzing eight developed countries, Apergis and Miller (2009) observed results that contradict those proposed by Kilian and Park (2009). Nonetheless, their results differ by country. No oil price shocks impact on stock market returns in Canada and Japan is observed, while oil supply shock had a significant impact on Australian stock returns. French stock returns are affected only by aggregate demand shock while oil-specific demand shock matters only in Germany, Italy, United Kingdom and United States. Apergis and Miller (2009) managed data for 27 years 1987M01-2007M12 and documented low significance level for the oil price shocks. Talking about variance decomposition, they argued a relatively small explanatory power of the oil price shocks in the long-run in percentage terms from the lowest 7.78% for Canada to the highest 16.27% for Italy.

Wang *et al.* (2013) reported that overall explanatory power of the oil price components varies from 20% to 30% during 1999M01-2011M12. It ranges because authors analyzed a

sample of 16 countries becoming first researchers who differentiated countries to oil-exporting and oil-importing ones. Their results partially contradict those of Kilian and Park (2009) by suggesting no significant impact of the oil-supply shock, positively significant impact of aggregate demand shock and oil-specific shocks. It is essential to note that oil-specific demand shock effect mainly belongs to oil-exporting countries while oil-importing are not affected by the shock except China. The impact of oil price shocks on stock market returns in oil-importing countries is much weaker and less persistent than those in oil-exporting countries. The present research findings are similar to Wang *et al.* (2013) in terms of stock returns responses, countries' differentiation according to net oil market position, quite similar timespan of data but having deeper analyses of each country's crude oil component characteristics and capturing all interrelationship between the variables in SVAR system.

By analyzing MSCI index for emerging countries 1988M01-2008M12, Basher *et al.* (2012) documented not significant impact of oil supply shock and positively significant aggregate demand shock for first 3 months. Non-significance of the relationship between emerging stock markets and the real oil price was determined by authors meaning no impact of the oil-specific shocks. The only significant factors appeared to be are interest rates and exchange rates shock, both in a negative way. In addition, Basher S. *et al.* (2012) argued that emerging stock market prices positively affect the oil prices. Recently, Lin *et al.* (2014) have conducted a research using Kilian and Park' SVAR model to analyze Chinese stock market performance during 1997M01-2008M12. The results are: oil-specific demand shock had a positive impact on China's stock returns, oil supply shock and global demand shock had no significant impact on Chinese stock market (partially contradict Kilian and Park (2009).

To sum up, a small body of literature devoted to the SVARs application for stock returns responses due to oil price shocks, and since findings are mixed we are not able to decide which of them are more relevant. The present research leads to shedding a light not only by contributing a new empirical evidence of 4-variable SVAR model but also trying to figure out why such responses were obtained. In addition, we checked responses reaction if interest rates and exchange rates added to the SVARs developing a new model have not been used previously by academics.

3. Methodology

This Chapter is structured as follows: in Section 3.1, the theoretical framework of applied methodology is discussed. Section 3.2 presents applied for stock market crude oil market SVAR model proposed by Kilian and Park (2009) and its further modification by adding interest rates and exchange rates.

3.1. Vector Autoregressive Model

A way to summarize the dynamics of macroeconomic data is to make use of vector autoregression. Vector autoregressive models[3] (VARs) were first proposed by Sims (1980) as a natural generalization of univariate autoregressive models. A VAR is often considered as an alternative to traditional large-scale dynamic simultaneous equation models.

In its basic form, a VAR(*p*) process is defined as follows:

$$\boldsymbol{y_t} = \boldsymbol{A_1 y_{t-1}} + \ldots + \boldsymbol{A_p y_{t-p}} + \boldsymbol{u_t} \ ,$$

with *K* endogenous variables $\boldsymbol{y_t} = (y_{t1}, \ldots, y_{kt}, \ldots, y_{Kt})$ for *k* = 1, 2, 3, … *K*, $\boldsymbol{A_i}$ coefficient matrices (*K* x *K)* for *i* = 1, 2, 3, …, *p* and $\boldsymbol{u_t}$ is a white noise disturbance term with $\mathbf{E}(\boldsymbol{u_t}) = \mathbf{0}$ and $\mathbf{E}(\boldsymbol{u_t u_t^T}) = \sum_{\boldsymbol{u}}$.

For simplicity, a VAR represents a n-equation, n-variable model in which each variable is in turn explained by its own lagged values plus current and past values of the remaining $n - 1$ variables. Another way to show the nature of VAR is to think of the reduced form of a dynamic economic system involving a vector of variables $\boldsymbol{y_t}$. Let us consider the simplest case of VAR – bivariate VAR with only two variables $\boldsymbol{y_{1,t}}$, $\boldsymbol{y_{2,t}}$ while we know that each of whose current values depend on the previous *k* values of both the variables (for bivariate VAR *k* is equal to 1):

$$\begin{pmatrix} \boldsymbol{y_{1,t}} \\ \boldsymbol{y_{2,t}} \end{pmatrix} = \begin{pmatrix} \boldsymbol{\beta_{10}} \\ \boldsymbol{\beta_{20}} \end{pmatrix} + \begin{pmatrix} \boldsymbol{\beta_{1,11}} & \boldsymbol{\alpha_{1,11}} \\ \boldsymbol{\alpha_{2,21}} & \boldsymbol{\beta_{2,21}} \end{pmatrix} \begin{pmatrix} \boldsymbol{y_{1,t-1}} \\ \boldsymbol{y_{2,t-1}} \end{pmatrix} + \begin{pmatrix} \boldsymbol{u_{1,t}} \\ \boldsymbol{u_{2,t}} \end{pmatrix}$$

Nowadays, VAR models became increasingly popular due to economists' interest to identify the response of macroeconomic variables to various impulses. VARs consider

[3] Vector autoregressive theory content refers to Sims (1980), Pfaff (2008) and Brooks (2008).

variables to be endogenous, however, the model allows putting appropriate restrictions that have to be in line with economic theory rationale making some variables exogenous. That is called as structural factorization or shocks' identification providing a notion of the structural vector autoregressive model (SVAR).

SVARs make explicit identifying assumptions to isolate estimates of some disturbances that can have an impact on them in order to ensure expected results propriety while keeping the model autonomic of the many additional restrictive assumptions necessary to provide every parameter a behavioral interpretation.

3.2 Structural vector autoregressive model

The SVAR proposed by Kilian (2009) and Kilian and Park (2009) has been estimated on a monthly data basis for the vector time series $\boldsymbol{y_t}$ and has a following representation:

$$\boldsymbol{A_0\, y_t = \alpha + \sum_{i=1}^{24} A_i\, y_{t-i} + \varepsilon_t}$$

where $\boldsymbol{\varepsilon_t}$ denotes the vector of serially and mutually uncorrelated structural innovations. "The structural innovations are derived from the reduced-form innovations by imposing exclusion restrictions on $\boldsymbol{A_0^{-1}}$. The model sets a block-recursive structure on the contemporaneous relationship between the reduced-form disturbances and the underlying structural disturbances" (Kilian and Park, 2009, pp. 1270).

The sample is taken by authors from 1973M01 to 2006M12 while assumptions for the SVAR are as following:

$$\boldsymbol{e_t} = \begin{pmatrix} e_{1t}^{\Delta global\ oil\ production} \\ e_{2t}^{global\ real\ activity} \\ e_{3t}^{real\ price\ of\ oil} \\ e_{4t}^{U.S.stock\ returns} \end{pmatrix} = \begin{bmatrix} a_{11} & 0 & 0 & 0 \\ a_{21} & a_{22} & 0 & 0 \\ a_{31} & a_{32} & a_{33} & 0 \\ a_{41} & a_{42} & a_{43} & a_{44} \end{bmatrix} \begin{pmatrix} e_{1t}^{oil\ supply\ shock} \\ e_{2t}^{aggregate\ demand\ shock} \\ e_{3t}^{oil-specific\ demand\ shock} \\ e_{4t}^{other\ shocks\ to\ returns} \end{pmatrix}$$

SVAR model allows understanding if the differently caused oil price shocks impact in the same manner on the stock market or not. Hence, these are the main oil price shocks catalyzers resulting in a different response by stock market:

1) **Oil supply shock** - unpredictable innovations to global oil production.

There are many possible reasons that can easily change the oil market supply. One of them is technological revolution expressed in the ability of the new machines to be more productive. Another scenario could be shocks driven by exogenous political events in the Middle East, *etc*.

An important fact to notice is an assumption of not allowing crude oil supply to respond any innovations within the same month. The relevance of this thinking is explicit because usually oil-producing countries are slow to answer the demand shocks since the process of doing has high costs and pressures to change established policies and forecasts (Yergin, 1992).

2) Aggregate demand shock - global real economic activity factor that influences crude oil price due to the changes in the global demand for industrial commodities. The performance of this particular shock has been controlled by the following restriction: increases in the real price of oil driven by shocks that are specific to the oil market will not lower global real economic activity within the month, given the sluggishness of global real activity;

3) Oil-specific demand shock - precautionary demand shocks driven by increased uncertainty about the future oil supply shortfalls. The shock has been determined as a remainder effect of the crude oil price that cannot be explained by oil supply shocks or shocks to the aggregate demand for industrial commodities;

4) Other shocks - other shocks that have an impact on stock market returns, but not derived from crude oil supply or demand.

More, Kilian and Park (2009) pointed out the negatively correlated response of the stock market only in case of an oil-specific demand shock. In its turn, the oil supply shock had no significant effect on cumulative stock returns while aggregate demand shock became positively correlated with the stock market.

Kilian and Park's model has some limitations that can have an impact on empirical results. The first limitation addresses an assumption of analyzing as one all shocks that affect crude oil prices, including three different shocks: oil precautionary demand shock, interest rates shock and exchange rates shock. It is clearly stated that the interest rates and exchange rates have an explicit impact on the stock returns through the oil price changes. Interest rates represent discount rate component as well as one of the main tools for Government to rule monetary policy, while exchange rates have importance due to international trade processes.

Taking a look at economic literature, Apergis and Miller (2009) argued that these control variables seem to have explanatory power for stock market returns, while Basher *et al.* (2012) extended the SVAR model by including them. The economic theory rationale recommends negative effect of the positive interest rate shock to the stock market (Fama, 1981; French *et al.*, 1987; Basher *et al.*, 2012). Donnelly and Sheehy (1996), He and Ng (1998), Pan *et al.* (2007) found a causal relationship between exchange rate movements and the stock market.

The second limitation stands for not capturing recessions in econometric model. According to business cycle dating provided by The National Bureau of Economic Research, the United States economy suffered six structural breaks during 1973M01 - 2006M12[4].

The present research addresses both the limitations and differentiates countries to oil-exporting and oil-importing in order to provide more detailed and accurate base for economists to forecast stock markets' performance. Firstly, we study stock market returns responses to the oil price shocks based on Kilian and Park (2009) 4-variable SVAR, but improved with dummies if appropriate. The reduced form VAR is given by[5]:

$$\boldsymbol{y_t} = \boldsymbol{c} + \sum_{i=1}^{24} \boldsymbol{A_i}\, \boldsymbol{y_{t-i}} + \boldsymbol{D_t} + \boldsymbol{u_t}$$

Secondly, we modify the model by adding interest and exchange rates, with dummies if appropriate. The structural representation of the modified 6-variable SVAR model is given by:

$$\boldsymbol{e_t} = \begin{pmatrix} e_{1t}^{\Delta global\ oil\ production} \\ e_{2t}^{global\ real\ activity} \\ e_{3t}^{interest\ rates} \\ e_{4t}^{exchange\ rates} \\ e_{5t}^{real\ price\ of\ oil} \\ e_{6t}^{U.S.stock\ returns} \end{pmatrix} = \begin{bmatrix} a_{11} & 0 & 0 & 0 & 0 & 0 \\ a_{21} & a_{22} & 0 & 0 & 0 & 0 \\ a_{31} & a_{32} & a_{33} & 0 & 0 & 0 \\ a_{41} & a_{42} & a_{43} & a_{44} & 0 & 0 \\ a_{51} & a_{52} & a_{53} & a_{54} & a_{55} & 0 \\ a_{61} & a_{62} & a_{63} & a_{64} & a_{65} & a_{66} \end{bmatrix} \begin{pmatrix} e_{1t}^{oil\ supply\ shock} \\ e_{2t}^{aggregate\ demand\ shock} \\ e_{3t}^{interest\ rate\ shock} \\ e_{4t}^{exchange\ rate\ shock} \\ e_{5t}^{oil-specific\ demand\ shock} \\ e_{6t}^{other\ shocks\ to\ returns} \end{pmatrix}$$

[4] The National Bureau of Economic Research reports 6 recessions during the data sample used by Kilian and Park (2009). They are 1973M11-1975M03, 1980M1-1980M07, 1987M07-1982M11, 1990M07-1991M03, 2001M03-2001M11 and 2007M12-2009M06 (accessed on 21st of May, 2016)

[5] The lag length is chosen to be 24 in accordance with Likelihood Ratios tests. The lag length is in line with Kilian and Park (2009) and common for all countries in a sample.

The identifying assumptions for modified structural vector autoregressive model are extensively consistent with Kilian and Park (2009) and are shown in a standard form of Cholesky ordering. Another important thing to notice is that all variables, even if some I(0) while others I(1), are included in SVAR model simultaneously. This is consistent with Kilian and Park (2009). Sims *et al.* (1990) documented that in many cases stationarity transformations of non-stationary data is unnecessary. They argued that the main objective of VARs is to determine the interrelationship between variables and by differencing to make them stationary the relevant information on any long-run relationship will be thrown away. To note, Bayesian approach also supports selected model structure.

To note, all variables in our SVARs are stationary at first difference while only global monthly real activity index and percentage change of oil production happen to be I(0). It is essential to know that index represents an equal-weighted index of the percent growth rates, so it is given by Kilian in transformed I(1) form. It could be a standard approach of having all variables presented in the model I(1) if we got original level data for the index. However, this task occurs to be unsolvable. Hence, we run SVARs at levels not focusing on variables' mixed stationarity.

By having I(0) and I(1) variables together in the model, it became impossible to check Granger causality since the condition of all series to be stationary of the same order is omitted. The similar problem occurred with Johansen cointegration test: we could not conduct the tests because it was necessary to have original series of data for that, but there is no of Kilian's index[6]. To advocate, Lütkepohl (2011, p.22) argued that VARs at levels "are robust to cointegration of unknown form" and "can be used even if the number of cointegration relationship is unknown".

Summing up, the selected SVARs input approach supported by specific data characteristics allows us to conduct impulse response and variance decomposition analyses.

[6] The index is proposed by Kilian (2009) and represents a global monthly real economic activity measure, which is required as a proxy of the aggregate demand shock in SVARs. The index constructed as growth rate for industrial commodities demand manually collected from Drewry's Shipping Monthly reports.

4. Data and empirical results

The Chapter is structured as follows: in Section 4.1, the countries' sample selection approach is discussed together with data description. Section 4.2 demonstrates empirical findings in forms of the impulse response and variance decomposition analyses.

4.1 Choice of sample and variables

This study uses monthly data, spanning from May 1994 through October 2015. It includes a measure of the world crude oil production, an indicator of global monthly real activity, the real price of crude oil, interest rates, exchange rates and real stock market returns. Our selection criteria for major oil-exporting and oil-importing countries is based on country's net position in the global crude oil market, its economy importance for the world and on its crude oil exports/imports dependency. This approach provides relative metrics which always give higher importance to the results than the absolute ones. For instance, Wang *et al.* (2013) chose sixteen oil-exporting and oil-importing countries only guided by the absolute volume of crude oil export/imports in thousands of barrel per day.

First, we downloaded sets of information about crude oil exports and imports (thousand barrels per day) for a list of all countries for 2012 (last available) and found a difference in order to determine their net position in the global crude oil market. Secondly, using international crude oil prices we computed an average monthly price for 2012[7]. Thirdly, we multiplied the net crude oil exports or imports of each country to the average price and to the number of days yearly, this is to find annual net revenue or expenditures for 2012 year for each country in USD. Next, in purpose to determine in what degree the national economies depend on crude oil receivables or payables, we divided annual net crude oil revenues/expenditures to the countries' GDP[8].

[7] Exports and imports of crude oil including lease condensate (thousand barrels per day), monthly international crude oil price data are obtained from the U.S. Energy Information Administration (EIA) (accessed on 15th of December, 2015).

[8] The GDP information is collected from the World Bank website (accessed on 15th of December, 2015).

Having calculated the oil dependency ratio, we continued the selection process by choosing a sample of developed countries[9]. There are two main reasons for that: 1) countries with the highest ratio appeared as developing countries without stock exchanges or with a lack of data[10]; 2) small sizes of their economies meaning negligible impact on the world economy. Further, we calculated a ratio of each country economy relevance for the world economy by dividing countries' GDP to the total of the world. The last step was to multiply previously computed ratios and to select those which values were the highest in absolute terms, the initial sign of the values demonstrated belongings to oil-exporting or oil-importing group of countries. After all, we came up with Canada, Norway, Denmark as oil-exporting countries and United States, Japan, Germany as oil-importing countries. Table 1 (in Appendix) illustrates mentioned above metrics for developed countries[11].

As a proxy for stock market, we use a major stock index for each of our oil-exporting and oil-importing countries: S&P/TSX Composite for Canada, OSEAX for Norway, OMXC 20 for Denmark, S&P500 Composite for United States, NIKKEI 225 for Japan and DAX 30 for Germany. Index values are collected from Thomson Reuters Datastream. With an objective to get the inflation-adjusted real values collected data is divided by the Consumer Price Index All Items (2010 = 100) of each country, which is also obtained from Datastream.

As a proxy for world oil price level, we select BRENT blend, the most widely used global crude oil benchmark that refers to four major oil fields in the North Sea, such as Brent, Forties, Oseberg and Ekofisk. The data is deflated by Consumer Price Index Energy (2010=100), data for both taken from Datastream. The rationale of having BRENT instead of WTI lies on its geographical superior in question of influence: BRENT is used to price light, sweet crude oil produced and traded in Europe, the Mediterranean, Africa, Australia and some countries in Asia while WTI spreads for United States, Canada, Mexico and South America

[9] List of developed countries is obtained from World Economic Situation and Prospects 2012 United Nations report (Statistical Index prepared by Development Policy and Analysis Division (DPAD) of the Department of Economic and Social Affairs of the United Nations Secretariat (UN/DESA). The list remains the same for 2013, 2014, 2015 years.

[10] These countries are East Timor, Equatorial Guinea, Angola, Libya etc.

[11] All the tables appear by order in the Appendix.

oil pricing[12]. In addition, the two third of the worlds' crude oil priced relative to the BRENT complex[13]. For instance, the major Russian crude oil, such as Urals, Siberian Light and REBCO, priced with a discount from BRENT quote.

As a proxy of global oil supply, we collected the world crude oil production data from U.S. Energy Information Administration website. In order to capture modern tendencies on the global crude oil market from the demand side, we use constructed by Kilian (2009) monthly global index of dry cargo single voyage freight rates[14]. Kilian's index of global monthly real activity is currently in often use due to its major strength against alternatives (for instance, OECD industrial production) - it considers rapid growth of Chinese and Indian economies. The rationale of using the index, which is based on freight rates, lies on stable and inelastic global shipping industry supply. To explain, if the global demand for industrial commodities increases rapidly, the industry will not be able to react at the short time by building new ships to deliver services and due to the limited ships available freight rates will surge immediately.

The exchange rates for each country are collected using Datastream. Our sample includes six countries and each of them has its individual national currency. Hence, we have five different exchange rates: canadian dollar, yen, euro, norwegian krone and danish krone, and all of them expressed against US dollar.

As a proxy for global interest rates movements, we use 3-month Government Treasury Bills taken from Datastream. The 3-month horizon is chosen due to its high level of liquidity, high sensitivity for capture new trends and under the assumption that managers from listed companies do properly understand arisen opportunities and are able to react gaining or saving cash flows. For instance, interrupted by higher interest rates economy growth forces oil price to increase due to the slow reaction from oil-producing countries, given by adjusting oil production costs, the uncertainty of the future crude oil market and decision-making discussion between top managers (Kilian, 2009; Wang *et al.*, 2012). Then, listed companies

[12] Information is taken from "This week in Petroleum" analysis provided by U.S. Energy Information Administration (EIA). The report is released on 16th of October, 2014.
[13] The information is provided by International Exchange trading platform website.
[14] The monthly global real activity index is collected from Kilian's homepage (http://www-personal.umich.edu/~lkilian)

(mostly from oil-importing countries) may go to ICE, NYMEX stock exchanges or OTC market in order to secure future cash flows by negotiating futures and forward contracts. Nevertheless, the condition of having interest rates changes is not compulsory, companies guided by their own market expectations regarding interest rates changes may go for derivative market product spending, saving or gaining their cash flows depends on expectations' plausibility. Hence, the shortest horizon of interest rates provides better opportunities for managers to analyze the market and react.

It is essential to note that all variables used in regressions are expressed in logarithmic forms with the exception of interest rates. The percentage change of global crude oil production and stock market returns are calculated as log differences while the real price of oil and exchange rates as logs. The Kilian's global monthly activity index is downloaded already in a logarithmic form.

4.2 Descriptive analysis and data tests

Table 2 demonstrates summary statistics of the models' variables. The average growth rate of world oil supply equals to 0.1% with maximum and minimum values of 2.87% and -2.42%, respectively. Aggregate global demand for industrial commodities has shown average growth of 3.07% with a historical high of 63.3% during the peak of business cycle' expansion in 2008 while its lowest value of -62.8% happened in February 2015 due to sufficient oversupply on the global crude oil market.

The historical average real price of oil slightly differs by country due to different CPI Energy values. Nonetheless, the minimum is observed in January 1999 due to global oil inventory oversupply and Asian economic slowdown while its maximum value achieved in July 2007 at the peak of business cycle expansion.

The skewness, as a measure of data set symmetry, demonstrates rejection of null hypothesis for all variables presented in SVARs. The skewness is much closer to 0 for the real price of oil, and this fact spreads for all countries in a sample. To note, the stock indices returns are always left-skewed distributions. The kurtosis, as a measure of data distribution tail position relative to normal distribution, shows results which mostly are not in line with normal

distribution while having values different from 3. The only exceptions are exchange rates for Denmark, Japan, Germany and Norway (2.82, 2.67, 2.85 and 2.46, respectively).

At the beginning, we conducted unit root tests to know whether the original data set is stationary or not. Considering three main tests, such as Augmented Dickey-Fuller (ADF), Philips-Perron (PP) and Kwiatkowski–Phillips–Schmidt–Shin (KPSS) tests, all series have been indicated as integrated of the first order with an exception of Kilian's index and oil production percentage change. Under support from Sims *et al.* (1990) and Lütkepohl (2011), we decided to go on with levels data and present them into SVARs[15]. The unit root tests results are shown in Table 3.

Further, in purpose to capture recessions occurred through the study sample period we perform two steps. First, we encounter official business cycle dating information for all oil-exporting and oil-importing countries. For instance, the C.D. Howe Institute Business Cycle Council provides data for Canada, the Centre for Economic Policy Research - for Eurozone, the National Bureau of Economic Research – for United States[16]. Second, we perform Likelihood Ratio (LR) tests in order to test the null hypothesis answering whether dummies improve the SVARs estimates or not.

The sequential modified LR test is given as follows:

$$\boldsymbol{LR = (T - m)\ (Ln|\sum_R| + Ln|\sum_U|) \sim \chi^2(q)}\ ,$$

where $\sum_R$ - determinant of the residual covariance matrix of the restricted system; $\sum_U$ - determinant of the residual covariance matrix of the unrestricted system; *m* is the sum of number of parameters in each equation of the unrestricted system, constants and dummies; *n* is the number of variables and *q* is the number of restrictions.

Table 5 displays LR tests' results for all combinations of dummies. Having analyzed them, we concluded relevance of adding to SVARs D1 for Canada, D1 and D2 for Norway, D1 and D2 for Denmark, D1, D2, D3 and D6 for Japan. Table 5 also revealed that inclusion of dummies for United States and Germany does not provide better estimates not improving the model.

[15] One may ask why not vector error correction model, the reason is impossibility to get level data of global real activity index required for cointegration tests. Look at Section 3.2 for details

[16] All list of recessions with assigned to them acronyms for a sample of countries is presented in Table 4.

Next, we run SVARs for all countries: firstly, with four variables included as Kilian and Park (2009) suggest; secondly, with six variables adding interest and exchange rates. The optimal lag selection for the first model was performed using LR test criterion, which argued 24 lag length. That lag length is also in line with Kilian and Park (2009) and does make sense practically since in the case of monthly data academics prefer to deal with 12 or 24 lags. Tables 6 and 7 illustrate regression coefficients of each variable for 4-variable SVARs and 6-variable SVARs for all countries in a sample.

4.3 Empirical results

In this Section, we present our empirical findings providing impulse response and variance decomposition analyses. The impulse response functions (IRFs) trace out the responsiveness of the dependent variables in the SVAR to shocks of each variable in a system. We conduct IRFs with 1000 Monte-Carlo repetitions and two standard error bands of a positive shock of each variable to see its effect on the other variables. It is important to note that statistical significance of IRFs results is reported if they are different from 0, this approach is common for SVAR literature.

The variance decomposition analysis is a different method to analyze SVARs by giving the percentage proportion of the movements in the dependent variable that are due to their own shocks versus shocks to other variables. In other words, variance decomposition shows in what degree dependent variable variance is explained by shocks in a system.

4.3.1 Impulse Response Functions

4.3.1.1 4-variable SVARs

Oil supply shock effect on stock market returns

Figure 1 illustrates that the stock returns response to positive oil supply shock (PRODC) is not significant in Canada, Norway and Germany, but there is short-lived significance for the remaining countries. The result is consistent with the empirical literature. For instance, Kilian and Park (2009) and Basher *et al.* (2012) documented no significant impact of oil supply shock on stock markets. Lin *et al.* (2014) also suggested no significant effect of oil supply shock to Chinese stock market returns.

Going through IRFs' results, US stock market returns appeared to be influenced by the percentage change in the global oil production having short-lived positive significance during 4-5 months' period. The same kind of response, but more persistent is indicated by Denmark with partial statistically significance from 5th to 9th month. To note, Wang *et al.* (2013) analyzed the relationship between oil price shocks and stock market returns in sixteen oil-exporting and oil-importing countries, concluded results that stand purely in line with the current research findings: oil supply shock is not significant in explaining stock market returns variations for Canada, Norway and Germany while it is shortly and positively significant for the United States returns.

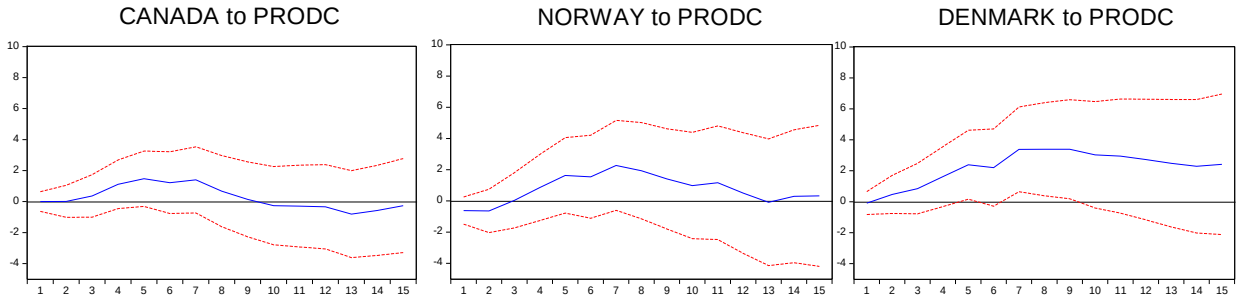
Thinking of oil-importing countries values, it is obvious that positive supply shock produces extra cash flows for the companies allowing to pay less than they expected and leveling up stock returns. An unexpected result came from Japanese stock market, the response to increase of world oil production negatively statistically significant for the first 2 months. Previously, Wang *et al.* (2013) and Abhyankar *et al.* (2013) reported not statistically significant response in Japan.

Such a finding can be explained by the following line of reasoning: since Japan is a pure crude oil importer with a huge amount of oil imports required on a permanent basis and zero its own production[17], the managers accumulate a certain amount of oil reserves[18] willing to maintain operability of business activities in case of oil supply disruptions. If the positive oil supply growth occurs, the stock market considers oil storing costs and lower spot price as a negative sign to stock prices. The same stock market reaction may be if managers do fix the oil price by acting on derivatives markets (futures, forwards). The stock returns response became not significant after their immediate reaction to oil supply shock meaning that positive effect of low oil price overweighs over time.

Not significant response by German stock market returns not only to oil supply shock but also to all oil price shocks will be explained at the end of the section providing appropriate supports for it.

[17] U.S. Energy Information Administration 2012 reports daily crude oil production for Japan close to 0.
[18] Abhyankar et al. (2013) suggest existence of strategic accumulated oil reserves, including both state and privately-held stockpiles, in Japan.

Panel A:



Panel B:

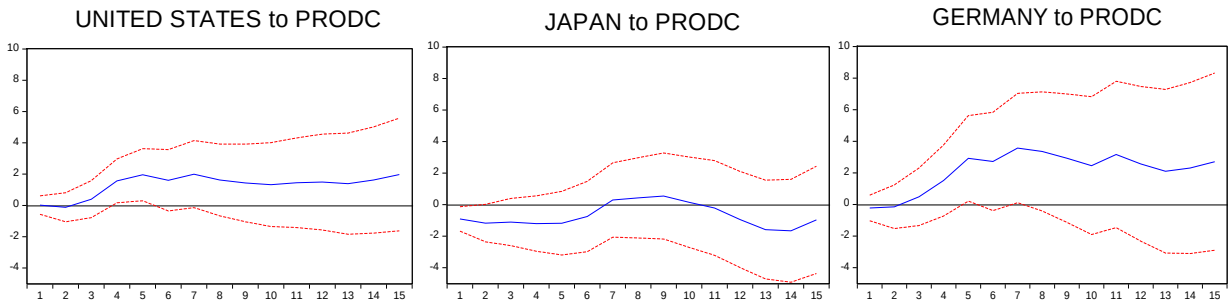


Figure 1.
Accumulative responses of stock returns to oil supply shock with ± 2 standard error bands. Panel A: Responses of stock returns in oil-exporting countries. Panel B: Responses of stock returns in oil-importing countries

The IRFs also reveals that the direction of response tends to be driven by the country's net position in the global crude oil market. In case of oil-exporting countries, such as Canada, Norway and Denmark, the positive oil supply shock, in the form of exploration of new oil fields or more productive technologies, immediately leads to lower oil prices. Bearing in mind short-term inelasticity of the oil price and its demand function (Hamilton, 2009), the positive oil supply shock directs to cash flows decreases due to oil revenues fall in exporting countries. However, after immediate stock market returns fall, the recovery process takes place putting returns up due to arisen oil demand from oil-importing countries. The oil demand and the price of oil gain much higher elasticity over time attracting oil consumers to buy more quantity.

The not significant response in Canada and Norway seems to be rational since it is not so difficult for oil-exporting countries to readjust their own oil production and export volumes in order to smooth negative effects from the oil supply shock. Trying to explain why Danish stock returns' response is shown to be statistically significant, we refer to its specific position in the global crude oil market: Denmark does export crude oil (67.8% of production) but also

import the commodity (43.1% of production)[19]. Another cause may be a crude oil production continuous fall in Denmark together with dramatically decreasing country's self-sufficiency in energy. To advocate, Danish Energy Agency reports the degree of self-sufficiency fell to 93% in 2013 from 102% in 2012 while crude oil production decreased by 13%[20].

To note, the net oil exports share in total production accounts for 55.26% and 80.67% for Canada and Norway, respectively. The percentage equals to 24.7% for Denmark. All figures are calculated on 2012th-year basis, but, as Danish Energy Agency says, Denmark performance is getting more oil import dependent[21].

Aggregate demand shock effect on stock market returns

As it is shown in Figure 2, the aggregate demand shock (REA), driven by global real economy changes (global demand for all industrial commodities), generates a positive impact on stock returns in all countries. It is intuitive that an aggregate demand expansion in oil-exporting countries forces oil prices up allowing stock returns to raise due to inelastic in short-term oil price and its demand, leading to increased company's cash flows (Hamilton, 2009; Jones and Kaul, 1996). Concerning to oil-importing countries, their stock markets suffer due to increased oil prices and their grown effect to companies' cash flows bearing higher industry costs (Jung and Park, 2011). However, in long-term stock returns increases are secured due to positive effects of economy growth that offsets increased oil price and demand elasticity (Kilian and Park, 2009).

The response of stock markets to REA shock in our sample of countries is shown to be very mixed. The aggregate demand shock impact on stock market returns is positively and highly statistically significant 15 months in Norway, partially significant for the first 2 and 7 months for Canada and United States, respectively. The length of response is even smaller in

[19] The numbers were manually calculated using U.S. Energy Information Administration data that account for 2012. The data is presented in Table 8.
[20] Degree of self-sufficiency is calculated as a ratio between primary energy production and consumption of oil, coal, natural gas, renewables and waste.
[21] It is not possible to provide calculations of crude oil self-efficiency using U.S. Energy Information Administration since there is no exact information about the crude oil and lease condensate production. It is also not possible to calculate as (production + import - export - reserves) since there is no information regarding accumulated crude oil reserves.

Denmark and Japan lasting only for 1 and 2 months. The only country, whose stock market returns of any month cannot be explained by the demand for industrial commodities, is Germany.

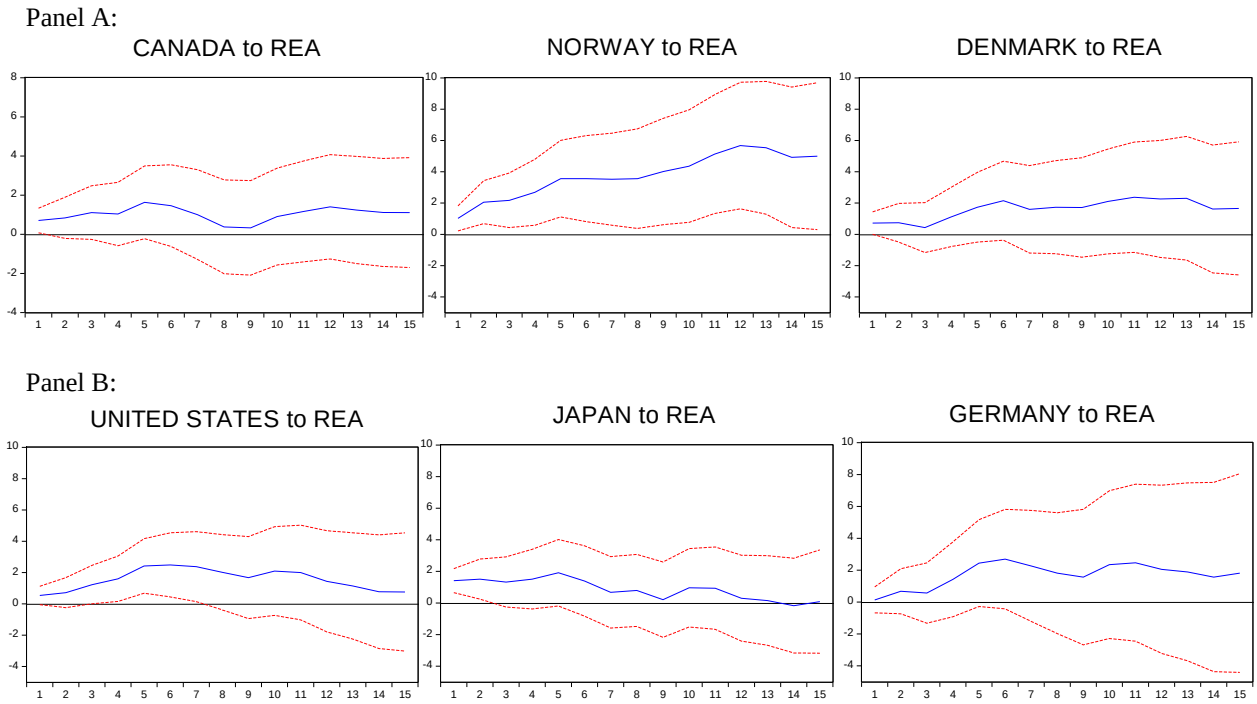


Figure 2.
Accumulative responses of stock returns to aggregate demand shock with ±2 standard error bands. Panel A: Responses of stock returns in oil-exporting countries. Panel B: Responses of stock returns in oil-importing countries

The most attractive result for discussion is the one by Norway. Such a highly significant response may be explained by the following: 1) external balance of goods and services as percentage of GDP is much greater for Norway than for other countries in a sample[22] (the higher percentage, the greater level of responsibility to global real economic activity changes); 2) Norway economy is highly dependent on crude oil, and this dependence is much stronger than other countries have[23] (the higher dependency, the greater oil price shocks impact).

The presented results for United States are precisely in line with Kilian and Park (2009) findings. Wang *et al.* (2013) documented the positive and significant impact of REA shock

[22] Table 9 demonstrates official World Bank statistics for external balance on goods and services relative to GDP.
[23] Table 10 presents share of crude oil commodity in the total primary energy supply for all countries in a sample and world.

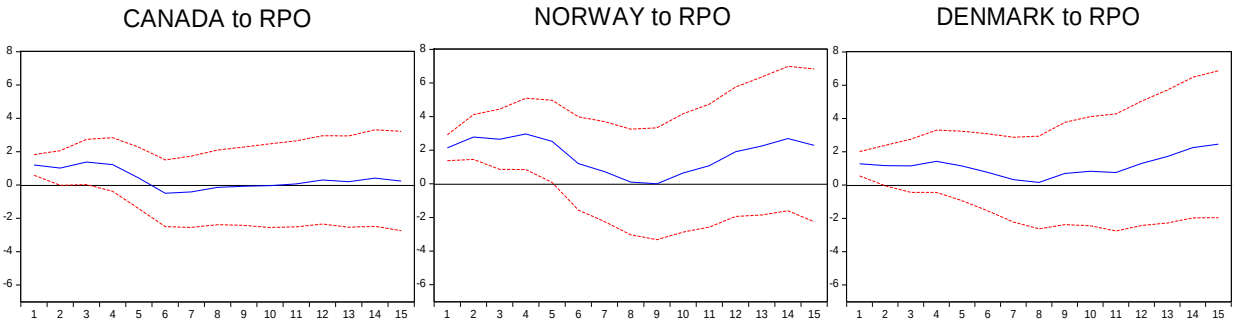
on US stock returns during first 2-7 months. Basher *et al.* (2012) revealed a positive significance for first 3 months analyzing MSCI emerging stock market index. Wang *et al.* (2013) also found positive and significant real economic activity impact on stock returns in Canada and Norway and not significant in Germany and Japan. There are also economists who say that aggregate demand shock does not have any causal impact on stock market returns in Canada, United States, Japan and Germany (Apergis and Miller, 2009). Lin *et al.* (2014) support that statement confirming no REA effect on Chinese stock returns and suggesting rigid regulations and capital mobility controls as a possible reason.

Oil-specific demand shock effect on stock market returns

The response of stock market returns to shocks specified as "other oil-specific shocks" (RPO) refers to the implication of all oil shocks that can have an impact on stock returns except oil supply and aggregate demand shocks. Kilian (2009), Kilian and Park (2009) and their followers relate other oil-specific shocks to a precautionary demand shock, induced by expectations of market participants on oil supply disruptions. Kilian and Park (2009), as first who used SVAR to consider oil price as an endogenous variable in a system, argued the negative and strongly significant effect of the oil-precautionary demand on stock returns.

The present research evidence contradicts with that statement providing results of positive short-lived significance for four out of six countries in our sample. It is important to state that effect of oil price shocks in oil-exporting countries on stock markets are greater and more persistent than in oil-importing. For all oil-exporting countries, we received results of positive significance for first 2, 3 and 5 months in Denmark, Canada and Norway, respectively. It is also relevant to note that almost all values are positive for oil-exporting countries. That fact supports a sense of rationale because if the market expectations of possible oil supply shortfalls increase, following by immediate oil price increase, the oil-exporting countries will receive higher revenues. Allowing financial theory to do its business, greater cash flows usually lead to stock returns increases. The uncovered evidence is in line with Wang *et al.* (2013), who also suggests the positive significant impact of RPO shock on stock market returns in Canada and Norway, but with a longer length of effect – for first 6 months.

Panel A:



Panel B:

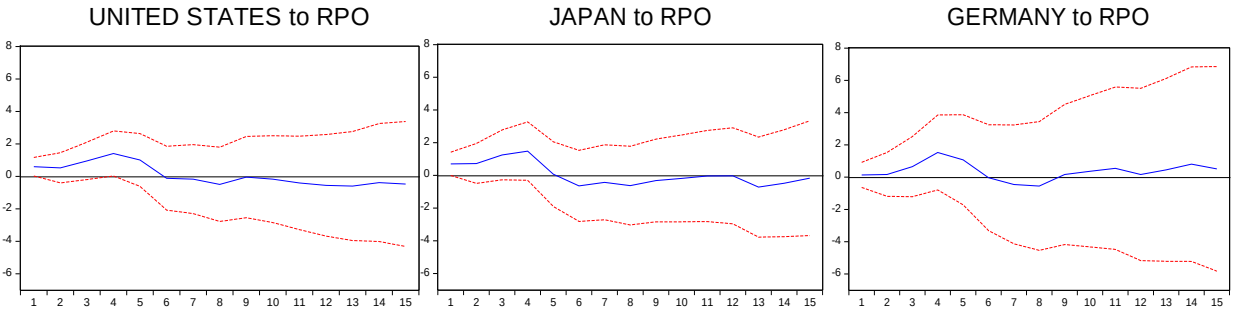


Figure 3.
Accumulative responses of stock returns to other oil-specific shocks with ± 2 standard error bands. Panel A: Responses of stock returns in oil-exporting countries. Panel B: Responses of stock returns in oil-importing countries

Talking about oil-importing countries, findings are common for all of them. United States, Japan and Germany stock market returns happened not to be explained by oil-specific demand shock due to observed not statistically significant results. These findings contradict Kilian and Park (2009), however, several other studies argue no precautionary demand impact on stock returns. For instance, Wang *et al.* (2013) for United States, Japan and Germany. Evidence about Chinese stock market is also backing no significance of RPO shock (Lin *et al.*, 2014). Emerging stock markets are shown not being explained by oil-specific shock (Basher *et al.*, 2012). One may say about the significantly positive impact of the precautionary demand shock for the first month in United States and Japan, but that does not change the whole picture of the response.

Further, we found interesting the result of the impulse responses' sign for RPO shock on stock markets – it is positive and then becomes negative (United States and Japan) or remains being positive (Canada, Norway, Denmark and Germany). The positive values of

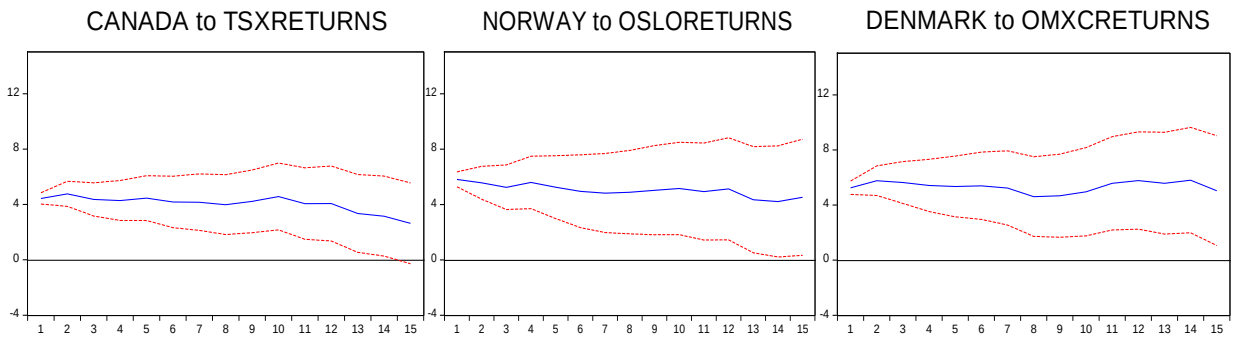
response in oil-exporting countries seem obvious, but in the case of oil-importing the discussion appears to be demanding. Due to oil price increases as a result of a positive oil-specific demand shock, the revenues/cash-flows in a simple situation decline following by stock market returns fall. Nevertheless, the global crude oil market represents a huge industry with its features, and one of them is derivatives market existence, usually used to secure companies' cash flows against unfavorable oil price changes and other shocks. Thus, if United States, Japan and Germany, use, for instance, forwards and futures, they are fixed in price of oil for upcoming future, while encouraging stock market returns up if there is a surge in market expectations about the oil supply disruptions. That could be a possible explanation of our findings related to the sign of responses' behavior.

Regarding response of stock market returns to their own shock (Figure 4), there is highly significant and persistently positive effect for all countries that lasts for an entire period of 15 months. Thinking about findings' rationale, one can notice no significant impact of any oil price shock on German stock market returns. A possible explanation of such a fact could be the specificity of German economy expressed in well-organized national energy policy aimed renewable energy to become the mainstay of energy supply by 2050. Having decided to abandon nuclear energy by 2022 and to focus on renewable energy expansion, Germany started restructuring the energy system. In such a way, crude oil, coal and oil products together are becoming less important for Germany economy[24].

To verify the proposition, Table 11 represents German total primary energy supply (TPES) breakdown analysis. It is shown that during the period from 1994 to 2013 such commodities as crude oil, coal, oil products and nuclear lose their share of the total energy supply by 3.38%, 3.05%, 3.13% and 3.82%, respectively. Meanwhile, biofuels and waste obtained an increase of 7.14%, natural gas and geothermal, solar and related to them components received an addition of 4.64% and 2.42%.

[24] "Germany's new energy policy. Heading towards 2050 with secure, affordable and environmentally sound energy" report, published by Federal Ministry of Economics and Technology of Germany (now called as Federal Ministry for Economic Affairs and Energy)

Panel A:



Panel B:

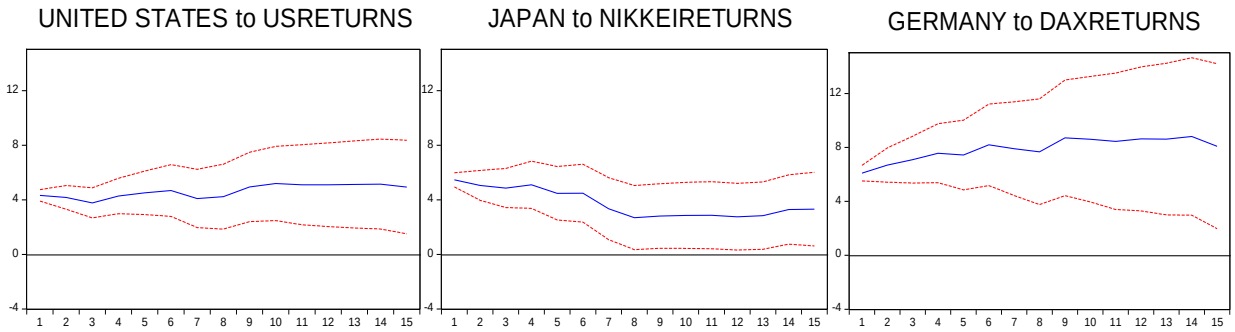


Figure 4.

Accumulative responses of stock returns to other shocks with ±2 standard error bands. Panel A: Responses of stock returns in oil-exporting countries. Panel B: Responses of stock returns in oil-importing countries

One may ask why other countries, in particular, other oil-importing countries, show at least some short-lived significant response to the oil price shocks while Germany does not. One can say that it is realistic if United States and Japan also have energy policies established with a purpose to be less dependent on crude oil as a source of energy and on energy imports in total. To answer that, Table 12 provides a detailed comparison of crude oil and its share in TPES for the world and all countries included in the present research. It is explicitly shown that Germany achieved negative crude oil share change in the amount of 3.38% during 1994-2013, and what makes greater sense, Germany's crude oil share has been always lower than world level. In addition, Germany is the only country whose historical share of TPES (32.39%) is lower than the world level (35.56%), while Canada, Norway, Denmark. United States and Japan got 38.02%, 72.11%, 44.18%, 39.83% and 42.02%. To conclude, Germany appears to be less crude oil dependent country than all oil-exporting and two other oil-importing countries. That could be a rational reason why only Germany shows no significance for any oil price shock.

Finishing, it is essential to note that the present economic literature does not have a common opinion on the significance and sign direction of the responses of stock market returns to oil price shocks. The present research findings contribute an existing small economic evidence partially supporting/contradicting statements of Kilian and Park (2009), Apergis and Miller (2009), Basher *et al.* (2012), Lin *et al.* (2014) while being almost absolutely consistent with concluding remarks by Wang *et al.* (2013) for Canada, Norway, United States, Japan and Germany. Such similarity could be explained by the relatively identical data sample period: the present research has a timeframe of [1994M05-2015M10] and includes a sample of Wang *et al.* (2013), which is [1999M01-2011m12]. All other papers on the relevant topic have samples till the 2008th year, but having different sizes depending on starting point (Kilian and Park, 2009; Apergis and Miller, 2009; Basher *et al.*, 2012; Lin *et al.*, 2014).

The data sample timeframe is an important factor while analyzing any research findings. For instance, Kilian and Park (2009) documented the highly significant response of the stock market returns due to oil-specific demand shock while our results do not have such a high level. According to Blanchard and Gali (2007), Kilian (2008), Cologni and Manera (2009), a research that covers more recent years reports smaller oil price shocks effect on macroeconomic variables due to many reasons, such as tendency of economies to be less dependent on oil, improvements in energy efficiency, improved monetary and fiscal policies *etc*.

To be more confident on this, a breakdown analysis of the global total primary energy supply was performed with the aim to calculate the crude oil share as one of its main components. Table 12 demonstrates that share of crude oil fell down by 6.22% for 20 years (1994 – 37.82% of TPES, 2013 – 31.6%). Thus, the tendency of world economies to be less dependent on crude oil receives support from International Energy Agency statistics. To note, in comparison with other sources of energy crude oil commodity is observed to have the highest decline while coal and natural gas gained 4.92% and 1.95%, respectively.

4.3.1.2 6-variable SVARs[25]

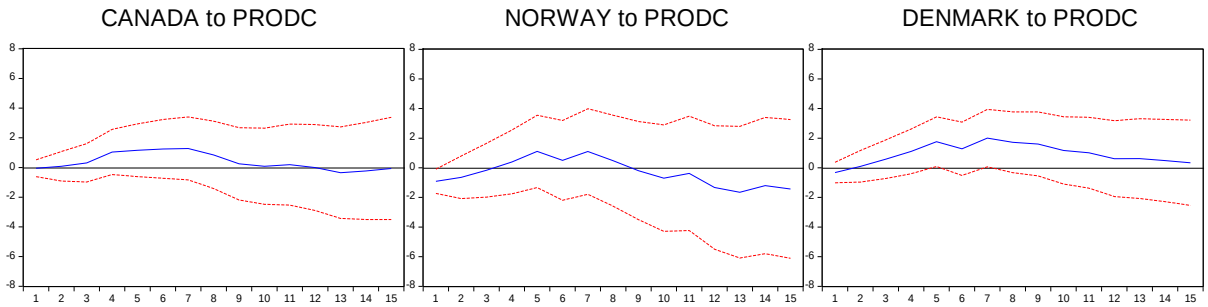
By adding to the SVAR model, proposed by Kilian and Park (2009), two explanatory variables, such as interest rates and exchange rates, we came to the conclusion that they make sense providing changes to the stock returns responses' values and their significance level comparing to original 4-variable SVARs results.

First, by considering oil supply shock effect to stock returns, we suggest no dramatic changes in comparison with that using 4-variable SVAR model (Figure 5). Further, we argue that the response of stock market returns to the aggregate demand shock have been changed under control of interest and exchange rates since IRFs demonstrate significant changes comparing to 4-variable SVARs. As it shown in Figure 6, Canada and Denmark became partially statistically significant for first 12 and 13 months, respectively. Norway returns keep being significant providing partial significance for 12 months. Thinking of oil importers, Japanese returns also got support by interest and exchange rates and now are significant for first 5 months instead of 2 months in 4-variable SVAR. In its turn, Germany shows no significant response as previous IRFs reported.

Analyzing such a huge impact on stock market returns by increased global real activity, we also observe that all the responses' values increased. These findings may be justified by the following reasoning: as a consequence of boosted global demand for industrial commodities we have higher oil prices, they usually lead to cash flows cuts and economy growth slowdown. Now, since interest rates are in power, Government is likely to lower them in order to stimulate economic activities, meaning lowering cost of capital that outweighs higher oil prices. In addition, lower interest rates allow the exchange rate to fall since investors are likely to invest abroad, currency depreciation appears stimulating net exports.

[25] The lag length for 6-variable SVAR models differ by country: Canada and Norway – 19 lags, Denmark – 15 lags, Japan and Germany – 21 lags. The optimal lag selection criterion is LR test statistics.

Panel A:



Panel B:

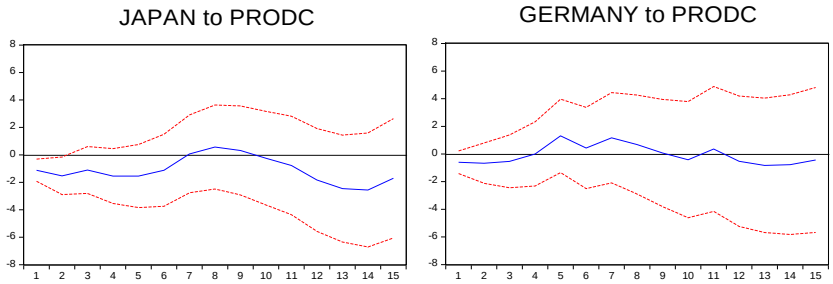
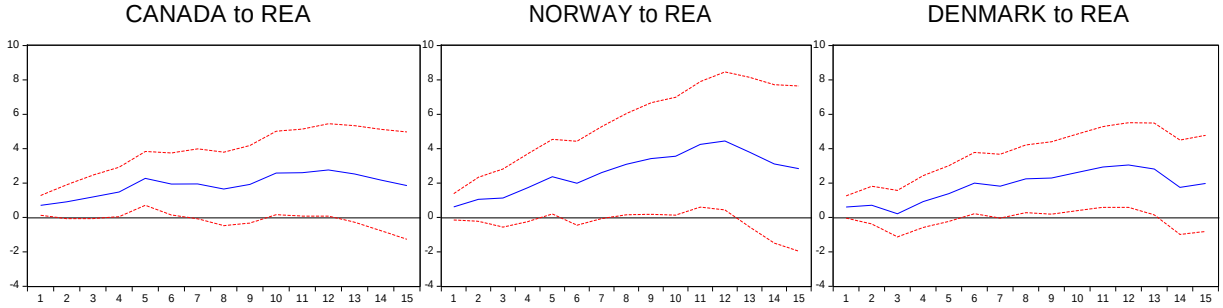


Figure 5.
Accumulative responses of stock returns to oil supply shock with ±2 standard error bands. Panel A: Responses of stock returns in oil-exporting countries. Panel B: Responses of stock returns in oil-importing countries

Panel A:



Panel B:

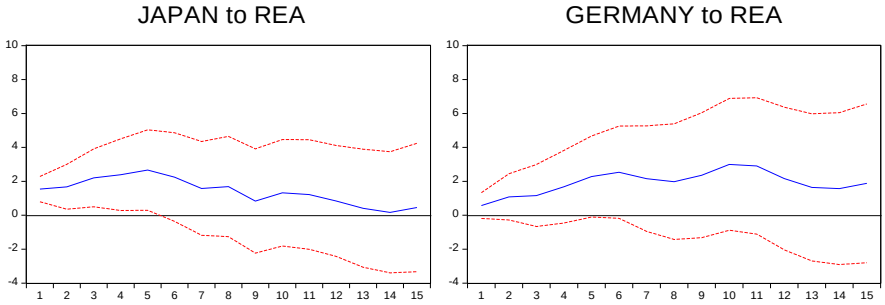
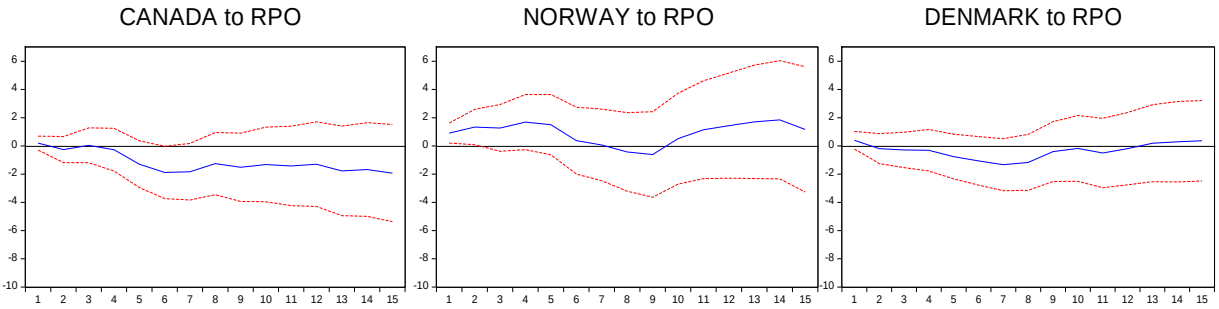


Figure 6.
Accumulative responses of stock returns to aggregate demand shock with ±2 standard error bands. Panel A: Responses of stock returns in oil-exporting countries. Panel B: Responses of stock returns in oil-importing countries

Figure 7 illustrates oil-specific demand shock impact on stock returns derived from 6-variable SVARs. The response is defined to be influenced by interest and exchange rates and shifted down comparing to 4-variable SVARs results. Hence, Canadian stock returns changed the length and sign of significance from positive for first 3 months to negative for 6-7 months. Norway resulted in being positively significant only for first 2 months while Denmark became not to be statistically significant at any horizon of IRFs.

Oil-importing countries' response to RPO shock also shifted down making Japanese stock returns to be statistically significant first month, while Germany for the first time reports partial statistical significance for first 9 months.

Panel A:



Panel B:

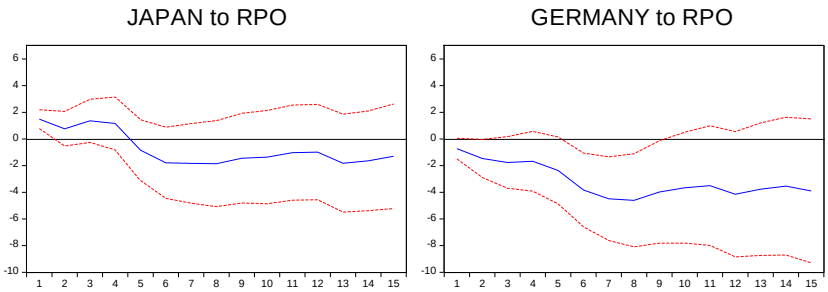


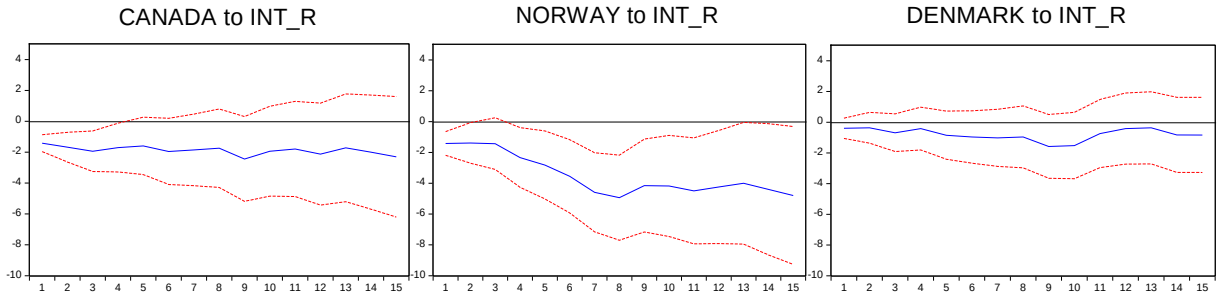
Figure 7.
Accumulative responses of stock returns to oil-specific demand shock with ±2 standard error bands. Panel A: Responses of stock returns in oil-exporting countries. Panel B: Responses of stock returns in oil-importing countries

Thus, interest and exchange rates force the oil-specific demand shock response to shifting down. A possible explanation could lie on the cause of shock itself – precautionary demand shock that rises when uncertainty about the future oil supply increases. Since it is only expectations or even rumors, Government may decide to increase interest rates in order to warn companies not to make mistakes while analyzing investment projects or any other

business decisions and to force them to select the best projects they would like to realize. Higher oil price together with increased interest rates ensures increase of cost of capital resulting in stock returns to fall. That is probably why we observe shift down on the response values by adding interest and exchange rates. About exchange rates, they go up having support from investors due to interest rates increase, which leads to net exports reduction. This fact also accounts for stock returns decline.

Figure 8 explicitly shows interest rates positive shock response of stock market returns. Hence, interest rates are observed to be negatively correlated with stock returns in Canada and Norway while not significant in Denmark, Japan and Germany. It seems to be obvious that INT_R response is greater in oil-exporting countries since higher cost of capital leads to crude oil sales margin decline. In the case of oil-importing countries, higher oil prices make other energy commodities more attractive rather than crude oil. One can argue that other commodities are also influenced by the increased cost of capital, however, it is widely known that Governments encourage companies who develop renewable energy providing tax reduction, promotional funds and grants, low-interest rates loans, market premium payments and many other incentives[26]. That could be a possible reason why interest rates shock effect differs for countries depending on their net position in the crude oil market. To note, Denmark result possibly stands by the current transition to be net oil importer in the global market[27].

Panel A:



[26] The information is obtained from KPMG "Taxes and incentives for renewable energy 2013" report
[27] Reed 27-28 pages for details

Panel B:

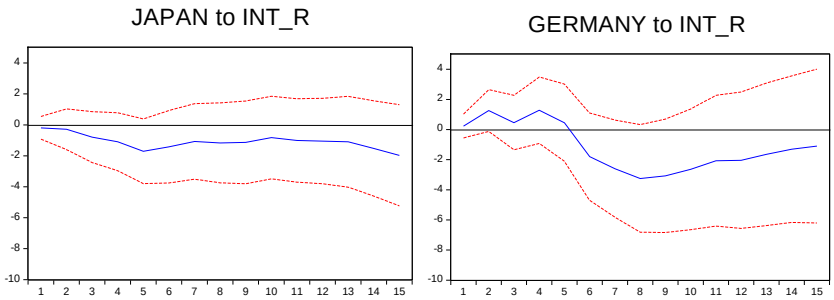


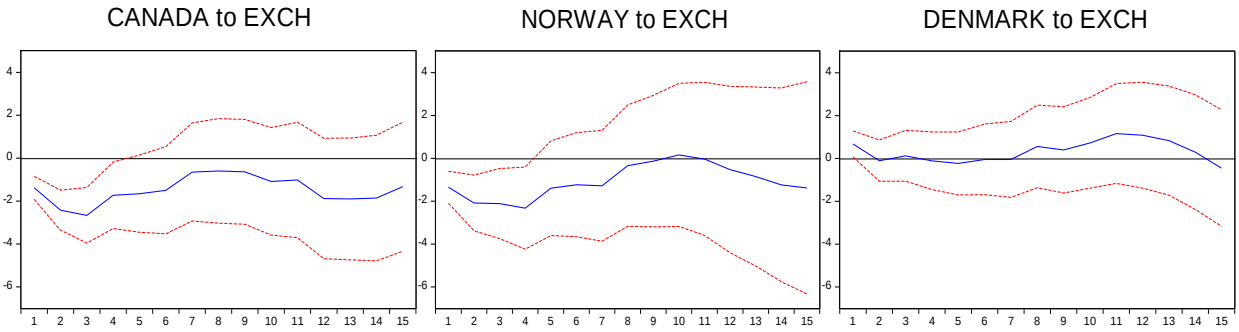
Figure 8.
Accumulative responses of stock returns to interest rate shock with ±2 standard error bands. Panel A: Responses of stock returns in oil-exporting countries. Panel B: Responses of stock returns in oil-importing countries

It is essential to discuss controversial findings regarding the exchange rate shock effect to stock market returns. As it is shown in Figure 9, positive exchange rate shock, meaning local currency depreciation against US dollar, has a negative statistically significant impact on Canadian and Norway stock returns that lasts for the first 4 months. Thinking of crude oil exports perspective, the result has to be opposite for oil-exporting countries since companies receive higher revenue, the market reacts positively then. Notwithstanding, international trade is not only crude oil, it is also about all other goods and services, and if companies have to pay more due to local currency depreciation, cash flows cuts are likely to happen. In addition, we should consider aggregate demand growth because if local currency depreciates we predict export increases and import decreases. Nevertheless, in the case of oil-exporting countries import changes are not so much dramatic as in oil-importing countries because they still receive higher margin from crude oil sales and may do not care a lot about the import price increases since even they take place their margin remains positive.

On the other hand, oil-importing countries' aggregate demand growth becomes much higher since the oil price, expressed in local currency, is higher and companies will develop other sources of energy, for instance, renewables, which lead to tax reductions, promotional funds and grants, market premium payments and low-interest rates. All these encourage oil-importing countries net export, and then aggregate demand, to increase allowing the stock market to generate positive returns. This line of thinking could be a possible explanation why exchange rate affects stock returns negatively in oil-exporting countries and positively in oil-importing countries. The explanation refers to positive aggregate demand shock effect, which is always positive, and short length of significance. To be precise, Denmark and Japan report

partial short-lived positive impact for first 1 and 5 months while Germany stock returns do not respond to exchange rate shock arguing its non-significance.

Panel A:



Panel B:

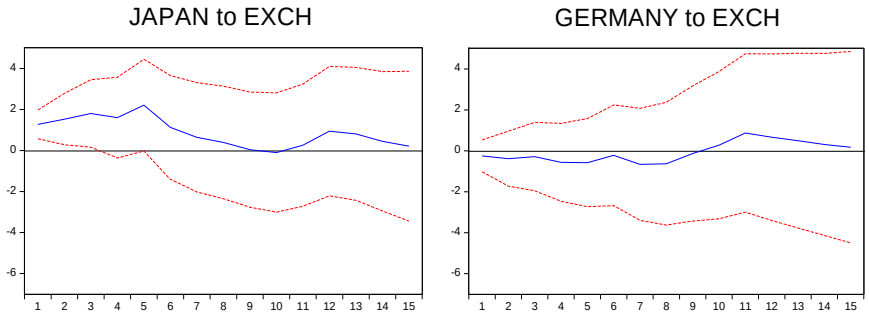
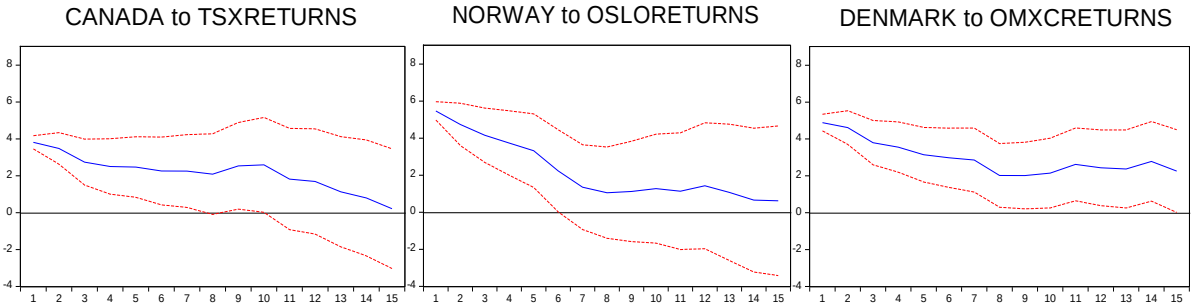


Figure 9.
Accumulative responses of stock returns to exchange rate shock with ±2 standard error bands. Panel A: Responses of stock returns in oil-exporting countries. Panel B: Responses of stock returns in oil-importing countries

Figure 10 reports stock market returns significant and positive response to the other shocks. It lasts for first 10, 6, 15 months in Canada, Norway and Denmark, first 7 and 8 months in Japan and Germany, respectively.

Panel A:



Panel B:

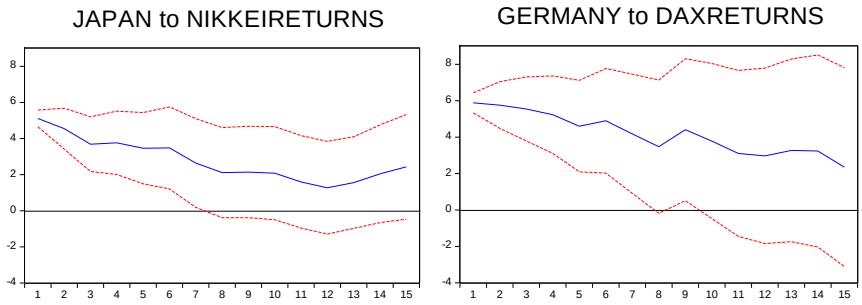


Figure 10.
Accumulative responses of stock returns to other shocks with ±2 standard error bands. Panel A: Responses of stock returns in oil-exporting countries. Panel B: Responses of stock returns in oil-importing countries.

4.3.2 Variance decomposition

Table 13 illustrates variance decomposition of aggregate stock market returns for each country in a sample for short and long-term horizons. Variance decomposition analysis points out that the average cumulative stock market returns in a different manner depend on the underlying cause of the oil price positive shock. We can see that the results in short and long-run differ by country.

Figure 11 analyzes 1-month stock returns' variations. We observe the negligible effect in Germany (0.23%) meaning that German stock market is robust to oil price shocks and reacts slowly. To note, this is consistent with IRFs findings. The oil price shocks' explanatory power is a bit higher in United States having a value of 3.3% while other countries occurred to be sensitive to oil price changes showing values of 8.95%, 15.11%, 7.27% and 10% in Canada, Norway, Denmark and Japan, respectively. To notice, the oil-exporting countries demonstrate higher sensibility to oil price changes.

Further for the 1-month horizon, oil price shock almost does not explain any variability of stock returns in Canada, Denmark, United States and Germany (<0.3%), but they matter in Norway and Japan (0.96% and 2.47%, respectively). Nonetheless, this result may be explained by the highest total percentage response to oil price shocks by Norway and Japan.

Figure 12 illustrates decomposition of 12-month stock returns' variations under impact on oil price shocks. We can see that the explanatory power of the shocks became much greater and account for 26.01%, 33.1%, 22.2% for oil-exporting countries, such as Canada, Norway and Denmark, and 25.8%, 25.36% and 23.68% for oil-importing countries, such as United

States, Japan and Germany, respectively. To note, present findings are greater than Kilian and Park (2009) documented for United States (11.93%), Apergis and Miller (2009) reported for Canada, United States, Japan and Germany (7.76%-12.11%) and Wang *et al.* (2013) for all countries in a sample excluding Denmark (10-23%).

The oil supply shock effect is smaller in oil-exporting countries than in oil-importing. The possible explanation could be that oil producers can adjust their oil production in order to mitigate the shocks from world oil supply. The aggregate demand shock explanatory power in oil-importing countries is higher, and that could be due to world economies' tendency to be less dependent on crude oil if global real activity increases, then the development of renewables and alternative sources boosts also. Lastly, the oil precautionary demand shock contribution is greater in oil-exporting countries than in oil-importing. The rationale may lie in having more incentives for oil importers to use other commodities rather than crude oil. That is due more competitive prices on the commodities' market and states' support of renewables development. This situation could represent one fraction of the whole picture on the markets since developed countries chose direction to green economy based economies years ago.

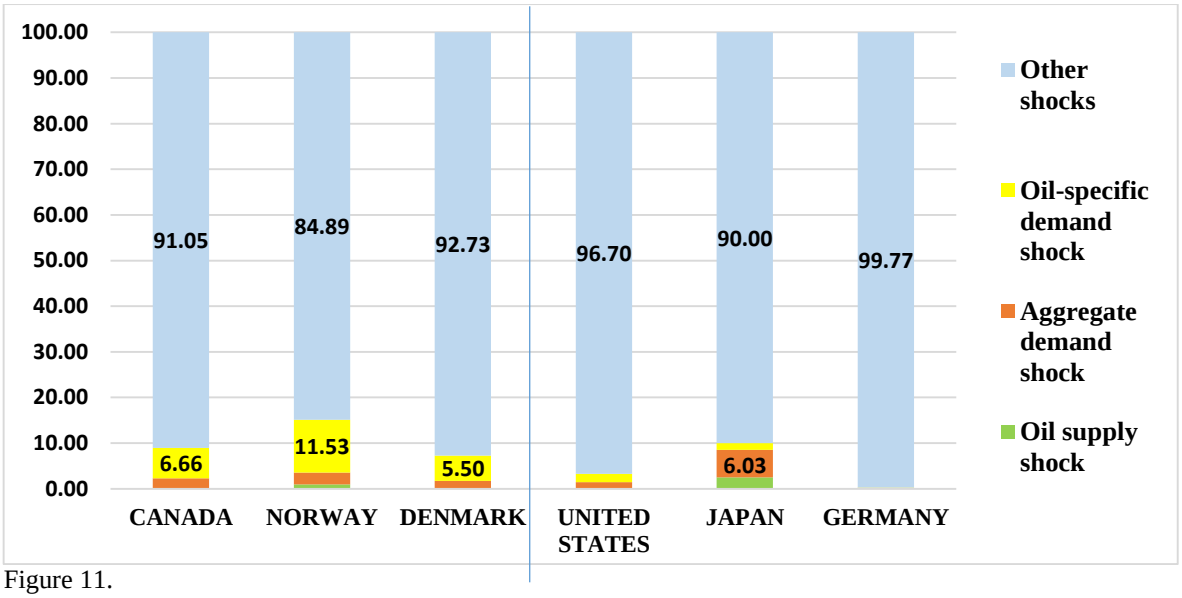


Figure 11.
Decomposition of 1-month stock market returns' variations (the left panel lists oil-exporting countries and the right panel lists oil-importing countries)

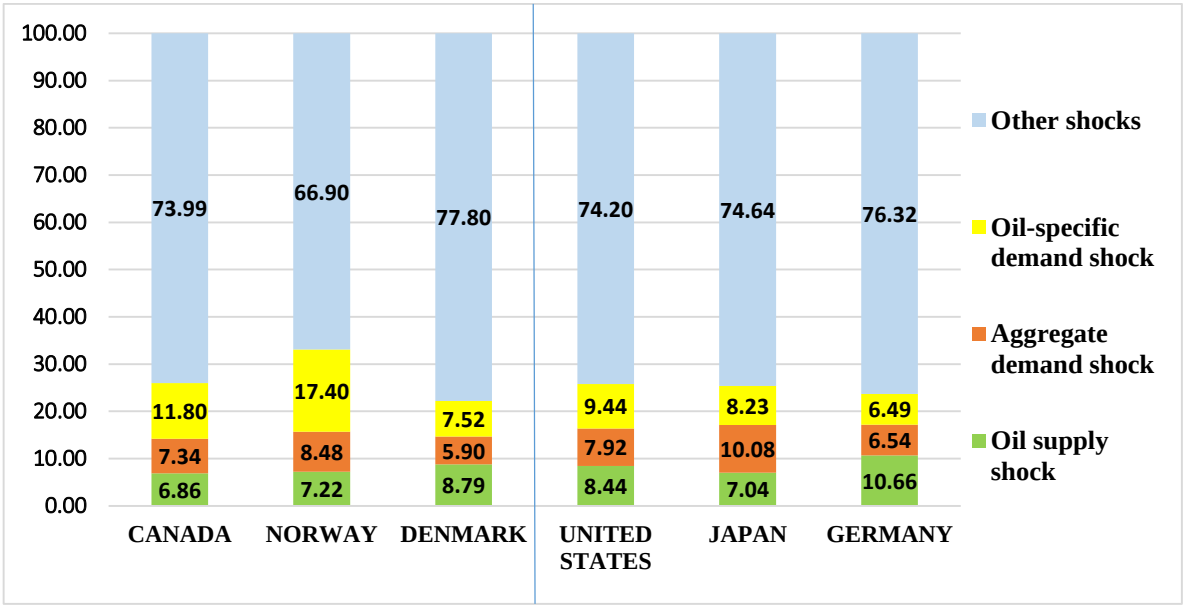


Figure 12.
Decomposition of 12-month stock market returns' variations (the left panel lists oil-exporting countries and the right panel lists oil-importing countries)

Concluding variance decomposition findings, the contributions of oil price shocks to stock returns' variability are increasing if the horizon has the same path. The oil-specific demand shock always demonstrates the highest explanatory power of stock returns variability in Canada, Norway, Denmark and United States. Hence, market expectations about the availability of crude oil supply have an impact higher than other oil price related shocks for all horizons. It is important to note that persistence of shock superior position is greater in all oil-exporting countries. The major shock that is guilty for variations of stock returns in Japan is aggregate demand shock presented by global monthly real activity measure. The most powerful shock on the German stock market is oil supply shock.

Checking the results of stock market returns variability to oil price shocks for 6-variable SVARs, we came up with results illustrated in Figure 13 for the 1-month horizon, Figure 14 for the 12-month horizon and in Table 14 for all horizons. For 1-month horizon, we see that dominant factors for stock returns variations have changed from oil-specific demand shock to the exchange rate and interest rate shocks. Their explanatory power is much greater in oil-exporting countries as well as all shocks impact on variations. To note, Japanese stock variations became hugely explained by the shocks considered in the model.

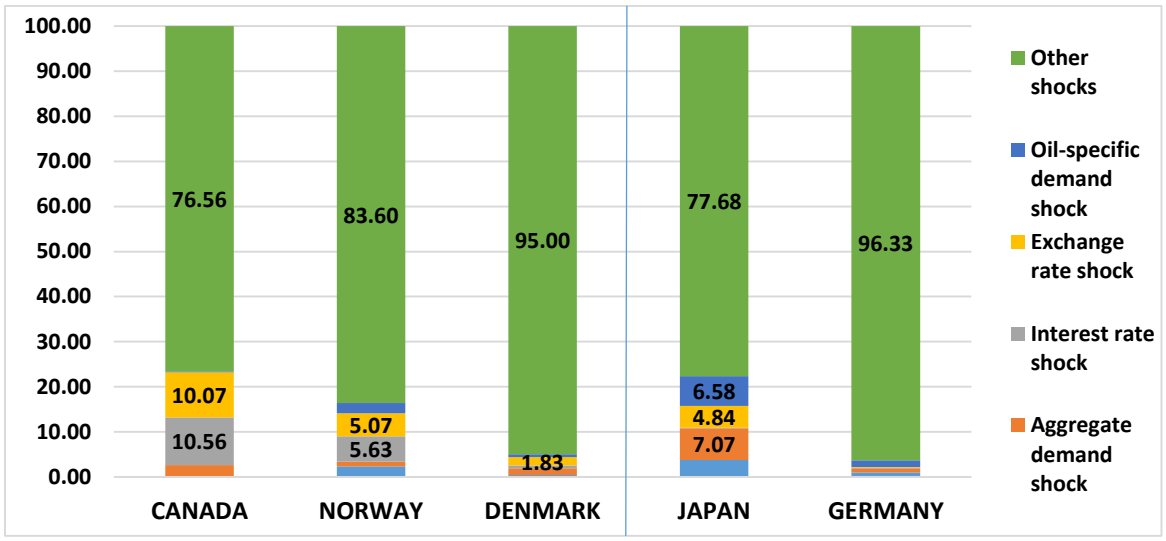


Figure 13.
Decomposition of 1-month stock market returns' variations (the left panel lists oil-exporting countries and the right panel lists oil-importing countries)

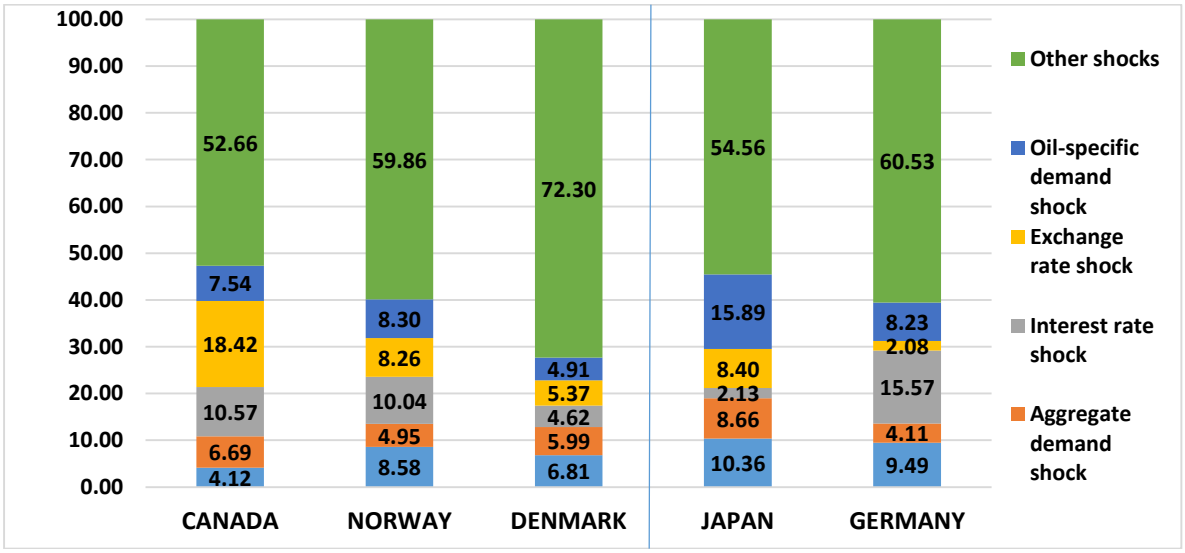


Figure 14.
Decomposition of 12-month stock market returns' variations (the left panel lists oil-exporting countries and the right panel lists oil-importing countries)

For 12-month horizon, oil supply shock is much powerful in oil-importing countries, which has a logical support. Next, exchange rate shock effect is larger in oil-exporting countries rather while interest rate shock matters more in oil-importing countries.

5. Conclusion

The present study investigated how the stock market returns affected based on differently caused oil-price shocks. We used the structural vector autoregressive model in order to consider oil price as an endogenous variable due to reversal causalities between the variables as Barsky and Kilian (2002), Kilian (2009), Kilian and Park (2009) proposed. The present research differs from an existing small body of economic literature due to a systematic approach to determine a sample of countries, recent years' data sample, methodology specifics and innovations, structural breaks' capture by regressions and detailed consideration of each country idiosyncratic features required to understand stock returns responses.

By methodology specifics, we mean presenting variables in the SVARs at levels do not making a huge concern about their order of integration. That is due to the objective to capture all relevant information about the interrelationships between the variables and under support by Sims *et al.* (1990), Lütkepohl (2011), Kilian (2009) and Kilian and Park (2009). By methodology innovation, we think of a new empirical evidence obtained by extending the model while adding interest and exchange rates. These additional variables allow us a better comprehension of stock markets returns responses in terms of international trade processes.

We documented mixed findings of the stock market returns responses due to oil price shocks, which seem to be affected by the country specific characteristics. In other words, in order to understand the oil-price shocks impact on stock market one has to consider a set of factors: 1) net position in the crude oil market (is the country a net exporter or net importer?); 2) economy dependency on crude oil commodity (crude oil as a percentage of country's total primary energy supply); 3) crude oil production (in what degree country relies on oil imports?); 4) export and import volumes as percentage of oil production (is the country a pure exporter/importer or not?); 5) external balance on goods and services statistics as percentage of GDP (in what degree economy depends on exports?).

Some of the factors are permanent for all oil price shocks responses while other factors' influential power is different depending on the underlying cause. For instance, German stock returns are not affected by any of the oil-price shocks likely because the level of its economy crude oil dependency is low (32.39% of TPES), lower than world level and much lower than

in other countries in a sample. On the other hand, external balance on good and services impact on stock returns is much greater while considering global aggregate demand shock response.

Taking into account impulse response analysis results and country-specific factors together, our findings suggest that oil-supply shock do not have any significant impact on real stock returns in pure net exporters, such as Canada and Norway, probably due to capacity to readjust own production and export volumes, and also in Germany because of the reason previously mentioned. Nevertheless, the shock has short-lived positive significance in United States and Denmark, oil-importing countries with sufficient volume of their own crude oil production. Japanese stock returns also show short-lived significant, but the negative response, that could be explained by fixed prices for oil due to derivatives contracts and accumulated oil reserves due to zero own production of oil. In the case of Denmark, even if the country for 2012 is considered as a net oil exporter, the level of oil import is extremely high as a percentage of the oil production that is declining dramatically recent years. Now, Denmark reported it as not energy self-sufficient and there is a tendency to become net importer closely.

Aggregate demand shock affects stock returns in a positive way for all countries except Germany as stimulus emanating from a global real economic activity growth initially outweighs the negative effect on higher oil prices. Hence, Denmark, Japan, Canada and United States got a positive and statistically significant response for the first 1, 2, 3 and 7 months, respectively. Norway has shown high and positive significance for the entire period of IRFs analysis (15 months), such a massive result of Norway could be explained by the enormous economy crude oil dependency (72.11% of TPES) and much reliance on global business cycle expansion in a form of goods and services export (with 11.47% to GDP for 1994-2014).

Oil precautionary demand shock has a positive impact on real stock returns in oil-exporting countries, such as Canada, Norway and Denmark, having significance for the first 3, 5 and 2 months, respectively. The lowest length for Denmark could be explained by its transformation from net oil exporter to importer. The highest length of significance and the biggest values of response belong to Norway due to its economy dramatic dependence on oil. Thinking of all oil importers, their stock market delivered not significant sustainable response.

We also argue that addition to the standard Kilian and Park (2009) 4-variable SVAR of interest and exchange rates can capture the international trade effects. Hence, global real economic activity positive effects strengthen over negative effects from higher oil process for aggregate demand shock response while negative effects from higher oil prices strengthen over the positive effects from performed by companies' risk management strategies for the oil-specific demand shock response. These results are based on comparison with 4-variable SVARs.

Regarding interest rates shock impact on stock returns, we found negatively significant response for oil exporters, such as Canada and Norway, and not significant for oil importers, such as Japan, Germany and special case country Denmark. The result for oil-exporters is logical while not significance in oil-importing countries could be explained by the increased stimulus to go on with renewable energy under higher oil prices and soft conditions by governors (tax reductions, low-interest rates, market premium payments, grants and others). In contrast, exchange rates shock response appeared to be controversial with logical beliefs, there is negative short-lived significance for exporters and positive for importers. However, thinking of changes in national aggregate demand, we may say that the growth of net-export in oil-importing countries is much higher than in oil-importing in the case of local currency depreciation.

The results we obtained and presented above partially contradict Kilian and Park (2009), Apergis and Miller (2009), Basher *et al.* (2012), Lin *et al.* (2014), but similar those by Wang *et al.* (2012). That happened probably due to similar data timespan. Noting the relatively low length of significant responses, we argued the reason is a capture of recent year data in a sample. The statement is supported by Blanchard and Gali (2007), Kilian (2008), Cologni and Manera (2009), who reported tendency of economies to be less dependent on oil, improvements in energy efficiency, improved monetary and fiscal policies *etc*. That is also encouraged by the International Energy Agency statistics, saying that crude oil share in the world total primary energy supply decreased by 6.22% during 1994-2013.

The present research findings could be helpful for forecasting future performance of stock market returns since by analyzing country-specific characteristics in the crude oil market, one may already have some information and intuition about the future. The study

could be useful for individual firms during the decision-making process whether they should hedge the risks or not, and for investors also for them to make a diversified portfolio.

For the further investigations, it would be interesting to conduct the research with larger data sample, to analyze each of the country-specific factors' impact on the stock market returns in order to check the propriety of them to explain the present research findings. It is also exciting to prove whether the renewable energy sources development growing effect on stock market returns. Another attractive field for researchers could be a willingness to check how the ownership structure of the oil exporting firms affects local real stock market returns.

References

Abhyankar, A., Xu, B., Wang, J. (2013). "Oil Price Shocks and the Stock Market: Evidence from Japan", *The Energy Journal*, Vol. 34, No. 2, pp. 1-32.

Adaramola, A. O. (2012), "Oil Price Shocks and Stock Market Behaviour: The Nigerian Experience", *Journal of Economics*, Vol. 3, No. I, pp. 19-24.

Alquist, R. and Kilian, L. (2010), "What do we learn from the price of crude oil futures?", *Journal of Applied Econometrics*, Vol. 25, No. 4, pp. 539-573.

Apergis, N. and Miller, S. (2009), "Do structural oil-market shocks affect stock prices?", *Energy Economics*, Vol. 31, No. 4, pp. 569-575.

Arouri, M., Lahiani, A., Bellalah, M. (2010), "Oil Price Shocks and Stock Market Returns in Oil-Exporting Countries: The Case of GCC Countries", *International Journal of Economics and Finance*, Vol. 2, No. 5, pp. 132-139.

Backus, D.K. and Crucini, M.J. (2000), "Oil prices and the terms of trade", *Journal of International Economics*, Vol. 50, No. 1, pp. 185–213.

Basher, S., Haug, A., Sadorsky, P. (2012), "Oil prices, exchange rates and emerging stock markets", *Energy Economics*, Vol. 34, No. 1, pp. 227-240.

Barsky, R. and Kilian, L. (2002), "Do We Really Know that Oil Caused the Great Stagflation? A Monetary Alternative", NBER Macroeconomics Annual, Vol. 16, pp. 137–183. Cambridge, MA: MIT Press.

Blanchard, O. and Gali, J. (2007), "The Macroeconomic Effects of Oil Price Shocks: Why are 2000's So Different from the 1970's?", Working Paper 13368, National Bureau of Economic Research, pp. 1-77.

Brook, C. (2008), *Introductory Econometrics for Finance*, New York: Cambridge University Press.

Carruth, A.A., Hooker, M.A., Oswald, A.J. (1998), "Unemployment equilibria and input prices: theory and evidence from the United States", *Review of Economics and Statistics*, Vol. 80, No. 4, pp. 621–628.

Cologni, A. and Manera, M. (2009), "The asymmetric effects of oil shocks on output growth: a Markov-switching analysis for the G7 countries", Economic Modelling, Vol. 26, No. 1, pp. 1–29.

Daniel, B. (1997), "International interdependence of national growth rates: A structural trends analysis", *Journal of Monetary Economics,* Vol. 40, No. 1, pp. 73-96.

Davis, S.J. (1987), "Fluctuations in the pace of labor reallocation. Empirical Studies of Velocity, Real Exchange Rates, Unemployment and Productivity", Carnegie-Rochester Conference Series on Public Policy, Vol. 24. pp. 335-402.

Donnelly, R. and Sheehy, E. (1996), "The share price reaction of U.K. exporters to exchange rate movements: An empirical study", *Journal of International Business Studies*, Vol. 27, pp. 157–165.

Driesprong, G., Jacobsen, B., Benjiman, M. (2003), "Striking oil: Another puzzle?", Erasmus University Rotterdam, Working Paper, pp. 1-33.

Faff, R. and Brailsford, T. (1999), "Oil price risk and the Australian stock market", *Journal of Energy Finance & Development,* Vol. 4, No. 1, pp. 69-87.

Fama, E. (1981), "Stock Returns, Real Activity, Inflation and Money", *The American Economic Review,* Vol. 71, No. 4, pp. 545-565.

Fayyad, A. and Daly, K. (2011), "The impact of oil price shocks on stock market returns: Comparing GCC countries with the UK and USA", *Emerging Markets Review,* Vol. 12, No. 1, pp. 61-78.

Ferson, W. and Harvey, C. (1994), "Sources of risk and expected returns in global equity markets", *Journal of Banking & Finance,* Vol. 18, No. 4, pp. 775–803.

Ferson, W. and Harvey, C. (1995), "Predictability and time-varying risk in world equity markets", *Research in Finance,* Vol. 13, pp. 25–88.

French, K. R., Schwert, G.W. and Stanbaugh, R. F. (1987), "Expected Stock Returns and Volatility", *Journal of Financial Economics*, Vol. 19, No. 1, pp. 3-29.

Gisser, M. and Goodwin, T. (1986). "Crude Oil and the Macroeconomy: Tests of Some Popular Notions: Note", *Journal of Money, Credit and Banking*, Vo. 18, No. 1, pp. 95-103.

Hamilton, J. D. (2003), “What is an Oil Shock?”, *Journal of Econometrics*, Vol. 113, No. 2, pp. 363-398.

Hamilton, J. D. (2009), “Understanding crude oil prices”, *Energy Journal*, Vol. 30, No. 2, pp. 179–206.

Hamilton, J.D. (1983), “Oil and the macroeconomy since World War II”, *Journal of Political Economy*, Vol. 91, No. 2, pp. 228–248.

Hammoudeh, S. and Aleisa, E. (2004), “Dynamic relationships among GCC stock markets and NYMEX oil futures”, *Contemporary Economic Policy*, Vol. 22, No. 2, pp. 250-269.

He, J. and Ng, L. (1998). “The foreign exchange exposure of Japanese multinational corporations”, *Journal of Finance*, Vol. 53, pp. 733–753.

Huang, R., Masulis, R., Stoll, H. (1996), “Energy Shocks and Financial Markets”, *Journal of Futures Markets*, Vol. 16, No. 1, pp. 1-27.

International Monetary Fund (2015), *World Economic Outlook: Adjusting to Lower Commodity Prices*, Washington, DC

Jung, H, and Park, C. (2011), “Stock market reaction to oil price shocks: a comparison between an oil-exporting economy and an oil-importing economy”, *Journal of Economic Theory and Econometrics*, Vol. 22, No. 3, pp. 1–29.

Kapusuzoglu, A. (2011), “Relationships between Oil Price and Stock Market: An Empirical Analysis from Istanbul Stock Exchange (ISE)”, *International Journal of Economics and Finance*, Vol. 3, No. 6, pp. 99-106.

Keane, M.P. and Prasad, E. (1996). “The employment and wage effects of oil price changes: a sectoral analysis”, *Review of Economics and Statistics*, Vol. 78, No. 3, pp. 389–400.

Kilian, L. (2008), “Exogenous oil supply shocks: how big are they and how much do they matter for the US economy?”, *Review of Economics and Statistics*, Vol. 90, No. 2, pp. 216–240.

Kilian, L. (2009), "Not all oil price shocks are alike: disentangling demand and supply shocks in the crude oil market", *American Economic Review*, Vol. 99, No. 3, pp. 1053-1069.

Kilian, L. and Park, C. (2009), “The impact of oil price shocks on the U.S. stock market”, *International Economic Review*, Vol. 50, No. 4, pp. 1267-1287.

Lee, K. and Ni, S. (2002), “On the dynamic effects of oil price shocks: a study using industry level data”, *Journal of Monetary Economics*, Vol. 49, No. 4, pp. 823–852.

Lin, C., Fang C., Cheng H. (2014), “The impact of oil price shocks on the returns in China’s stock market”, *Emerging Markets Finance & Trade*, Vol. 50, No. 5, pp. 193-205.

Lütkepohl, H. (2011), “Vector autoregressive models”, European University Institute Working paper ECO 2011/30 (prepared for the Handbook of Research Methods and Applications on Empirical Macroeconomics).

Maghyereh, A. and Al-Kandari, A. (2007),"Oil prices and stock markets in GCC countries: new evidence from nonlinear cointegration analysis", *Managerial Finance*, Vol. 33, No. 7, pp. 449-460.

Masih, R., Peters, S., De Mello, L. (2011), “Oil price volatility and stock price fluctuations in an emerging market: Evidence from South Korea”, *Energy Economics*, Vol. 33, No. 5, pp. 975-986.

Muellbauer, J. and Nunziata, L. (2001), “Credit, the stock market, and oil. Forecasting U.S. GDP”, Center for Economic Policy Research, Discussion paper, No. 2906.

Narayan, C. and Narayan, S. (2010), “Modelling the impact of oil prices on Vietnam’s stock prices”, *Applied Energy*, Vol. 87, No. 1, pp. 356-361.

Ono, S. (2011), “Oil Price Shocks and Stock Markets in BRICs”, *The European Journal of Comparative Economics*, Vol. 8, No. 1, pp. 29-45.

Pan, M., Fok, R., Liu, Y. (2007), “Dynamic linkages between exchange rates and stock prices: Evidence from East Asian markets”, *International Review of Economics & Finance*, Vol. 16, No. 4, pp. 503-520.

Papapetrou, E. (2001), “Oil price shocks, stock market, economic activity and employment in Greece”. *Energy Economics*, Vol. 23, No. 5, pp. 511-532.

Park, J. and Ratti, A. (2008), “Oil price shocks and stock markets in the U.S. and 13 European countries”, *Energy Economics*, Vol. 30, No. 5, pp. 2587-2608.

Pfaff, B. (2008), “VAR, SVAR and SVEC models: implementation within R package vars”, *Journal of statistical software*, Vol. 27, No. 4, pp. 1-32.

Rasche, R. and Tatom, J. (1981), “Energy price shocks, aggregate supply, and monetary policy: the theory and international evidence. Supply shocks, incentives, and national wealth”, Carnegie-Rochester Conference Series on Public Policy, Vol. 14, pp. 10-94.

Raymond, J. and Rich, R. (1997), “Oil and the macroeconomy: a Markov state-switching approach”, *Journal of Money, Credit and Banking*, Vol. 29, No. 2, pp. 193–213.

Sims, C. (1980), “Macroeconomics and Reality,” *Econometrica*, Vol. 48, No. 1, pp. 1-48.

Sims, C., Stock, J., Watson, M. (1990), “Inference in linear time series models with some unit roots”, *Econometrica*, Vol. 58, No. 1, pp. 113-144.

Wang, Y., Wu, C., Yang L. (2013), “Oil price shocks and stock market activities: Evidence from oil-importing and oil-exporting countries", *Journal of Comparative Economics*, Vol. 41, No. 4, pp. 1220-1269.

Yergin, D. (1992), *The Prize: The Epic Quest for Oil, Money, and Power*, New York: Free Press.

Zhang, C. and Chen, X. (2011), “The impact of global oil price shocks on China’s stock returns: Evidence from the ARJI(-h_t)-EGARCH model”, *Energy*, Vol. 36, No. 11, pp. 6627-6633.

Appendix

Table 1
Sample of countries selection process

Developed countries	Annual net crude oil revenues/expenditures	Nominal GDP	Crude oil dependency ratio	Economy importance ratio	Final relative ratio
European Union (EU-15)					
Austria	(5,950.97)	407,575.11	-1.46%	0.55%	-0.0081%
Belgium	(22,353.83)	498,746.23	-4.48%	0.68%	-0.0304%
Denmark	**1,916.82**	**322,276.54**	**0.59%**	**0.44%**	**0.0026%**
Finland	(8,764.65)	256,706.47	-3.41%	0.35%	-0.0119%
France	(44,509.13)	2,681,416.11	-1.66%	3.65%	-0.0606%
Germany	**(72,417.91)**	**3,533,242.46**	**-2.05%**	**4.81%**	**-0.0986%**
Greece	(17,751.37)	249,524.99	-7.11%	0.34%	-0.0242%
Ireland	(2,427.75)	221,965.98	-1.09%	0.30%	-0.0033%
Italy	(57,391.04)	2,075,220.97	-2.77%	2.82%	-0.0781%
Netherlands	(46,681.37)	823,139.24	-5.67%	1.12%	-0.0635%
Portugal	(8,676.62)	216,368.22	-4.01%	0.29%	-0.0118%
Spain	(45,520.12)	1,355,732.59	-3.36%	1.85%	-0.0620%
Sweden	(15,801.89)	543,880.65	-2.91%	0.74%	-0.0215%
United Kingdom	(19,700.53)	2,614,946.49	-0.75%	3.56%	-0.0268%
Other Europe					
Norway	**49,809.72**	**509,704.86**	**9.77%**	**0.69%**	**0.0678%**
Switzerland	(2,718.67)	666,100.61	-0.41%	0.91%	-0.0037%
Other countries					
Australia	(8,131.80)	1,534,425.91	-0.53%	2.09%	-0.0111%
Canada	**66,637.84**	**1,832,715.60**	**3.64%**	**2.49%**	**0.0907%**
Japan	**(143,109.24)**	**5,954,476.60**	**-2.40%**	**8.10%**	**-0.1948%**
New Zealand	(2,738.40)	174,445.31	-1.57%	0.24%	-0.0037%
United States	**(361,767.66)**	**16,163,158.00**	**-2.24%**	**22.00%**	**-0.4924%**
New European Union members					
Bulgaria	(4,923.38)	52,591.57	-9.36%	0.07%	-0.0067%
Czech Republic	(5,407.43)	206,751.37	-2.62%	0.28%	-0.0074%
Estonia	363.66	22,660.73	1.60%	0.03%	0.0005%
Hungary	(4,438.42)	126,824.84	-3.50%	0.17%	-0.0060%
Latvia	(0.85)	28,545.15	0.00%	0.04%	0.0000%
Lithuania	(6,931.71)	42,824.49	-16.19%	0.06%	-0.0094%
Poland	(18,820.60)	496,205.74	-3.79%	0.68%	-0.0256%
Romania	(3,951.77)	169,396.06	-2.33%	0.23%	-0.0054%
Slovakia	(4,128.42)	92,747.39	-4.45%	0.13%	-0.0056%

The exports and imports of crude oil including lease condensate, monthly international crude oil price data for are obtained from the U.S. Energy Information Administration (EIA) website. The nominal GDP information is provided by the World bank website. The list of developed countries refers to United Nations World Economic Situation and Prospects report. Luxembourg, Iceland, Cyprus, Malta and Slovenia have been taken out of analysis due to no available data provided by EIA. The annual net crude oil revenues/expenditures are calculated as follows: crude oil exports/imports per day * 1000 (since exports/imports expressed in thousand barrels per day) * 105.1 (monthly international average price of crude oil per barrel, in USD) * 366 (number of days in 2012). The crude oil dependency ratio is computed as the division between annual net crude oil revenues/expenditures and GDP. The economy importance ratio is a ratio of national economy GDP and world GDP. The final relative ratio represents sample selection criteria and is calculated as the multiplication of crude oil dependency ratio and economy importance ratio. Its positive value means that country is net exporter while negative values report net importer position, the highest value in absolute terms the higher level of crude oil dependency. The world nominal GDP is equal to 73.47 trillion USD. All data together with calculations based on 2012 year.

Table 2
Descriptive statistics

	ALL COUNTRIES		CANADA				NORWAY				UNITED STATES		
	PRODC	**REA**	**RPO**	**INT_R**	**EXCH**	**S&P/TSX**	**RPO**	**INT_R**	**EXCH**	**OSEAX**	**RPO**	**INT_R**	**S&P500**
Mean	0.106797	3.074525	3.908324	3.170197	0.220801	0.283411	4.084996	4.249195	1.905728	0.594698	4.005786	3.085757	0.376616
Median	0.086772	0.185	3.864302	3.0156	0.234685	0.867307	4.049347	4.	1.874752	1.190777	4.01381	2.92	1.021074
Maximum	2.886626	63.3	4.704382	8.1875	0.470185	15.40058	5.038899	8.512	2.246279	14.5603	4.633619	6.76	14.51121
Minimum	-2.424601	-62.8	2.892592	0.425	-0.04573	-22.25267	3.018472	1.817	1.621939	-29.37023	3.110853	0.185	-16.57531
Std. Dev.	0.80795	27.66305	0.483851	1.837831	0.156394	4.674413	0.483178	2.027897	0.146518	6.242703	0.405711	2.319047	4.590936
Skewness	-0.077198	0.233041	0.010388	0.344824	-0.113524	-0.953262	0.065381	0.354863	0.434626	-1.201586	-0.106068	0.045833	-0.698596
Kurtosis	3.814817	2.302652	1.711343	2.22987	1.610398	6.573544	1.859298	1.721494	2.46578	6.652653	1.852915	1.315384	4.561536
Jarque-Bera	7.364821	7.533605	17.78728	11.44416	21.22975	175.6708	14.11679	22.89752	11.14727	204.7124	14.57197	30.47951	47.01536
Probability	0.025162	0.023126	0.000137	0.003273	0.000025	0	0.00086	0.000011	0.003797	0	0.000685	0	0
Sum	27.44691	790.153	1004.439	814.7406	56.7459	72.83673	1049.844	1092.043	489.772	152.8375	1029.487	793.0395	96.79023
Sum Sq. Dev.	167.1123	195902.5	59.93261	864.6712	6.261504	5593.634	59.76593	1052.766	5.4957	9976.662	42.13802	1376.763	5395.632
Observations	257	257	257	257	257	257	257	257	257	257	257	257	257

	DENMARK				JAPAN				GERMANY			
	RPO	**INT_R**	**EXCH**	**OMXC20**	**RPO**	**INT_R**	**EXCH**	**NIKKEI225**	**RPO**	**INT_R**	**EXCH**	**DAX30**
Mean	3.933594	2.857845	1.81945	0.834313	3.740498	0.388272	4.665693	-0.045981	3.955398	2.578836	-0.18923	0.43848
Median	3.91721	3.265	1.777779	1.152738	3.801538	0.225	4.68675	0.423129	3.9188	2.875	-0.23008	1.499552
Maximum	4.90779	7.125	2.176239	15.17466	4.766353	2.3438	4.981138	13.83282	4.832704	5.315	0.166878	18.52373
Minimum	2.81481	-0.86	1.547222	-19.2533	2.43449	-0.235	4.332442	-27.78374	2.962692	-0.06	-0.46156	-23.1515
Std. Dev.	0.517152	1.926233	0.14287	5.454021	0.661045	0.501955	0.142833	6.005058	0.469636	1.582754	0.142526	6.35492
Skewness	-0.03584	-0.0709	0.716594	-0.7804	-0.134936	2.29021	-0.588842	-0.477725	-0.02771	-0.17544	0.733088	-0.79679
Kurtosis	1.766762	2.092264	2.820533	4.342788	1.647973	8.730079	2.670887	3.962403	1.762304	1.864881	2.850546	4.273614
Jarque-Bera	16.34105	9.038796	22.34013	45.3943	20.3545	576.2589	16.0117	19.69374	16.43691	15.11598	23.25858	44.56351
Probability	0.000283	0.010896	0.000014	0	0.000038	0	0.000334	0.000053	0.00027	0.000522	0	0
Sum	1010.934	734.4662	467.5988	214.4184	961.3079	99.78587	1199.083	-11.81709	1016.537	662.7609	-48.6312	112.6893
Sum Sq. Dev.	68.46615	949.8556	5.225432	7615.063	111.8669	64.50145	5.222733	9231.546	56.46293	641.3084	5.200327	10338.56
Observations	257	257	257	257	257	257	257	257	257	257	257	257

Canada, Norway and Denmark are representatives of oil-exporting countries while United States, Japan and Germany are oil-importing countries. ***PRODC*** is the global oil production change rate (calculated as log difference of oil production), *REA* is the monthly global real activity change rate (Kilian index), ***RPO*** is the real price of oil (deflated by U.S. CPI Energy, 2010 as a base year), ***INT_R*** is the interest rates for 3 month U.S. Government T-bills, ***EXCH*** is the exchange rate of the country's currency against USD, ***S&P/TSX, OSEAX, OMXC20, S&P500, NIKKEI225*** **and** ***DAX30*** are stock market returns for Canada, Norway, Denmark, United States, Japan and Germany, respectively.

Table 3
Unit root tests

Variables	ADF test		PP test		KPSS test		Country
	w/o trend	w/ trend	w/o trend	w/ trend	w/o trend	w/ trend	
PRODC	-13.64(1)***	-13.63(1)***	-17.17(1)***	-17.14(1)***	0.047(1)	0.031(1)	Common
REA	-3.147(1)**	-3.123(1)	-2.377(9)	-2.337(9)	0.351(11)*	0.338(11)***	Common
INT_R	-1.766(2)	-3.281(3)*	-1.691(7)	-2.719(7)	1.499(12)***	0.053(12)	Canada
EXCH	-1.314(1)	-1.292(1)	-1.282(7)	-1.166(7)	1.484(12)***	0.222(12)***	Canada
RPO	-1.734(0)	-2.034(0)	-1.653(1)	-2.006(3)	1.725(12)***	0.175**	Canada
TSXRETURNS	-13.77(0)***	-13.77(0)***	-13.77(3)***	-13.77(3)***	0.078(4)	0.029(4)	Canada
INT_R	-1.781(2)	-2.686(2)	-1.711(7)	-2.551(7)	1.067(12)***	0.104(12)	Norway
EXCH	-1.451(0)	-1.135(0)	-1.617(4)	-1.35(4)	0.759(12)***	0.211(12)**	Norway
RPO	-1.855(0)	-2.373(0)	-1.868(1)	-2.699(3)	1.651(12)***	0.135(11)*	Norway
NORWAYRETURNS	-13.7(0)***	-13.68(0)***	-13.76(3)***	-13.74(3)***	0.05(5)	0.045(5)	Norway
INT_R	-1.896(3)	-2.892(3)	-1.488(8)	-2.503(8)	1.419(12)***	0.128(12)*	Denmark
EXCH	-1.652(0)	-1.612(0)	-1.669(2)	-1.636(2)	0.702(12)**	0.224(12)***	Denmark
RPO	-1.713(0)	-2.082(0)	-1.676(1)	-2.2(3)	1.689(12)***	0.183(11)**	Denmark
OMXCRETURNS	-14.46(0)***	-14.43(0)***	-14.59(5)***	-14.57(5)***	0.065(6)	0.064(6)	Denmark
INT_R	-1.104(2)	-2.068(2)	-1.08(8)	-2.313(8)	1.382(12)***	0.078(12)	United States
RPO	-1.733(1)	-1.972(1)	-1.852(2)	-2.562(3)	1.761(12)***	0.15(11)**	United States
USRETURNS	-15.4(0)***	-15.4(0)***	-15.45(6)***	-15.45(6)***	0.174(6)	0.129(6)*	United States
INT_R	-3.831(2)***	-3.598(2)**	-3.381(4)**	-3.24(4)*	0.461(11)*	0.219(12)***	Japan
EXCH	-1.665(0)	-1.654(0)	-1.864(4)	-1.892(4)	0.611(12)**	0.178(12)**	Japan
RPO	-1.592(0)	-1.636(0)	-1.573(1)	-1.658(2)	1.811(12)***	0.218(11)***	Japan
NIKKEIRETURNS	-14.56(0)***	-14.61(0)***	-14.64(5)***	-14.68(5)***	0.143(6)	0.048(6)	Japan
INT_R	-1.376(1)	-2.248(1)	-1.53(9)	-2.395(9)	1.304(12)***	0.149(12)**	Germany
EXCH	-1.63(0)	-1.647(0)	-1.634(1)	-1.659(2)	0.699(12)**	0.227(12)***	Germany
RPO	-1.878(0)	-2.2(0)	-1.867(2)	-2.333(3)	1.679(12)***	0.169(11)**	Germany
DAXRETURNS	-14.87(0)***	-14.85(0)***	-14.87(2)***	-14.85(2)***	0.073(3)	0.066(3)	Germany

This table reports the results of unit root tests for all six variables that are proposed to use in SVAR model of each country. ***PRODC*** is the global oil production change rate (calculated as log difference of oil production), ***REA*** is the monthly global real activity change rate (Kilian index), ***INT_R*** is the interest rates, ***EXCH*** is the exchange rate of the local currency against USD (in a logarithmic form), ***RPO*** is the real price of oil (deflated by U.S. CPI with 2010 as a base year and transformed to the log), ***TSXRETURNS*** is the stock market returns for Canada (TSX/S&P500) while ***NORWAYRETURNS*** – for Norway (OSEAX), ***OMXCRETURNS*** – for Denmark (OMXC20), ***USRETURNS*** – for United States (S&P500), ***NIKKEIRETURNS*** – for Japan (NIKKEI225) and ***DAXRETURNS*** – for Germany (DAX30). We use Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests, and report results with and without a trend. The null hypothesis for ADF and PP unit root tests is "has a unit root" statement, KPSS test null hypothesis argues the opposite. The numbers in parentheses after the t-statistics value represent the number of lags. The lag length selection process for ADF tests is automatic and based on Schwarz Information Criterion (maximum – 30 lags), for PP and KPSS test the number of bandwidths is Newey-West automatic (using Bartlett kernel). The level of significance for coefficients are expressed as follows: * if significant at 10% level, ** if significant at 5% level and *** if significant at 1%.

Table 4
Business cycle dating for oil-exporting and oil-importing countries during 1994-2015

	Recession designation	Peak	Trough
Canada	D1	2008M10	2009M05
Norway	D1	2008M01	2009M04
	D2	2011M10	2013M01
Denmark	D1	2008M01	2009M04
	D2	2011M10	2013M01
United States	D1	2001M03	2001M11
	D2	2007M12	2009M06
Japan	D1	1997M03	1999M07
	D2	2000M08	2003M04
	D3	2008M02	2009M03
	D4	2010M08	2011M04
	D5	2012M05	2013M01
	D6	2014M03	2014M08
Germany	D1	2008M01	2009M04
	D2	2011M10	2013M01

The C.D. Howe Institute Business Cycle Council provided data for Canada, The Centre for Economic Policy Research - for Germany and Denmark, The National Bureau of Economic Research – for United States, The Economic Cycle Research Institute – for Japan. Due to difficulties to find official business cycle dating for Norway the Denmark's dummies are used, under the assumption of similarity between Nordic countries' economies. The recessions are designated for ease of using them in LR tests to determine the variables to put into the SVAR model.

Table 5
Likelihood Ratio test results to determine necessity of dummies' addition in SVAR for oil-exporting and oil-importing countries

	Dummies	Determinant residual covariance		*T*	*m*	*q*	LR test value	Chi-square distribution value (0.05)
		Unrestricted system (with dummy)	Restricted system (without dummy)					
Canada	D1	0.668786	0.738278	233	98	4	13.346	9.488
Norway	D1	1.317255	1.411596	233	98	4	9.338	9.488
	D2	1.31799	1.411596	233	98	4	9.263	9.488
	D1+D2	1.215334	1.411596	233	99	8	20.060	15.507
Denmark	D1	1.218797	1.27549	233	98	4	6.138	9.488
	D2	1.190516	1.27549	233	98	4	9.307	9.488
	D1+D2	1.123764	1.27549	233	99	8	16.971	15.507
United States	D1	0.584561	0.603476	233	98	4	4.299	9.488
	D2	0.588012	0.603476	233	98	4	3.504	9.488
	D1+D2	0.566303	0.603476	233	99	8	8.519	15.507
Japan	D1	1.567132	1.600539	233	98	4	2.848	9.488
	D2	1.514532	1.600539	233	98	4	7.457	9.488
	D3	1.509607	1.600539	233	98	4	7.896	9.488
	D4	1.522312	1.600539	233	98	4	6.765	9.488
	D5	1.558609	1.600539	233	98	4	3.584	9.488

	D6	1.554929	1.600539	233	98	4	3.903	9.488
	D1+D2	1.433583	1.600539	233	99	8	14.762	15.507
	D1+D3	1.484796	1.600539	233	99	8	10.058	15.507
	D1+D4	1.491424	1.600539	233	99	8	9.462	15.507
	D1+D5	1.527184	1.600539	233	99	8	6.287	15.507
	D1+D6	1.520652	1.600539	233	99	8	6.861	15.507
	D2+D3	1.373472	1.600539	233	99	8	20.502	15.507
	D2+D4	1.440834	1.600539	233	99	8	14.086	15.507
	D2+D5	1.480043	1.600539	233	99	8	10.488	15.507
	D2+D6	1.475972	1.600539	233	99	8	10.857	15.507
	D3+D4	1.436781	1.600539	233	99	8	14.463	15.507
	D3+D5	1.470482	1.600539	233	99	8	11.357	15.507
	D3+D6	1.464952	1.600539	233	99	8	11.861	15.507
	D4+D5	1.457824	1.600539	233	99	8	12.515	15.507
	D4+D6	1.454469	1.600539	233	99	8	12.824	15.507
	D5+D6	1.504485	1.600539	233	99	8	8.293	15.507
	D1+D2+D3	1.310073	1.600539	233	100	12	26.634	21.026
	D1+D2+D4	1.363284	1.600539	233	100	12	21.339	21.026
	D1+D2+D5	1.400244	1.600539	233	100	12	17.781	21.026
	D1+D2+D6	1.397242	1.600539	233	100	12	18.067	21.026
	D2+D3+D4	1.302265	1.600539	233	100	12	27.429	21.026
	D2+D3+D5	1.342733	1.600539	233	100	12	23.359	21.026
	D2+D3+D6	1.337514	1.600539	233	100	12	23.877	21.026
	D1+D3+D4	1.416770	1.600539	233	100	12	16.221	21.026
	D1+D3+D5	1.448515	1.600539	233	100	12	13.274	21.026
	D1+D3+D6	1.438252	1.600539	233	100	12	14.219	21.026
	D1+D2+D3+D4	1.249429	1.600539	233	101	16	32.690	21.026
	D1+D2+D3+D5	1.279811	1.600539	233	101	16	29.519	26.296
	D1+D2+D3+D6	1.275781	1.600539	233	101	16	29.935	26.296
	D1+D2+D3+D4+D5	1.195093	1.600539	233	102	20	38.267	31.410
	D1+D2+D3+D4+D6	1.201546	1.600539	233	102	20	37.562	31.410
	D1+D2+D3+D5+D6	1.240424	1.600539	233	102	20	33.390	31.410
	D1+D2+D3+D4+D5+D6	1.127454	1.600539	233	103	24	45.549	36.415
Germany	D1	1.459456	1.508282	233	98	4	4.443	9.488
	D2	1.445408	1.508282	233	98	4	5.748	9.488
	D1+D2	1.398463	1.508282	233	99	8	10.130	15.507

Likelihood Ratio test values are calculated as $(\boldsymbol{T-m})$ $(\boldsymbol{Ln}|\sum_{\boldsymbol{R}}| + \boldsymbol{Ln}|\sum_{\boldsymbol{U}}|)$. $\sum_{\boldsymbol{R}}$ refers as determinant of the residual covariance matrix of the restricted system while $\sum_{\boldsymbol{U}}$ of the unrestricted system, *T* is the number of observations, *m* is the sum of parameters in each equation of the unrestricted system, constants and dummies, *q* is the number of restrictions. The dummies are established with accordance of business cycle dating. All possible combinations are presented to ensure better SVAR model fit. By focusing on recessions longer than one year, the prioritization was performed in order to reduce required amount of tests from 720 to 38 for Japan. The C.D. Howe Institute Business Cycle Council provided the information for Canada, The Centre for Economic Policy Research - for Germany and Denmark, The National Bureau of Economic Research – for United States, The Economic Cycle Research Institute – for Japan. Due to difficulties to find official business cycle dating for Norway the Denmark's dummies are used identifying the assumption of similarity between Nordic countries' economies. The [1 24] lag length used during the tests.

Table 6
4-variable SVARs of each country

CANADA					NORWAY				
	PRODC	REA	RPO	TSXRETURNS		PRODC	REA	RPO	NORWAYRETURNS
PRODC(-1)	-0.08779	-0.08197	-0.01132	0.000899	**PRODC(-1)**	-0.068966	-0.42527	-0.01324	-0.00552
	-0.07976	-0.93515	-0.01036	-0.51664		-0.08136	-0.89067	-0.01088	-0.68207
PRODC(-2)	-0.18524**	0.36358	-0.00165	0.463304	**PRODC(-2)**	-0.24338***	0.329466	-0.00615	0.994267
	-0.07849	-0.92031	-0.01019	-0.50844		-0.07964	-0.87188	-0.01065	-0.66768
PRODC(-3)	-0.00801	0.332287	-0.0037	1.106197**	**PRODC(-3)**	-0.088099	0.411158	-0.00831	1.269193*
	-0.07746	-0.90818	-0.01006	-0.50174		-0.0812	-0.88897	-0.01086	-0.68077
PRODC(-4)	0.026952	-0.50383	-0.00555	0.559456	**PRODC(-4)**	-0.051307	0.540526	-0.00473	1.362912**
	-0.07806	-0.91515	-0.01014	-0.50559		-0.08219	-0.89977	-0.01099	-0.68904
PRODC(-5)	-0.08448	-0.412	-0.00875	-0.180314	**PRODC(-5)**	-0.086288	-0.34755	0.00043	0.118812
	-0.07779	-0.91204	-0.0101	-0.50387		-0.08242	-0.90233	-0.01102	-0.691
PRODC(-6)	-0.08512	-2.24073**	-0.02413**	0.251753	**PRODC(-6)**	-0.057563	-1.95687**	-0.02717**	1.09785
	-0.07805	-0.91506	-0.01014	-0.50554		-0.08293	-0.90791	-0.01109	-0.69527
PRODC(-7)	-0.09513	0.274388	-0.01554	-1.118557**	**PRODC(-7)**	-0.109812	0.546922	-0.01614	-0.10575
	-0.08114	-0.95136	-0.01054	-0.52559		-0.08589	-0.94024	-0.01148	-0.72003
PRODC(-8)	-0.03486	-0.17523	-0.00028	-0.362871	**PRODC(-8)**	-0.088228	0.124032	-0.00014	-0.36122
	-0.08169	-0.95779	-0.01061	-0.52914		-0.08657	-0.94771	-0.01157	-0.72575
PRODC(-9)	0.062979	-0.83972	-0.01154	-0.667463	**PRODC(-9)**	0.050232	-0.54644	-0.01921*	-0.38019
	-0.08008	-0.93894	-0.0104	-0.51873		-0.08537	-0.93457	-0.01141	-0.71568
PRODC(-10)	-0.0375	-1.74736*	0.005314	-0.243526	**PRODC(-10)**	-0.078106	-1.68622*	-0.00034	0.647682
	-0.0803	-0.94142	-0.01043	-0.5201		-0.08516	-0.93225	-0.01138	-0.71391
PRODC(-11)	-0.05697	0.334851	-0.01589	-0.455156	**PRODC(-11)**	-0.094589	0.47174	-0.02286**	-0.84461
	-0.08018	-0.94007	-0.01041	-0.51935		-0.08577	-0.93897	-0.01147	-0.71906
PRODC(-12)	0.006899	-1.46956	-0.01966*	-1.199281**	**PRODC(-12)**	-0.007403	-2.14643**	-0.01978*	-0.77551
	-0.07898	-0.92595	-0.01026	-0.51155		-0.08532	-0.93406	-0.01141	-0.71529
PRODC(-13)	-0.10935	-0.22322	0.006151	0.320103	**PRODC(-13)**	-0.117154	-0.46361	0.00937	0.64363
	-0.07938	-0.93064	-0.01031	-0.51414		-0.08623	-0.94396	-0.01153	-0.72288
PRODC(-14)	0.091616	-1.4601	-0.00954	0.536221	**PRODC(-14)**	0.049218	-1.67528*	-0.01301	0.200569
	-0.0803	-0.9415	-0.01043	-0.52014		-0.08741	-0.95695	-0.01169	-0.73282
PRODC(-15)	0.152608*	0.799839	-0.01762*	0.757215	**PRODC(-15)**	0.112509	0.191775	-0.02784**	0.914556
	-0.0808	-0.94734	-0.01049	-0.52337		-0.08694	-0.95179	-0.01162	-0.72887
PRODC(-16)	0.123117	0.154586	-0.00213	1.235737**	**PRODC(-16)**	0.042774	0.559226	0.001976	1.338113*
	-0.08233	-0.96529	-0.01069	-0.53329		-0.0887	-0.97104	-0.01186	-0.74361
PRODC(-17)	-0.01914	-0.20044	-0.01596	-0.230566	**PRODC(-17)**	-0.032025	0.5191	-0.02371**	-0.28751
	-0.08146	-0.9551	-0.01058	-0.52766		-0.08943	-0.97899	-0.01196	-0.7497
PRODC(-18)	-0.02747	-0.64158	-0.0107	0.48293	**PRODC(-18)**	-0.019383	-0.10528	-0.01024	1.134747
	-0.08157	-0.95636	-0.01059	-0.52835		-0.09103	-0.99657	-0.01217	-0.76316
PRODC(-19)	-0.08837	-0.78458	0.003776	0.080545	**PRODC(-19)**	-0.121917	-0.76351	0.008782	0.695617
	-0.08047	-0.94348	-0.01045	-0.52124		-0.09016	-0.98709	-0.01205	-0.75591
PRODC(-20)	-0.01431	0.22128	0.002492	-0.417544	**PRODC(-20)**	-0.061545	-0.64762	0.004386	0.304252
	-0.07874	-0.92316	-0.01022	-0.51001		-0.08684	-0.95073	-0.01161	-0.72806
PRODC(-21)	-0.1238	-1.17014	0.007319	0.328897	**PRODC(-21)**	-0.20862**	-1.68604*	0.002006	0.942313
	-0.07821	-0.91701	-0.01016	-0.50661		-0.08687	-0.95099	-0.01161	-0.72826
PRODC(-22)	-0.12202	0.924643	0.003866	0.753857	**PRODC(-22)**	-0.154576*	0.18151	0.001127	0.903923
	-0.07833	-0.91836	-0.01017	-0.50736		-0.08877	-0.97182	-0.01187	-0.74421
PRODC(-23)	-0.13308*	-0.96088	0.007532	0.202247	**PRODC(-23)**	-0.177006**	-1.46373	0.000336	0.427015
	-0.07851	-0.92044	-0.01019	-0.50851		-0.08737	-0.95653	-0.01168	-0.73251
PRODC(-24)	0.302038***	0.660227	0.010901	-0.003299	**PRODC(-24)**	0.321261***	0.044384	0.00748	0.300513
	-0.07912	-0.92769	-0.01028	-0.51252		-0.088	-0.96345	-0.01177	-0.7378
REA(-1)	0.007515	1.261071***	0.000828	0.016478	**REA(-1)**	0.007618	1.187339***	0.000966	0.094443
	-0.00757	-0.08874	-0.00098	-0.04903		-0.00848	-0.09284	-0.00113	-0.0711
REA(-2)	-0.00783	-0.5021***	0.000584	0.00839	**REA(-2)**	-0.008435	-0.41651***	0.000148	-0.09355
	-0.01199	-0.14053	-0.00156	-0.07764		-0.01295	-0.14173	-0.00173	-0.10854
REA(-3)	0.006504	0.244453*	-0.0025	-0.036288	**REA(-3)**	0.010355	0.257576*	-0.00191	0.052077
	-0.01248	-0.14627	-0.00162	-0.08081		-0.01347	-0.14743	-0.0018	-0.1129
REA(-4)	0.005502	-0.35323**	0.00149	0.094218	**REA(-4)**	0.006953	-0.34686**	0.00183	0.062988
	-0.01258	-0.14752	-0.00163	-0.0815		-0.01356	-0.14849	-0.00181	-0.11371
REA(-5)	-0.00931	0.386774**	-0.00036	-0.092574	**REA(-5)**	-0.008062	0.381077**	-0.00121	-0.04094
	-0.01286	-0.15081	-0.00167	-0.08332		-0.01399	-0.15318	-0.00187	-0.11731
REA(-6)	0.00055	-0.11855	0.000189	-0.001184	**REA(-6)**	-0.009066	-0.08981	0.001332	-0.02863
	-0.01322	-0.155	-0.00172	-0.08563		-0.01441	-0.15777	-0.00193	-0.12082
REA(-7)	-0.00806	-0.03369	0.000682	-0.065315	**REA(-7)**	-0.003336	-0.03929	0.001409	-0.0196
	-0.01289	-0.15116	-0.00167	-0.08351		-0.01385	-0.15162	-0.00185	-0.11611
REA(-8)	0.015069	0.040732	-0.00137	0.1013	**REA(-8)**	0.012779	-0.04438	-0.0024	0.052292
	-0.01294	-0.15174	-0.00168	-0.08383		-0.01385	-0.15159	-0.00185	-0.11609
REA(-9)	-0.02071	0.059265	0.001497	0.022852	**REA(-9)**	-0.020697	0.06037	0.000959	-0.0227
	-0.01346	-0.15777	-0.00175	-0.08716		-0.01429	-0.15647	-0.00191	-0.11982
REA(-10)	0.012096	0.227033	0.000269	-0.028347	**REA(-10)**	0.0123	0.208869	0.000785	0.031782
	-0.01351	-0.15842	-0.00175	-0.08752		-0.01414	-0.15484	-0.00189	-0.11857
REA(-11)	-0.01555	-0.32602**	-0.00082	0.019972	**REA(-11)**	-0.01168	-0.29245*	-0.00123	-0.04684
	-0.01349	-0.1582	-0.00175	-0.0874		-0.01408	-0.15419	-0.00188	-0.11807
REA(-12)	0.027327*	0.295115*	3.40E-05	-0.043324	**REA(-12)**	0.031974**	0.277544*	-0.00044	0.043282
	-0.01413	-0.16561	-0.00183	-0.09149		-0.01458	-0.15963	-0.00195	-0.12224
REA(-13)	-0.02743*	-0.35162**	-0.00021	0.040681	**REA(-13)**	-0.040962***	-0.31636*	-0.0006	-0.10995
	-0.01475	-0.17291	-0.00192	-0.09553		-0.01523	-0.16671	-0.00204	-0.12767
REA(-14)	0.020073	0.36592**	0.00069	-0.023976	**REA(-14)**	0.026799*	0.356802**	0.002126	0.121502
	-0.01477	-0.17319	-0.00192	-0.09568		-0.01531	-0.16763	-0.00205	-0.12837
REA(-15)	0.004598	-0.40405**	4.24E-05	0.025984	**REA(-15)**	-0.000905	-0.39707**	0.000277	-0.06949
	-0.0146	-0.17123	-0.0019	-0.0946		-0.01531	-0.16765	-0.00205	-0.12838
REA(-16)	-0.02124	0.350283**	-0.00049	0.047476	**REA(-16)**	-0.010736	0.307705*	-0.00175	0.079811
	-0.01462	-0.17138	-0.0019	-0.09468		-0.0153	-0.16748	-0.00205	-0.12825
REA(-17)	0.001557	-0.3055*	0.000979	-0.095366	**REA(-17)**	-0.008608	-0.26981	0.001613	-0.09672
	-0.01489	-0.17453	-0.00193	-0.09642		-0.01547	-0.16941	-0.00207	-0.12973
REA(-18)	0.005945	0.264116	-0.00039	0.024206	**REA(-18)**	0.013468	0.194772	-0.00054	-0.02466
	-0.01506	-0.17657	-0.00196	-0.09755		-0.01562	-0.17098	-0.00209	-0.13094
REA(-19)	0.014549	-0.20264	0.000546	-0.087928	**REA(-19)**	0.018178	-0.15992	-3.40E-05	-0.00562
	-0.01498	-0.17561	-0.00195	-0.09702		-0.01556	-0.17031	-0.00208	-0.13042
REA(-20)	-0.01937	0.121161	-0.00072	0.132426	**REA(-20)**	-0.018303	0.152705	-0.00077	0.171745
	-0.01493	-0.17504	-0.00194	-0.0967		-0.01542	-0.16878	-0.00206	-0.12925

REA(-21)	0.013376	-0.17564	-0.00014	-0.103917	**REA(-21)**	0.009988	-0.10184	0.000775	-0.14301
	-0.01495	-0.1753	-0.00194	-0.09685		-0.0154	-0.16855	-0.00206	-0.12907
REA(-22)	-0.00359	0.267673	0.000302	0.058293	**REA(-22)**	-0.006261	0.193894	0.000263	0.005441
	-0.01464	-0.1717	-0.0019	-0.09486		-0.01512	-0.16549	-0.00202	-0.12673
REA(-23)	0.006336	-0.16624	-0.00067	-0.033232	**REA(-23)**	0.012971	-0.15097	0.000333	0.03158
	-0.01394	-0.16342	-0.00181	-0.09028		-0.01458	-0.15966	-0.00195	-0.12227
REA(-24)	-0.01226	0.075493	0.000239	0.046344	**REA(-24)**	-0.019845**	0.053769	-0.00138	0.009981
	-0.00842	-0.09868	-0.00109	-0.05452		-0.00922	-0.10095	-0.00123	-0.0773
RPO(-1)	0.279525	5.112234	0.699877***	-2.996457	**RPO(-1)**	-0.251386	17.81771**	0.845374***	7.867789
	-0.69224	-8.11606	-0.08989	-4.48382		-0.73301	-8.02475	-0.098	-6.14528
RPO(-2)	0.229593	-3.67357	0.271356**	7.43258	**RPO(-2)**	0.031329	-8.07303	0.136083	-8.14504
	-0.85435	-10.0168	-0.11094	-5.53389		-0.92654	-10.1434	-0.12387	-7.76772
RPO(-3)	0.091416	-12.8753	-0.09519	-5.344569	**RPO(-3)**	0.62535	-16.7028	-0.11237	1.78885
	-0.86691	-10.164	-0.11258	-5.61523		-0.94058	-10.2971	-0.12574	-7.88544
RPO(-4)	-0.17331	9.849742	0.035535	-9.101572	**RPO(-4)**	-1.185418	5.591018	0.031751	-3.93515
	-0.86274	-10.1152	-0.11203	-5.58825		-0.93235	-10.207	-0.12464	-7.81645
RPO(-5)	-0.15516	-12.2079	0.001989	-1.857766	**RPO(-5)**	0.525666	-14.5227	-0.06089	-12.178
	-0.866	-10.1533	-0.11246	-5.60934		-0.91921	-10.0632	-0.12289	-7.7063
RPO(-6)	-1.12431	3.235458	0.061198	8.564408	**RPO(-6)**	-0.527906	3.561719	0.062215	8.610868
	-0.86842	-10.1818	-0.11277	-5.62505		-0.92826	-10.1623	-0.1241	-7.78219
RPO(-7)	-0.29236	14.39852	0.034465	6.306238	**RPO(-7)**	0.205016	12.85597	0.03683	0.217547
	-0.87214	-10.2253	-0.11325	-5.64909		-0.91741	-10.0435	-0.12265	-7.69123
RPO(-8)	0.969677	-7.22484	-0.1112	-3.190504	**RPO(-8)**	0.620643	-7.03698	-0.18748	4.412016
	-0.87647	-10.2761	-0.11382	-5.67714		-0.91777	-10.0474	-0.1227	-7.69421
RPO(-9)	1.19364	-7.72008	0.07335	0.867836	**RPO(-9)**	1.151236	-6.17778	0.121824	8.693119
	-0.90985	-10.6674	-0.11815	-5.89335		-0.95764	-10.4839	-0.12803	-8.02851
RPO(-10)	-1.23626	-1.7218	0.103004	3.835808	**RPO(-10)**	-1.677951*	7.092118	0.205551	1.134917
	-0.91554	-10.7342	-0.11889	-5.93025		-0.96195	-10.531	-0.1286	-8.06457
RPO(-11)	0.548655	15.21781	-0.07225	-2.440244	**RPO(-11)**	-0.203639	14.3222	-0.05265	-1.97072
	-0.90694	-10.6333	-0.11777	-5.87453		-0.96063	-10.5167	-0.12843	-8.05357
RPO(-12)	0.45853	-5.2832	0.013471	-0.880705	**RPO(-12)**	0.956705	-13.6099	-0.00258	-1.7
	-0.91208	-10.6936	-0.11844	-5.90779		-0.95935	-10.5026	-0.12825	-8.04277
RPO(-13)	0.409308	6.996934	-0.13826	2.602159	**RPO(-13)**	0.845794	6.736373	-0.15485	3.733283
	-0.89872	-10.5369	-0.11671	-5.82125		-0.95322	-10.4355	-0.12743	-7.99143
RPO(-14)	-1.74887*	-5.14269	0.116971	-1.369258	**RPO(-14)**	-1.609156*	-1.11485	0.081955	-5.83288
	-0.90368	-10.5951	-0.11735	-5.85339		-0.94532	-10.349	-0.12638	-7.92518
RPO(-15)	1.477315	9.20664	-0.07263	-9.071118	**RPO(-15)**	1.369108	11.47988	-0.07973	-5.53313
	-0.90915	-10.6592	-0.11806	-5.88883		-0.94195	-10.3121	-0.12593	-7.89694
RPO(-16)	-1.80327*	-15.7239	0.080925	3.841566	**RPO(-16)**	-1.363778	-12.3565	0.089198	7.604436
	-0.91163	-10.6884	-0.11838	-5.90493		-0.93958	-10.2862	-0.12561	-7.87707
RPO(-17)	1.443004	-0.25145	-0.00261	3.157583	**RPO(-17)**	1.248808	-4.61634	-0.09107	5.723261
	-0.92721	-10.871	-0.12041	-6.00584		-0.92164	-10.0897	-0.12321	-7.72664
RPO(-18)	-0.64367	13.57194	0.024798	7.868814	**RPO(-18)**	-1.412233	10.98987	0.048872	-0.08438
	-0.91001	-10.6693	-0.11817	-5.89441		-0.90324	-9.88838	-0.12075	-7.57244
RPO(-19)	-0.91998	3.397503	-0.01359	-7.278892	**RPO(-19)**	-0.598141	-4.21686	-0.04118	-13.784*
	-0.91147	-10.6864	-0.11836	-5.90384		-0.90802	-9.94071	-0.12139	-7.61251
RPO(-20)	0.32254	-5.08083	0.037985	-7.226478	**RPO(-20)**	0.513666	-7.13931	0.089572	0.360527
	-0.91793	-10.7622	-0.1192	-5.9457		-0.91851	-10.0556	-0.12279	-7.70046
RPO(-21)	0.189261	-2.35102	0.034188	13.82296**	**RPO(-21)**	0.071077	-0.22677	-0.04057	9.761479
	-0.90676	-10.6312	-0.11775	-5.87335		-0.90742	-9.93407	-0.12131	-7.60743
RPO(-22)	0.378133	-2.04277	0.040022	-5.783979	**RPO(-22)**	-0.093827	-2.4894	0.007167	-6.20906
	-0.89287	-10.4684	-0.11595	-5.7834		-0.86444	-9.46361	-0.11557	-7.24715
RPO(-23)	1.414399	1.602647	-0.0481	-9.091332	**RPO(-23)**	1.197942	4.701865	0.015239	-8.52606
	-0.87742	-10.2873	-0.11394	-5.68334		-0.85194	-9.32671	-0.11389	-7.14231
RPO(-24)	-1.242*	-4.08176	-0.10584	6.498219	**RPO(-24)**	-0.470776	1.517327	0.009814	8.747625
	-0.69909	-8.19642	-0.09078	-4.52822		-0.66834	-7.31677	-0.08935	-5.60312
TSXRETURNS(-1)	0.014015	0.089869	0.002612	0.075516	**NORWAYRETURNS(-1)**	0.011331	0.004098	0.002966**	-0.04256
	-0.01316	-0.1543	-0.00171	-0.08524		-0.01091	-0.11945	-0.00146	-0.09148
TSXRETURNS(-2)	0.003629	-0.28938*	0.000999	-0.090931	**NORWAYRETURNS(-2)**	0.001977	-0.21695*	0.001824	-0.08105
	-0.01359	-0.15936	-0.00177	-0.08804		-0.01105	-0.12102	-0.00148	-0.09268
TSXRETURNS(-3)	0.036839***	0.109355	0.002781	-0.018573	**NORWAYRETURNS(-3)**	0.021052*	0.004141	0.003233**	0.05071
	-0.01366	-0.16017	-0.00177	-0.08849		-0.01124	-0.12309	-0.0015	-0.09426
TSXRETURNS(-4)	-0.02679*	0.083433	-0.00118	0.029479	**NORWAYRETURNS(-4)**	-0.01074	0.130187	-0.00038	-0.09954
	-0.01359	-0.15931	-0.00176	-0.08801		-0.01175	-0.12864	-0.00157	-0.09851
TSXRETURNS(-5)	0.005942	-0.00677	-0.00038	-0.104986	**NORWAYRETURNS(-5)**	0.016231	0.00199	0.001536	-0.07426
	-0.01366	-0.16017	-0.00177	-0.08849		-0.01184	-0.12964	-0.00158	-0.09928
TSXRETURNS(-6)	0.009937	-0.10729	-0.00048	0.060039	**NORWAYRETURNS(-6)**	0.013339	-0.00267	-0.00073	-0.00338
	-0.01355	-0.1589	-0.00176	-0.08779		-0.0117	-0.12806	-0.00156	-0.09807
TSXRETURNS(-7)	0.028749**	-0.00171	-0.00186	-0.021882	**NORWAYRETURNS(-7)**	0.021446*	-0.0547	-0.00162	0.044619
	-0.01352	-0.15851	-0.00176	-0.08757		-0.01125	-0.12313	-0.0015	-0.09429
TSXRETURNS(-8)	0.035137**	0.186168	-0.00091	0.073937	**NORWAYRETURNS(-8)**	0.014975	0.321964***	-0.00106	0.08938
	-0.01368	-0.16041	-0.00178	-0.08862		-0.01125	-0.1232	-0.0015	-0.09435
TSXRETURNS(-9)	0.001816	-0.04186	0.001362	0.003087	**NORWAYRETURNS(-9)**	-0.001963	0.214434*	0.004089***	-0.02714
	-0.01374	-0.1611	-0.00178	-0.089		-0.01144	-0.1253	-0.00153	-0.09595
TSXRETURNS(-10)	0.015068	-0.01964	-0.00213	-0.114802	**NORWAYRETURNS(-10)**	0.017848	-0.01593	-0.00159	-0.07837
	-0.01346	-0.15776	-0.00175	-0.08716		-0.0115	-0.12586	-0.00154	-0.09639
TSXRETURNS(-11)	-0.01853	0.094652	0.000628	-0.024327	**NORWAYRETURNS(-11)**	-0.006371	-0.00341	0.000786	-0.04449
	-0.01349	-0.15811	-0.00175	-0.08735		-0.01144	-0.12524	-0.00153	-0.09591
TSXRETURNS(-12)	-0.01575	-0.1832	-0.00043	-0.235375***	**NORWAYRETURNS(-12)**	-0.021226*	-0.23454*	-0.00141	-0.27067***
	-0.01356	-0.15898	-0.00176	-0.08783		-0.01143	-0.12508	-0.00153	-0.09579
TSXRETURNS(-13)	-0.00617	-0.07347	0.000223	-0.023435	**NORWAYRETURNS(-13)**	0.004451	-0.09375	-0.00052	-0.10004
	-0.01396	-0.16369	-0.00181	-0.09043		-0.01163	-0.12731	-0.00155	-0.0975
TSXRETURNS(-14)	-0.0127	-0.03359	0.001211	-0.084081	**NORWAYRETURNS(-14)**	-0.008936	0.004352	0.002041	0.00474
	-0.01373	-0.16101	-0.00178	-0.08895		-0.01131	-0.12381	-0.00151	-0.09481
TSXRETURNS(-15)	0.011511	0.018889	-0.00157	0.049737	**NORWAYRETURNS(-15)**	0.008857	-0.01997	-0.0001	-0.0903
	-0.014	-0.1641	-0.00182	-0.09066		-0.01138	-0.12453	-0.00152	-0.09537
TSXRETURNS(-16)	0.002949	-0.00356	0.000457	-0.037593	**NORWAYRETURNS(-16)**	-0.006027	-0.05606	0.001531	0.016125
	-0.01371	-0.16074	-0.00178	-0.0888		-0.01122	-0.12284	-0.0015	-0.09407
TSXRETURNS(-17)	-0.00523	-0.14614	-0.0025	0.000162	**NORWAYRETURNS(-17)**	-0.000997	-0.14454	-0.00015	-0.05773
	-0.01355	-0.15891	-0.00176	-0.08779		-0.01124	-0.12302	-0.0015	-0.09421
TSXRETURNS(-18)	-0.01294	-0.27814*	-0.00193	-0.001957	**NORWAYRETURNS(-18)**	-0.003969	-0.08359	-0.00063	-0.03865
	-0.0135	-0.15828	-0.00175	-0.08744		-0.01096	-0.11998	-0.00147	-0.09188
TSXRETURNS(-19)	-0.00898	0.163942	0.001326	-0.064483	**NORWAYRETURNS(-19)**	-0.007711	0.169732	0.00046	0.134958
	-0.01332	-0.15612	-0.00173	-0.08625		-0.01061	-0.1162	-0.00142	-0.08898
TSXRETURNS(-20)	0.00908	-0.05117	-0.00018	0.069082	**NORWAYRETURNS(-20)**	-0.000609	0.134607	0.001308	-0.05659
	-0.01311	-0.15368	-0.0017	-0.0849		-0.01071	-0.11723	-0.00143	-0.08977
TSXRETURNS(-21)	0.020829	-0.23631	-0.00387**	-0.057926	**NORWAYRETURNS(-21)**	0.008443	-0.03343	-0.00311**	-0.01592
	-0.01305	-0.15306	-0.0017	-0.08456		-0.01075	-0.11773	-0.00144	-0.09016
TSXRETURNS(-22)	-0.02122	-0.05167	0.000299	-0.04723	**NORWAYRETURNS(-22)**	-0.008427	-0.03652	0.001365	0.008224

	-0.01326	-0.15552	-0.00172	-0.08592		-0.01083	-0.11859	-0.00145	-0.09082
TSXRETURNS(-23)	-0.03991***	-0.22381	-0.0019	0.004439	**NORWAYRETURNS(-23)**	-0.021792**	0.044578	-0.00095	0.082828
	-0.01327	-0.15559	-0.00172	-0.08596		-0.01084	-0.11868	-0.00145	-0.09088
TSXRETURNS(-24)	-0.00865	-0.02855	-0.00234	-0.226721***	**NORWAYRETURNS(-24)**	-0.002259	-0.03099	1.85E-05	-0.10873
	-0.01333	-0.15628	-0.00173	-0.08634		-0.01066	-0.11669	-0.00143	-0.08936
C	-0.09748	12.21272**	0.137997**	3.740731	**C**	0.33728	7.933518	0.182526**	-2.65755
	-0.51115	-5.99289	-0.06638	-3.31085		-0.65275	-7.14611	-0.08727	-5.47243
D1	0.519343	-10.0153**	-0.1311**	-7.833713***	**D1**	0.206953	-3.9763	-0.014	-8.69076***
	-0.42568	-4.99085	-0.05528	-2.75726		-0.33992	-3.72127	-0.04544	-2.84971
					D2	0.321954	-2.44622	0.081535**	-1.03001
						-0.28436	-3.11311	-0.03802	-2.38399
R-squared	0.551225	0.950936	0.977884	0.456222	**R-squared**	0.509509	0.953245	0.974823	0.44369
Adj. R-squared	0.228772	0.915683	0.961993	0.065507	**Adj. R-squared**	0.150792	0.919052	0.95641	0.036836

DENMARK					**UNITED STATES**				
	PRODC	**REA**	**RPO**	**OMCXRETURNS**		**PRODC**	**REA**	**RPO**	**USRETURNS**
PRODC(-1)	-0.07269	0.400392	-0.02593**	0.731123	**PRODC(-1)**	-0.08119	-0.19976	-0.00536	-0.20601
	-0.08095	-0.91272	-0.01114	-0.59236		-0.08097	-0.90043	-0.01004	-0.48405
PRODC(-2)	-0.22071***	0.610931	-0.00755	0.414628	**PRODC(-2)**	-0.14336*	0.556377	0.000767	0.651074
	-0.08156	-0.91955	-0.01122	-0.59679		-0.07793	-0.86664	-0.00966	-0.46588
PRODC(-3)	-0.06812	1.143523	-0.01254	1.25288**	**PRODC(-3)**	-0.01658	1.172381	0.000216	1.621504***
	-0.08116	-0.91509	-0.01117	-0.59389		-0.07753	-0.8622	-0.00961	-0.4635
PRODC(-4)	-0.00534	-0.15278	-0.00565	1.192342	**PRODC(-4)**	0.024254	-0.19694	-0.00222	0.788355
	-0.08394	-0.94646	-0.01155	-0.61426		-0.07967	-0.88597	-0.00988	-0.47627
PRODC(-5)	-0.1066	-0.15189	-0.00824	-0.09849	**PRODC(-5)**	-0.10278	-0.22857	-0.0072	-0.1888
	-0.08282	-0.93384	-0.0114	-0.60607		-0.07967	-0.886	-0.00988	-0.47629
PRODC(-6)	-0.07073	-1.63298*	-0.01946*	1.697747***	**PRODC(-6)**	-0.08413	-1.62239*	-0.02172**	0.278809
	-0.08354	-0.94189	-0.0115	-0.61129		-0.08022	-0.89214	-0.00995	-0.47959
PRODC(-7)	-0.09435	-0.00723	-0.02196*	-0.1745	**PRODC(-7)**	-0.01632	0.186583	-0.01944*	-0.77834
	-0.08529	-0.96161	-0.01174	-0.62409		-0.0827	-0.91973	-0.01025	-0.49443
PRODC(-8)	-0.07577	0.355993	-0.00109	0.559542	**PRODC(-8)**	-0.00609	0.081398	-0.00352	0.178099
	-0.08485	-0.95672	-0.01168	-0.62092		-0.08406	-0.93481	-0.01042	-0.50253
PRODC(-9)	0.028931	-0.74601	-0.01914*	0.291728	**PRODC(-9)**	0.046694	-0.41883	-0.01812*	0.299071
	-0.08396	-0.94661	-0.01155	-0.61435		-0.0822	-0.91413	-0.01019	-0.49142
PRODC(-10)	-0.08808	-1.55773	-0.00316	0.261232	**PRODC(-10)**	-0.08277	-1.81952**	0.005446	0.359694
	-0.08354	-0.94189	-0.0115	-0.61129		-0.08271	-0.91976	-0.01025	-0.49444
PRODC(-11)	-0.05861	0.821953	-0.01989*	-0.08746	**PRODC(-11)**	-0.11744	0.558709	-0.0165	-0.35411
	-0.08323	-0.93836	-0.01145	-0.609		-0.08281	-0.92091	-0.01027	-0.49506
PRODC(-12)	-0.0178	-1.77058*	-0.03212***	-0.37337	**PRODC(-12)**	-0.00973	-1.38986	-0.01891*	-0.57538
	-0.08167	-0.92078	-0.01124	-0.59759		-0.08182	-0.90987	-0.01014	-0.48912
PRODC(-13)	-0.11429	0.045975	0.0005	0.192531	**PRODC(-13)**	-0.13389	-0.36771	0.011461	0.214055
	-0.0824	-0.92909	-0.01134	-0.60298		-0.08168	-0.90831	-0.01013	-0.48829
PRODC(-14)	0.058242	-0.96414	-0.01604	0.630415	**PRODC(-14)**	0.05368	-1.42039	-0.01378	0.933287*
	-0.08265	-0.93185	-0.01137	-0.60477		-0.08303	-0.92339	-0.01029	-0.4964
PRODC(-15)	0.084633	0.57675	-0.01954*	-0.05061	**PRODC(-15)**	0.095462	1.316621	-0.02134**	1.374219***
	-0.08249	-0.9301	-0.01135	-0.60364		-0.08404	-0.9346	-0.01042	-0.50242
PRODC(-16)	0.06999	0.545968	-0.00229	0.92785	**PRODC(-16)**	0.050426	0.463062	-0.00811	1.038401**
	-0.08246	-0.92969	-0.01135	-0.60337		-0.08703	-0.96791	-0.01079	-0.52033
PRODC(-17)	-0.06773	-0.11025	-0.01966*	-0.24506	**PRODC(-17)**	-0.07335	0.050486	-0.0149	-0.11716
	-0.08351	-0.94154	-0.01149	-0.61106		-0.08601	-0.95655	-0.01066	-0.51422
PRODC(-18)	0.046339	-0.60386	-0.01523	0.366455	**PRODC(-18)**	-0.06777	-0.70015	-0.01035	0.449357
	-0.08456	-0.95345	-0.01164	-0.61879		-0.08609	-0.95736	-0.01067	-0.51466
PRODC(-19)	-0.0869	-0.97634	0.009298	-0.00374	**PRODC(-19)**	-0.06401	-0.7328	0.003802	0.200744
	-0.08357	-0.94221	-0.0115	-0.61149		-0.08495	-0.94476	-0.01053	-0.50788
PRODC(-20)	0.007357	0.180833	-8.41E-05	0.006758	**PRODC(-20)**	0.011495	-0.19382	-0.00628	0.219063
	-0.08096	-0.91278	-0.01114	-0.59239		-0.08272	-0.91988	-0.01026	-0.49451
PRODC(-21)	-0.10774	-1.31619	0.006948	0.200176	**PRODC(-21)**	-0.17519**	-0.63814	0.005334	0.386414
	-0.07937	-0.89494	-0.01092	-0.58082		-0.08127	-0.90376	-0.01008	-0.48584
PRODC(-22)	-0.11536	0.884597	0.00138	0.90155	**PRODC(-22)**	-0.15978**	0.82436	0.005208	0.903981*
	-0.07974	-0.89903	-0.01097	-0.58347		-0.08036	-0.89365	-0.00996	-0.48041
PRODC(-23)	-0.12304	-0.96696	-0.00042	0.244793	**PRODC(-23)**	-0.1269	-0.87745	0.006161	-0.36386
	-0.0786	-0.88625	-0.01082	-0.57518		-0.08026	-0.89255	-0.00995	-0.47981
PRODC(-24)	0.324979***	1.230408	0.003613	0.179531	**PRODC(-24)**	0.2843***	1.238254	0.016662*	0.391737
	-0.08002	-0.90222	-0.01101	-0.58554		-0.08104	-0.90119	-0.01005	-0.48446
REA(-1)	0.007837	1.256718***	0.001629	0.0028	**REA(-1)**	0.002924	1.333507***	0.001179	0.026251
	-0.00796	-0.08979	-0.0011	-0.05828		-0.00797	-0.08865	-0.00099	-0.04766
REA(-2)	-0.00854	-0.54445***	8.02E-05	-0.04101	**REA(-2)**	-0.0001	-0.53389***	0.000423	0.01885
	-0.01254	-0.14136	-0.00173	-0.09174		-0.01301	-0.14471	-0.00161	-0.07779
REA(-3)	0.005322	0.316378**	-0.00232	0.124537	**REA(-3)**	0.000105	0.229477	-0.00187	-0.03488
	-0.01321	-0.14899	-0.00182	-0.09669		-0.01361	-0.15136	-0.00169	-0.08137
REA(-4)	0.007784	-0.41544***	0.001225	-0.05848	**REA(-4)**	0.006716	-0.37534**	0.001174	0.083908
	-0.01347	-0.15184	-0.00185	-0.09854		-0.01374	-0.15285	-0.0017	-0.08217
REA(-5)	-0.00882	0.460631***	0.000221	0.017003	**REA(-5)**	-0.01189	0.501093***	-0.00071	-0.08097
	-0.01384	-0.15609	-0.00191	-0.1013		-0.01418	-0.15767	-0.00176	-0.08476
REA(-6)	-0.00182	-0.17138	-0.00028	-0.09693	**REA(-6)**	0.006976	-0.27309*	3.96E-05	0.014067
	-0.01418	-0.15984	-0.00195	-0.10374		-0.0148	-0.16463	-0.00184	-0.0885
REA(-7)	-0.00363	-0.00122	0.001425	0.12462	**REA(-7)**	-0.00766	0.037213	0.001043	-0.05759
	-0.01369	-0.15432	-0.00188	-0.10015		-0.01443	-0.16053	-0.00179	-0.08629
REA(-8)	0.01423	-0.01789	-0.00218	-0.10558	**REA(-8)**	0.007006	-0.02527	-0.00132	0.018038
	-0.01365	-0.15392	-0.00188	-0.0999		-0.0143	-0.15906	-0.00177	-0.08551
REA(-9)	-0.01914	0.077806	0.002424	0.083839	**REA(-9)**	-0.01151	0.079488	0.000447	0.081269
	-0.01403	-0.15815	-0.00193	-0.10264		-0.01456	-0.16187	-0.0018	-0.08702
REA(-10)	0.0062	0.199736	-0.00052	-0.06127	**REA(-10)**	0.005838	0.17278	0.000251	-0.09494
	-0.01378	-0.15538	-0.0019	-0.10084		-0.01439	-0.16007	-0.00178	-0.08605
REA(-11)	-0.01031	-0.27799*	-0.00059	0.031527	**REA(-11)**	-0.01447	-0.2605	2.91E-06	0.008599
	-0.01354	-0.15272	-0.00186	-0.09911		-0.01426	-0.15853	-0.00177	-0.08522
REA(-12)	0.026489*	0.254369	-0.00092	-0.00124	**REA(-12)**	0.022669	0.237681	-0.00067	-0.00713
	-0.01401	-0.15796	-0.00193	-0.10252		-0.01458	-0.16211	-0.00181	-0.08715
REA(-13)	-0.03082**	-0.37491**	-9.75E-05	-0.13628	**REA(-13)**	-0.01233	-0.33217**	0.000147	0.009759
	-0.01456	-0.1642	-0.002	-0.10657		-0.01494	-0.16613	-0.00185	-0.08931
REA(-14)	0.02037	0.464512***	0.001417	0.154199	**REA(-14)**	0.007836	0.411017**	0.000535	0.012322
	-0.01475	-0.16636	-0.00203	-0.10797		-0.01476	-0.16412	-0.00183	-0.08823
REA(-15)	0.002269	-0.49774***	0.000138	-0.06826	**REA(-15)**	0.004983	-0.46222***	0.000129	-0.01984
	-0.01484	-0.16729	-0.00204	-0.10857		-0.01467	-0.16316	-0.00182	-0.08771
REA(-16)	-0.01364	0.388798**	-0.00097	0.035644	**REA(-16)**	-0.02111	0.385232**	-0.00079	0.010943

	-0.0151	-0.17031	-0.00208	-0.11053		-0.01477	-0.16428	-0.00183	-0.08831
REA(-17)	-0.00065	-0.31808*	0.001961	0.045627	**REA(-17)**	0.007734	-0.30665*	0.002053	-0.05897
	-0.01549	-0.17469	-0.00213	-0.11337		-0.01509	-0.16786	-0.00187	-0.09024
REA(-18)	0.000936	0.235018	-0.00122	-0.12531	**REA(-18)**	0.009189	0.249814	-0.00137	0.020557
	-0.01578	-0.17797	-0.00217	-0.11551		-0.01524	-0.16947	-0.00189	-0.0911
REA(-19)	0.026822*	-0.12073	0.001018	0.061728	**REA(-19)**	0.013649	-0.21157	0.001025	-0.08872
	-0.01578	-0.17795	-0.00217	-0.11549		-0.01531	-0.17026	-0.0019	-0.09153
REA(-20)	-0.02828*	-0.02178	-0.00155	0.012751	**REA(-20)**	-0.02349	0.156697	-0.00128	0.219036**
	-0.01585	-0.17869	-0.00218	-0.11597		-0.01524	-0.16946	-0.00189	-0.0911
REA(-21)	0.023909	-0.01893	0.000364	0.010228	**REA(-21)**	0.016464	-0.2176	-0.00012	-0.19015**
	-0.01597	-0.18002	-0.0022	-0.11684		-0.01551	-0.17248	-0.00192	-0.09272
REA(-22)	-0.02436	0.121895	0.000655	-0.06377	**REA(-22)**	-0.008	0.282174*	0.000745	0.105074
	-0.01565	-0.1764	-0.00215	-0.11448		-0.01518	-0.16881	-0.00188	-0.09075
REA(-23)	0.022385	-0.08491	-0.00123	0.122332	**REA(-23)**	0.007992	-0.18535	-0.00113	-0.0821
	-0.01471	-0.16589	-0.00202	-0.10766		-0.0143	-0.159	-0.00177	-0.08547
REA(-24)	-0.01891**	0.077895	2.24E-05	-0.05598	**REA(-24)**	-0.01322	0.088651	0.000442	0.088398*
	-0.00922	-0.10396	-0.00127	-0.06747		-0.00877	-0.09757	-0.00109	-0.05245
RPO(-1)	0.033752	11.67342	0.715038***	-2.46046	**RPO(-1)**	0.474764	7.930775	0.710469***	-0.56164
	-0.67858	-7.65096	-0.09338	-4.96549		-0.71909	-7.99699	-0.08916	-4.29899
RPO(-2)	0.304091	-3.12884	0.274143**	2.172823	**RPO(-2)**	0.140093	-5.55777	0.264066**	5.801408
	-0.82857	-9.34212	-0.11402	-6.06305		-0.87783	-9.76229	-0.10884	-5.24798
RPO(-3)	0.722921	-13.7763	-0.02137	3.733527	**RPO(-3)**	0.025441	-11.5601	-0.05402	0.181693
	-0.84692	-9.54901	-0.11655	-6.19733		-0.90423	-10.0559	-0.11211	-5.40584
RPO(-4)	-0.99261	6.344882	0.057241	-7.23103	**RPO(-4)**	-0.63484	10.07708	0.015048	-9.34575*
	-0.84362	-9.51177	-0.11609	-6.17316		-0.89907	-9.9985	-0.11147	-5.37496
RPO(-5)	0.213243	-9.03284	-0.11426	-3.28261	**RPO(-5)**	0.046727	-15.703	-0.04879	-12.3627**
	-0.83913	-9.46111	-0.11547	-6.14028		-0.90111	-10.0212	-0.11172	-5.38718
RPO(-6)	-1.01726	-0.44697	0.028262	-0.31771	**RPO(-6)**	-1.01427	7.992107	0.121472	10.38302*
	-0.84193	-9.49268	-0.11586	-6.16077		-0.91652	-10.1926	-0.11363	-5.47928
RPO(-7)	0.00481	12.55436	0.005204	5.497409	**RPO(-7)**	0.23836	10.77059	0.011614	1.87256
	-0.8415	-9.48786	-0.1158	-6.15764		-0.92397	-10.2755	-0.11456	-5.52384
RPO(-8)	0.856443	-3.72625	-0.14595	7.528827	**RPO(-8)**	1.303843	-2.45156	-0.09865	9.809368*
	-0.85014	-9.58529	-0.11699	-6.22087		-0.92559	-10.2935	-0.11476	-5.53354
RPO(-9)	0.812411	-5.98697	0.065921	-4.508	**RPO(-9)**	0.948985	-10.126	0.053841	-1.68853
	-0.88367	-9.96329	-0.1216	-6.46619		-0.97377	-10.8293	-0.12073	-5.82158
RPO(-10)	-1.30151	2.781941	0.148978	-1.75454	**RPO(-10)**	-1.72211*	-0.23505	0.137267	-4.87358
	-0.88876	-10.0207	-0.1223	-6.50347		-0.97735	-10.8691	-0.12118	-5.84297
RPO(-11)	0.344782	9.007655	-0.01883	3.778269	**RPO(-11)**	0.404526	16.09072	-0.07751	-6.26633
	-0.89304	-10.069	-0.12289	-6.53482		-0.97719	-10.8674	-0.12116	-5.84203
RPO(-12)	0.740323	-13.6737	-0.0186	1.654305	**RPO(-12)**	1.35248	-14.5206	-0.03848	2.486438
	-0.88607	-9.99034	-0.12193	-6.48375		-0.96315	-10.7111	-0.11942	-5.75806
RPO(-13)	0.440223	11.25157	-0.0904	0.815255	**RPO(-13)**	0.356149	9.271748	-0.10704	6.647545
	-0.8797	-9.91855	-0.12106	-6.43716		-0.95458	-10.6158	-0.11835	-5.70682
RPO(-14)	-1.61124*	2.258775	0.103856	0.092975	**RPO(-14)**	-2.09325**	-3.69445	0.034384	1.376636
	-0.8773	-9.89151	-0.12073	-6.41961		-0.95417	-10.6113	-0.1183	-5.70441
RPO(-15)	1.268235	2.599778	-0.10361	-8.30855	**RPO(-15)**	1.536353	12.15594	-0.03993	-6.58183
	-0.88148	-9.93859	-0.1213	-6.45016		-0.9501	-10.566	-0.1178	-5.68005
RPO(-16)	-1.09184	-15.3661	0.051162	3.597371	**RPO(-16)**	-1.67549*	-22.0946**	0.106453	-0.87769
	-0.88406	-9.96773	-0.12166	-6.46908		-0.9512	-10.5783	-0.11793	-5.68665
RPO(-17)	1.243531	-1.841	-0.05427	4.342183	**RPO(-17)**	0.945685	3.273651	-0.00759	5.951463
	-0.88878	-10.0209	-0.12231	-6.50359		-0.97841	-10.8809	-0.12131	-5.84933
RPO(-18)	-1.36592	9.220105	0.019086	-3.37212	**RPO(-18)**	-1.17972	8.844077	-0.01388	4.034402
	-0.87922	-9.91316	-0.12099	-6.43366		-0.9557	-10.6283	-0.11849	-5.71354
RPO(-19)	-0.81309	2.839143	0.063323	-3.35518	**RPO(-19)**	-0.51709	6.198146	0.076143	-3.01995
	-0.8833	-9.9592	-0.12155	-6.46354		-0.95884	-10.6632	-0.11888	-5.73228
RPO(-20)	0.280162	-1.38549	0.046544	-6.08658	**RPO(-20)**	0.447893	-4.90585	0.064605	-6.10597
	-0.88363	-9.96292	-0.1216	-6.46596		-0.95536	-10.6246	-0.11845	-5.71153
RPO(-21)	0.409007	3.870927	0.00228	13.89653**	**RPO(-21)**	0.125153	1.3911	-0.03501	9.72789*
	-0.87476	-9.86291	-0.12038	-6.40105		-0.94617	-10.5223	-0.11731	-5.65656
RPO(-22)	-0.00992	-3.83142	0.015965	-6.25424	**RPO(-22)**	0.189938	-1.08464	0.011816	-8.65528
	-0.86478	-9.75032	-0.119	-6.32798		-0.92414	-10.2773	-0.11458	-5.52485
RPO(-23)	1.324958	-0.21373	-0.04011	-11.2847*	**RPO(-23)**	1.473374	-7.35393	-0.02346	-9.52707*
	-0.85465	-9.63608	-0.11761	-6.25384		-0.91365	-10.1606	-0.11328	-5.46212
RPO(-24)	-0.78227	-2.80938	-0.03117	12.21684**	**RPO(-24)**	-1.15757	3.031152	-0.09179	11.81243***
	-0.66114	-7.45437	-0.09098	-4.8379		-0.74326	-8.26577	-0.09215	-4.44348
OMCXRETURNS(-1)	0.012058	0.084812	0.004196**	0.09797	**USRETURNS(-1)**	0.005982	-0.03471	0.002404	-0.03506
	-0.0119	-0.13418	-0.00164	-0.08708		-0.0139	-0.15463	-0.00172	-0.08312
OMCXRETURNS(-2)	0.008935	-0.29786**	0.002375	-0.0336	**USRETURNS(-2)**	0.014356	-0.1968	0.00083	-0.09073
	-0.01213	-0.13671	-0.00167	-0.08873		-0.01421	-0.15804	-0.00176	-0.08496
OMCXRETURNS(-3)	0.009301	0.017356	0.001882	-0.03862	**USRETURNS(-3)**	0.021934	-0.03671	0.003141*	0.104201
	-0.01248	-0.14067	-0.00172	-0.09129		-0.01417	-0.15757	-0.00176	-0.08471
OMCXRETURNS(-4)	-0.01398	0.043949	-0.00035	-0.0578	**USRETURNS(-4)**	-0.02184	0.317701*	-0.00161	0.036808
	-0.01198	-0.1351	-0.00165	-0.08768		-0.0145	-0.16123	-0.0018	-0.08667
OMCXRETURNS(-5)	-0.00742	-0.05416	-0.00284	0.015061	**USRETURNS(-5)**	0.003665	0.004121	0.001055	0.011106
	-0.01197	-0.13498	-0.00165	-0.0876		-0.01478	-0.16438	-0.00183	-0.08837
OMCXRETURNS(-6)	0.018848	-0.03411	-0.00086	-0.00861	**USRETURNS(-6)**	0.014332	-0.10164	0.000491	-0.1223
	-0.01197	-0.13496	-0.00165	-0.08759		-0.01459	-0.16223	-0.00181	-0.08721
OMCXRETURNS(-7)	0.019912	-0.0673	-0.00188	-0.08918	**USRETURNS(-7)**	0.026715*	0.02684	-0.00207	0.079904
	-0.01211	-0.13649	-0.00167	-0.08858		-0.01462	-0.16261	-0.00181	-0.08742
OMCXRETURNS(-8)	0.021718*	0.163751	0.001517	0.021469	**USRETURNS(-8)**	0.032075**	0.204264	-0.00025	0.145128
	-0.01214	-0.13688	-0.00167	-0.08884		-0.01469	-0.16336	-0.00182	-0.08782
OMCXRETURNS(-9)	-0.00435	0.007483	0.003688**	-0.01691	**USRETURNS(-9)**	0.00617	-0.11288	0.001254	0.015725
	-0.01224	-0.13797	-0.00168	-0.08954		-0.01474	-0.16392	-0.00183	-0.08812
OMCXRETURNS(-10)	0.008974	-0.09893	0.000131	0.072829	**USRETURNS(-10)**	0.003421	0.153558	0.002142	0.000519
	-0.01231	-0.1388	-0.00169	-0.09008		-0.01436	-0.15968	-0.00178	-0.08584
OMCXRETURNS(-11)	-0.00129	-0.1245	0.000514	-0.03652	**USRETURNS(-11)**	-0.01057	-0.1184	0.000515	-0.09506
	-0.0121	-0.13641	-0.00166	-0.08853		-0.01441	-0.16025	-0.00179	-0.08615
OMCXRETURNS(-12)	-0.02735**	-0.12032	-4.58E-06	-0.09546	**USRETURNS(-12)**	-0.01411	-0.19152	0.00118	-0.09692
	-0.01205	-0.13586	-0.00166	-0.08818		-0.0143	-0.15907	-0.00177	-0.08551
OMCXRETURNS(-13)	0.009893	0.041648	-0.00046	0.026066	**USRETURNS(-13)**	-0.01009	-0.09268	-0.00111	-0.0289
	-0.01219	-0.13742	-0.00168	-0.08919		-0.01415	-0.15741	-0.00175	-0.08462
OMCXRETURNS(-14)	-0.01833	-0.14138	0.000901	-0.18279**	**USRETURNS(-14)**	-0.01652	0.036323	0.002775	0.008516
	-0.01197	-0.13498	-0.00165	-0.0876		-0.01406	-0.15632	-0.00174	-0.08404
OMCXRETURNS(-15)	0.008007	0.193092	-5.09E-05	0.028914	**USRETURNS(-15)**	0.020891	0.059103	-9.40E-05	0.18855**
	-0.01219	-0.1375	-0.00168	-0.08924		-0.01421	-0.15806	-0.00176	-0.08497
OMCXRETURNS(-16)	-0.0163	-0.10924	0.000139	-0.04976	**USRETURNS(-16)**	0.006273	0.017695	0.001024	0.104689
	-0.01227	-0.13833	-0.00169	-0.08978		-0.01449	-0.16118	-0.0018	-0.08665
OMCXRETURNS(-17)	-0.01276	0.065049	-0.0008	0.043482	**USRETURNS(-17)**	-0.01949	0.069484	0.000553	0.01801
	-0.01225	-0.13814	-0.00169	-0.08966		-0.01452	-0.1615	-0.0018	-0.08682

OMCXRETURNS(-18)	-0.00657	-0.14104	-0.0008	-0.04968	**USRETURNS(-18)**	-0.02081	-0.39831**	-0.00275	-0.07659
	-0.01224	-0.138	-0.00168	-0.08956		-0.01426	-0.15854	-0.00177	-0.08523
OMCXRETURNS(-19)	-0.0041	0.263967*	0.001562	0.028849	**USRETURNS(-19)**	-0.00191	0.371332**	0.001463	0.095164
	-0.0119	-0.13419	-0.00164	-0.08709		-0.01411	-0.15689	-0.00175	-0.08434
OMCXRETURNS(-20)	0.00054	0.020987	0.000505	0.068935	**USRETURNS(-20)**	0.01243	0.03182	0.000806	-0.00989
	-0.01181	-0.13317	-0.00163	-0.08643		-0.01426	-0.1586	-0.00177	-0.08526
OMCXRETURNS(-21)	0.009663	-0.18016	-0.00263	0.000249	**USRETURNS(-21)**	0.016414	-0.13248	-0.00314*	0.085928
	-0.0116	-0.13075	-0.0016	-0.08486		-0.01413	-0.15712	-0.00175	-0.08447
OMCXRETURNS(-22)	-0.01475	-0.12478	-6.37E-05	-0.0194	**USRETURNS(-22)**	-0.01803	-0.10964	0.000301	-0.08496
	-0.01177	-0.13273	-0.00162	-0.08614		-0.01412	-0.15707	-0.00175	-0.08444
OMCXRETURNS(-23)	-0.02374**	-0.11946	-0.00186	0.114387	**USRETURNS(-23)**	-0.04079***	-0.08934	-0.0001	-0.01973
	-0.01169	-0.13177	-0.00161	-0.08552		-0.01406	-0.15633	-0.00174	-0.08404
OMCXRETURNS(-24)	0.002999	-0.08745	-0.00251	-0.04767	**USRETURNS(-24)**	0.004385	-0.18469	-0.00103	-0.08963
	-0.01164	-0.13126	-0.0016	-0.08519		-0.01449	-0.16114	-0.0018	-0.08663
C	0.147816	4.645733	0.182186**	-3.61796	**C**	0.134423	9.644755	0.126652	-1.32431
	-0.56571	-6.37829	-0.07785	-4.13953		-0.63533	-7.06548	-0.07877	-3.79823
D1	0.143788	-4.28393	-0.02325	-6.00491**					
	-0.31432	-3.54392	-0.04325	-2.30001					
D2	0.260512	-3.75748	0.068525*	-2.07854					
	-0.26088	-2.9414	-0.0359	-1.90897					
R-squared	0.518842	0.951352	0.977179	0.445965	**R-squared**	0.524482	0.953226	0.968874	0.501478
Adj. R-squared	0.166951	0.915773	0.960489	0.040776	**Adj. R-squared**	0.188822	0.920209	0.946902	0.149581

JAPAN					**GERMANY**				
	PRODC	**REA**	**RPO**	**NIKKEIRETURNS**		**PRODC**	**REA**	**RPO**	**DAXRETURNS**
PRODC(-1)	-0.06184	-0.31107	-0.01229	-0.43746	**PRODC(-1)**	-0.08472	-0.47829	-0.0216**	0.093605
	-0.08112	-0.84718	-0.01106	-0.60108		-0.08152	-0.88646	-0.0108	-0.65896
PRODC(-2)	-0.22115***	0.532121	0.000508	0.069971	**PRODC(-2)**	-0.22632***	0.327276	0.002921	0.937464
	-0.08058	-0.84146	-0.01099	-0.59702		-0.08079	-0.87848	-0.01071	-0.65303
PRODC(-3)	-0.05937	0.568482	-0.00826	-0.11337	**PRODC(-3)**	-0.07137	0.6194	-0.01004	1.479603**
	-0.08131	-0.84911	-0.01109	-0.60245		-0.08195	-0.89111	-0.01086	-0.66242
PRODC(-4)	0.02586	0.008302	0.006061	-0.24399	**PRODC(-4)**	0.011482	-0.41424	-0.00108	2.044782***
	-0.08078	-0.84358	-0.01102	-0.59853		-0.08343	-0.90719	-0.01106	-0.67437
PRODC(-5)	-0.02811	-0.7102	-0.00262	0.344732	**PRODC(-5)**	-0.07399	-0.49967	-0.00119	-0.16075
	-0.08088	-0.8446	-0.01103	-0.59925		-0.08456	-0.91951	-0.01121	-0.68353
PRODC(-6)	-0.03601	-1.60729*	-0.0135	1.000092*	**PRODC(-6)**	-0.01497	-2.40245***	-0.0268**	1.158947*
	-0.08094	-0.84527	-0.01104	-0.59973		-0.08432	-0.91683	-0.01118	-0.68154
PRODC(-7)	0.003458	0.456434	-0.01279	0.053295	**PRODC(-7)**	-0.02875	0.145368	-0.01919	-0.46553
	-0.08298	-0.86654	-0.01132	-0.61482		-0.08855	-0.96284	-0.01174	-0.71574
PRODC(-8)	0.009991	-0.20849	0.002631	0.620644	**PRODC(-8)**	-0.01037	-0.13097	0.005765	-0.27936
	-0.08392	-0.8764	-0.01145	-0.62181		-0.08811	-0.9581	-0.01168	-0.71221
PRODC(-9)	0.061366	-0.4689	-0.0112	-0.16522	**PRODC(-9)**	0.087627	-1.04719	-0.01211	0.020474
	-0.0838	-0.87515	-0.01143	-0.62093		-0.08665	-0.94217	-0.01148	-0.70037
PRODC(-10)	-0.04022	-1.84487**	-0.00199	-0.36191	**PRODC(-10)**	-0.07224	-1.34386	0.008914	1.408597**
	-0.08328	-0.86966	-0.01136	-0.61703		-0.0864	-0.93951	-0.01145	-0.69839
PRODC(-11)	-0.03388	1.092464	-0.01412	-1.31497**	**PRODC(-11)**	-0.07542	0.46706	-0.0197*	-1.36623*
	-0.08234	-0.85985	-0.01123	-0.61007		-0.08668	-0.94252	-0.01149	-0.70064
PRODC(-12)	0.012701	-1.55075*	-0.01788	-0.97219	**PRODC(-12)**	-0.02046	-1.72998*	-0.02697**	-1.2044*
	-0.0833	-0.86991	-0.01136	-0.61721		-0.08816	-0.9586	-0.01168	-0.71259
PRODC(-13)	-0.17479**	-0.30434	0.005606	-0.05544	**PRODC(-13)**	-0.12042	-0.29728	0.002995	0.709228
	-0.08489	-0.88653	-0.01158	-0.629		-0.08726	-0.9488	-0.01156	-0.7053
PRODC(-14)	-0.00905	-1.08775	-0.01632	0.763611	**PRODC(-14)**	0.060198	-1.59065*	-0.01682	1.00601
	-0.08684	-0.90688	-0.01184	-0.64344		-0.08732	-0.94954	-0.01157	-0.70585
PRODC(-15)	0.030595	0.438258	-0.01953	1.516857**	**PRODC(-15)**	0.092296	1.099653	-0.01189	1.745365**
	-0.08754	-0.91415	-0.01194	-0.6486		-0.08764	-0.953	-0.01162	-0.70843
PRODC(-16)	0.056888	-0.10894	-0.0132	-0.08356	**PRODC(-16)**	0.039255	1.098688	-0.00103	1.239027*
	-0.08763	-0.91508	-0.01195	-0.64926		-0.08779	-0.95461	-0.01164	-0.70962
PRODC(-17)	-0.11123	0.59886	-0.02023*	-0.07891	**PRODC(-17)**	-0.05351	-0.48243	-0.00938	-0.60162
	-0.08895	-0.92888	-0.01213	-0.65905		-0.0877	-0.95365	-0.01162	-0.7089
PRODC(-18)	-0.03432	-0.22956	-0.00459	0.785707	**PRODC(-18)**	0.048914	-0.98075	-0.01011	0.677891
	-0.09033	-0.94334	-0.01232	-0.66931		-0.08814	-0.95837	-0.01168	-0.71242
PRODC(-19)	-0.04059	-0.30149	0.00855	0.287339	**PRODC(-19)**	-0.06689	-0.77059	0.001637	0.070814
	-0.08818	-0.92083	-0.01203	-0.65334		-0.08606	-0.93581	-0.01141	-0.69565
PRODC(-20)	-0.05923	0.321515	-0.00284	0.393747	**PRODC(-20)**	0.000865	-0.08104	-0.00038	0.589164
	-0.08351	-0.87206	-0.01139	-0.61873		-0.08384	-0.9117	-0.01111	-0.67772
PRODC(-21)	-0.16943**	-1.1113	-0.00038	0.534501	**PRODC(-21)**	-0.15674*	-0.94998	0.011879	0.579648
	-0.0833	-0.86996	-0.01136	-0.61724		-0.08201	-0.89172	-0.01087	-0.66287
PRODC(-22)	-0.16078*	0.083827	0.001823	1.006053*	**PRODC(-22)**	-0.15116*	1.352693	0.00125	1.606139**
	-0.08194	-0.85568	-0.01118	-0.60711		-0.08218	-0.8936	-0.01089	-0.66427
PRODC(-23)	-0.12194	-1.39423	-0.00016	0.534327	**PRODC(-23)**	-0.16706**	-1.21062	-0.00167	-0.42444
	-0.08179	-0.85418	-0.01116	-0.60605		-0.08356	-0.90864	-0.01108	-0.67545
PRODC(-24)	0.322772***	0.328774	0.010188	0.200019	**PRODC(-24)**	0.317691***	0.856558	0.004357	0.505816
	-0.0827	-0.86363	-0.01128	-0.61275		-0.08537	-0.92824	-0.01131	-0.69002
REA(-1)	0.003585	1.233519***	0.001193	0.022548	**REA(-1)**	0.007085	1.28752***	0.001569	0.06361
	-0.00883	-0.09219	-0.0012	-0.06541		-0.0082	-0.08916	-0.00109	-0.06628
REA(-2)	0.003104	-0.50448***	-0.00025	-0.05919	**REA(-2)**	-0.00888	-0.49276***	-0.00057	-0.12109
	-0.01376	-0.14367	-0.00188	-0.10194		-0.01309	-0.14239	-0.00174	-0.10585
REA(-3)	-0.00505	0.22837	-0.00155	0.052976	**REA(-3)**	0.003346	0.231009	-0.00113	0.138737
	-0.01422	-0.14849	-0.00194	-0.10535		-0.01349	-0.14674	-0.00179	-0.10908
REA(-4)	0.006104	-0.27112*	0.001687	0.076698	**REA(-4)**	0.009483	-0.37986**	0.000663	-0.00564
	-0.01428	-0.14914	-0.00195	-0.10582		-0.01337	-0.14542	-0.00177	-0.1081
REA(-5)	0.002919	0.433772***	-0.00081	-0.12055	**REA(-5)**	-0.00703	0.45523***	-0.00041	-0.02863
	-0.0145	-0.15148	-0.00198	-0.10747		-0.01367	-0.14861	-0.00181	-0.11047
REA(-6)	-0.00104	-0.22318	0.000833	0.006874	**REA(-6)**	-0.00316	-0.15935	3.88E-06	-0.10407
	-0.01504	-0.15702	-0.00205	-0.11141		-0.0141	-0.15327	-0.00187	-0.11393
REA(-7)	-0.01561	-0.00561	3.96E-05	0.063962	**REA(-7)**	-0.00175	-0.04968	0.001922	0.049837
	-0.01463	-0.15281	-0.002	-0.10842		-0.01361	-0.14803	-0.0018	-0.11004
REA(-8)	0.008444	0.066054	-0.00166	-0.12411	**REA(-8)**	0.007088	-0.03607	-0.00267	-0.02219
	-0.01416	-0.14791	-0.00193	-0.10494		-0.01353	-0.14707	-0.00179	-0.10933
REA(-9)	-0.00415	0.043611	0.002442	0.161119	**REA(-9)**	-0.01687	0.1595	0.001883	0.11639
	-0.01452	-0.15159	-0.00198	-0.10755		-0.01389	-0.15108	-0.00184	-0.1123
REA(-10)	0.001536	0.146906	-0.0008	-0.11923	**REA(-10)**	0.006493	0.190834	-0.00075	-0.15282
	-0.01455	-0.15195	-0.00198	-0.10781		-0.01381	-0.1502	-0.00183	-0.11166
REA(-11)	-0.01184	-0.25454*	-0.00049	0.021318	**REA(-11)**	-0.00839	-0.33779**	0.000338	0.052049

	-0.01457	-0.15216	-0.00199	-0.10796		-0.01383	-0.1504	-0.00183	-0.1118
REA(-12)	0.020296	0.300388*	-0.00074	-0.04189	**REA(-12)**	0.0246*	0.269157*	-0.00115	0.032446
	-0.01512	-0.1579	-0.00206	-0.11203		-0.0145	-0.15767	-0.00192	-0.1172
REA(-13)	-0.01565	-0.3827**	0.000271	0.054514	**REA(-13)**	-0.02828*	-0.29325*	-0.00038	-0.01103
	-0.01588	-0.16582	-0.00217	-0.11765		-0.0151	-0.16419	-0.002	-0.12205
REA(-14)	0.008141	0.430969**	0.000857	0.031126	**REA(-14)**	0.020707	0.338277**	0.001303	0.006036
	-0.01613	-0.16847	-0.0022	-0.11953		-0.01511	-0.16428	-0.002	-0.12212
REA(-15)	0.010595	-0.47306***	-0.00046	-0.08504	**REA(-15)**	0.002608	-0.43927***	0.000644	-0.01849
	-0.01631	-0.17036	-0.00223	-0.12087		-0.01492	-0.16228	-0.00198	-0.12063
REA(-16)	-0.01752	0.391856**	0.000112	0.040201	**REA(-16)**	-0.01479	0.383271**	-0.00107	0.106485
	-0.01652	-0.17247	-0.00225	-0.12237		-0.0151	-0.16418	-0.002	-0.12205
REA(-17)	0.0022	-0.39801	0.001152	0.00428	**REA(-17)**	-0.00224	-0.32089	0.000695	-0.17339
	-0.01689	-0.17638	-0.0023	-0.12515		-0.01546	-0.16815	-0.00205	-0.125
REA(-18)	0.001807	0.273382	-0.00042	-0.04894	**REA(-18)**	0.010383	0.230077	0.000227	0.031341
	-0.0172	-0.17962	-0.00235	-0.12744		-0.0156	-0.16968	-0.00207	-0.12613
REA(-19)	0.017564	-0.19711	0.000738	-0.01771	**REA(-19)**	0.013128	-0.16381	0.000243	-0.09765
	-0.01699	-0.17739	-0.00232	-0.12586		-0.01541	-0.16758	-0.00204	-0.12458
REA(-20)	-0.02179	0.150585	-0.00198	0.087798	**REA(-20)**	-0.01931	0.126024	-0.00088	0.213795*
	-0.01677	-0.17514	-0.00229	-0.12426		-0.01518	-0.16503	-0.00201	-0.12267
REA(-21)	0.015815	-0.20251	0.000893	0.016487	**REA(-21)**	0.013267	-0.12231	-0.0003	-0.15002
	-0.01646	-0.17191	-0.00225	-0.12197		-0.01535	-0.16694	-0.00203	-0.1241
REA(-22)	-0.0117	0.219337	-0.00027	-0.04078	**REA(-22)**	-0.01376	0.154556	0.001327	-0.01926
	-0.01602	-0.1673	-0.00219	-0.1187		-0.01511	-0.16428	-0.002	-0.12212
REA(-23)	0.016747	-0.08675	0.000324	-0.1377	**REA(-23)**	0.012556	-0.12365	-0.00151	0.018709
	-0.01512	-0.15792	-0.00206	-0.11205		-0.01443	-0.15693	-0.00191	-0.11665
REA(-24)	-0.01809*	0.084041	-0.00055	0.120375*	**REA(-24)**	-0.01076	0.078907	0.000268	0.087601
	-0.00954	-0.09965	-0.0013	-0.0707		-0.00902	-0.0981	-0.0012	-0.07293
RPO(-1)	0.339501	11.11519	0.824168***	0.744479	**RPO(-1)**	0.462079	9.949478	0.834287***	0.166861
	-0.65887	-6.88068	-0.08987	-4.88188		-0.67902	-7.38347	-0.09	-5.48859
RPO(-2)	0.475897	-10.2991	0.165214	4.707374	**RPO(-2)**	0.210232	-7.67156	0.267621**	4.151317
	-0.84905	-8.86672	-0.11581	-6.29099		-0.87625	-9.52807	-0.11614	-7.08281
RPO(-3)	-0.40984	-11.4838	0.000403	-1.43962	**RPO(-3)**	0.388366	-13.2541	-0.1142	4.79393
	-0.86505	-9.03388	-0.11799	-6.40959		-0.89737	-9.75775	-0.11894	-7.25354
RPO(-4)	-0.5978	9.14263	0.008442	-15.841**	**RPO(-4)**	-1.09139	13.80833	0.0501	-15.3535**
	-0.85592	-8.93852	-0.11674	-6.34194		-0.90386	-9.82824	-0.1198	-7.30594
RPO(-5)	0.658961	-11.2244	-0.12819	0.157861	**RPO(-5)**	0.122265	-15.7896	-0.19444	-12.3021*
	-0.878	-9.16909	-0.11976	-6.50553		-0.91372	-9.93555	-0.1211	-7.38571
RPO(-6)	-1.54263*	0.466693	0.110635	14.18085**	**RPO(-6)**	-0.36226	2.25196	0.066985	12.52767*
	-0.87858	-9.17518	-0.11984	-6.50985		-0.93481	-10.1649	-0.1239	-7.55617
RPO(-7)	0.274445	8.527959	-0.08375	-1.08334	**RPO(-7)**	-0.1021	16.59629	0.06727	7.576118
	-0.89037	-9.29828	-0.12144	-6.59719		-0.93119	-10.1254	-0.12342	-7.52687
RPO(-8)	0.944196	0.393683	-0.09097	-0.05496	**RPO(-8)**	0.809238	-1.924	-0.144	9.554782
	-0.88672	-9.26017	-0.12095	-6.57014		-0.94249	-10.2484	-0.12492	-7.61826
RPO(-9)	1.147358	-12.3344	0.135322	0.997421	**RPO(-9)**	0.774463	-6.97379	0.183974	-4.54504
	-0.90796	-9.48201	-0.12384	-6.72755		-0.97059	-10.5539	-0.12864	-7.84538
RPO(-10)	-1.09677	0.296847	0.108472	-1.56743	**RPO(-10)**	-1.35081	-8.03067	0.073852	-3.47773
	-0.91916	-9.5989	-0.12537	-6.81047		-0.98391	-10.6988	-0.13041	-7.95306
RPO(-11)	-0.18633	15.222	0.054271	-6.09087	**RPO(-11)**	0.41184	7.840635	-0.11764	-12.5606
	-0.91831	-9.59	-0.12525	-6.80416		-0.9752	-10.604	-0.12925	-7.88262
RPO(-12)	0.874424	-12.8053	-0.05783	-2.03107	**RPO(-12)**	0.284814	-3.39606	0.026805	7.510581
	-0.90526	-9.45373	-0.12347	-6.70748		-0.97098	-10.5581	-0.12869	-7.84848
RPO(-13)	0.030043	9.088543	-0.15442	10.31914	**RPO(-13)**	0.92749	5.296139	-0.15056	5.669504
	-0.8981	-9.37897	-0.1225	-6.65444		-0.93674	-10.1858	-0.12415	-7.57174
RPO(-14)	-1.96159**	-0.14376	0.049303	3.184173	**RPO(-14)**	-1.45206	4.939793	0.215967*	-1.57404
	-0.90386	-9.43911	-0.12328	-6.6971		-0.94655	-10.2925	-0.12545	-7.65106
RPO(-15)	2.518889***	3.439002	-0.07654	-9.29498	**RPO(-15)**	0.859563	11.87133	-0.08451	-9.25872
	-0.91051	-9.50865	-0.12419	-6.74644		-0.94804	-10.3087	-0.12565	-7.66312
RPO(-16)	-1.82244**	-7.57391	0.131146	2.443385	**RPO(-16)**	-1.56572*	-24.4927	0.01082	7.031547
	-0.90798	-9.48214	-0.12384	-6.72763		-0.93849	-10.2048	-0.12439	-7.58587
RPO(-17)	1.116646	-3.42613	-0.04913	-0.81155	**RPO(-17)**	1.661119*	0.167574	-0.02849	7.809464
	-0.91414	-9.5465	-0.12468	-6.7733		-0.96214	-10.462	-0.12752	-7.77708
RPO(-18)	-0.88296	12.7833	0.031951	9.159237	**RPO(-18)**	-1.13769	8.675157	-0.0912	-6.873
	-0.90064	-9.40555	-0.12284	-6.67329		-0.93964	-10.2174	-0.12454	-7.5952
RPO(-19)	-0.46072	1.310823	0.080512	-16.2224**	**RPO(-19)**	-0.69766	6.703716	0.09698	-0.98898
	-0.90188	-9.41842	-0.12301	-6.68243		-0.94412	-10.2661	-0.12513	-7.63142
RPO(-20)	-0.21772	-5.2796	-0.0186	1.47379	**RPO(-20)**	0.276562	-5.78216	0.109476	-3.87118
	-0.92302	-9.63922	-0.1259	-6.83908		-0.92857	-10.097	-0.12307	-7.50571
RPO(-21)	-0.38024	1.059286	-0.03335	7.074715	**RPO(-21)**	0.446548	-2.37554	-0.04213	14.96229**
	-0.92156	-9.62395	-0.1257	-6.82825		-0.92037	-10.0078	-0.12198	-7.43943
RPO(-22)	0.436088	1.34672	0.021608	2.634879	**RPO(-22)**	-0.26807	2.179272	-0.01626	-11.436
	-0.90039	-9.4029	-0.12281	-6.67141		-0.8983	-9.76786	-0.11906	-7.26106
RPO(-23)	1.754956*	0.290669	-0.07704	-7.18544	**RPO(-23)**	0.852855	-1.7667	-0.02032	-12.3654*
	-0.89208	-9.3161	-0.12168	-6.60983		-0.89007	-9.67838	-0.11797	-7.19454
RPO(-24)	-1.0322	-3.08861	0.011137	4.34417	**RPO(-24)**	-0.38473	-0.93868	-0.02619	12.95022**
	-0.69174	-7.2239	-0.09435	-5.1254		-0.67622	-7.35295	-0.08962	-5.4659
NIKKEIRETURNS(-1)	-0.01145	0.063967	0.000962	-0.07493	**DAXRETURNS(-1)**	-0.00186	0.025343	0.003066**	0.098306
	-0.01205	-0.1258	-0.00164	-0.08925		-0.0103	-0.11199	-0.00137	-0.08325
NIKKEIRETURNS(-2)	-0.02159*	-0.00025	0.001345	-0.04813	**DAXRETURNS(-2)**	0.000355	-0.11032	-2.07E-05	0.054193
	-0.01214	-0.12673	-0.00166	-0.08992		-0.01049	-0.11409	-0.00139	-0.08481
NIKKEIRETURNS(-3)	0.010717	-0.04118	-0.0009	0.025273	**DAXRETURNS(-3)**	0.007168	0.036155	0.002148	0.060905
	-0.01216	-0.12694	-0.00166	-0.09007		-0.01034	-0.11245	-0.00137	-0.08359
NIKKEIRETURNS(-4)	-8.11E-05	0.164494	-0.00188	-0.11177	**DAXRETURNS(-4)**	-0.01416	0.23769**	-0.00054	-0.07371
	-0.01182	-0.12346	-0.00161	-0.0876		-0.01031	-0.11205	-0.00137	-0.0833
NIKKEIRETURNS(-5)	0.004561	-0.07764	-0.00058	-0.01514	**DAXRETURNS(-5)**	0.001439	0.060117	-0.00157	0.117527
	-0.01169	-0.12204	-0.00159	-0.08659		-0.01058	-0.11501	-0.0014	-0.0855
NIKKEIRETURNS(-6)	0.00066	-0.20356*	-0.00162	-0.17126**	**DAXRETURNS(-6)**	0.020121*	-0.13074	0.000802	-0.03335
	-0.01127	-0.11773	-0.00154	-0.08353		-0.01058	-0.11509	-0.0014	-0.08555
NIKKEIRETURNS(-7)	0.006181	0.197895*	-0.001	-0.10177	**DAXRETURNS(-7)**	0.021011*	-0.06138	-0.0018	0.001156
	-0.01133	-0.11831	-0.00155	-0.08394		-0.01078	-0.11723	-0.00143	-0.08715
NIKKEIRETURNS(-8)	0.011606	0.265844**	0.001308	-0.05741	**DAXRETURNS(-8)**	0.016966	0.19199	0.000625	0.155898*
	-0.01145	-0.11956	-0.00156	-0.08483		-0.01086	-0.11804	-0.00144	-0.08775
NIKKEIRETURNS(-9)	0.003014	0.047646	0.000412	0.014177	**DAXRETURNS(-9)**	-0.00256	0.030178	0.004064***	-0.15202*
	-0.01144	-0.11951	-0.00156	-0.08479		-0.01088	-0.1183	-0.00144	-0.08794
NIKKEIRETURNS(-10)	-0.00509	0.046748	0.000154	-0.03341	**DAXRETURNS(-10)**	0.007031	-0.0914	0.001045	-0.09138
	-0.0109	-0.11383	-0.00149	-0.08076		-0.01107	-0.12038	-0.00147	-0.08949
NIKKEIRETURNS(-11)	0.000894	0.095925	0.000174	-0.14946*	**DAXRETURNS(-11)**	-0.00617	0.005971	-0.00102	-0.03353
	-0.01092	-0.114	-0.00149	-0.08088		-0.01116	-0.12137	-0.00148	-0.09022
NIKKEIRETURNS(-12)	0.000494	-0.16609	-0.00104	-0.04694	**DAXRETURNS(-12)**	-0.02095*	-0.0716	-0.00079	-0.07647
	-0.01111	-0.11602	-0.00152	-0.08232		-0.01102	-0.11979	-0.00146	-0.08905

NIKKEIRETURNS(-13)	-0.02551**	0.001428	-0.00172	0.036932	**DAXRETURNS(-13)**	0.007642	-0.03466	-0.00122	-0.04423
	-0.01117	-0.11669	-0.00152	-0.08279		-0.0109	-0.11856	-0.00145	-0.08813
NIKKEIRETURNS(-14)	-0.01246	0.114985	0.00031	-0.02597	**DAXRETURNS(-14)**	-0.01972*	0.063734	0.002016	0.010108
	-0.01136	-0.11867	-0.00155	-0.08419		-0.01051	-0.11433	-0.00139	-0.08499
NIKKEIRETURNS(-15)	0.00227	0.147128	0.001296	0.015512	**DAXRETURNS(-15)**	-0.00302	0.098289	-0.00018	0.149144*
	-0.01132	-0.11825	-0.00154	-0.0839		-0.01076	-0.11703	-0.00143	-0.087
NIKKEIRETURNS(-16)	0.00058	-0.03498	0.000257	-0.02075	**DAXRETURNS(-16)**	-0.00934	-0.0908	0.000414	0.027107
	-0.01115	-0.11639	-0.00152	-0.08258		-0.01086	-0.11807	-0.00144	-0.08777
NIKKEIRETURNS(-17)	-0.00867	0.243652**	8.73E-05	-0.19712**	**DAXRETURNS(-17)**	-0.00913	-0.01965	-0.00088	-0.05046
	-0.01121	-0.11708	-0.00153	-0.08307		-0.01081	-0.11756	-0.00143	-0.08739
NIKKEIRETURNS(-18)	0.000414	-0.09201	-0.00212	-0.13624	**DAXRETURNS(-18)**	-0.00749	-0.2839**	-0.00194	-0.02655
	-0.01167	-0.1219	-0.00159	-0.08649		-0.01071	-0.11651	-0.00142	-0.08661
NIKKEIRETURNS(-19)	-0.00774	0.182235	-8.14E-05	0.218164**	**DAXRETURNS(-19)**	-0.00029	0.214722*	0.001329	0.176139**
	-0.01145	-0.11958	-0.00156	-0.08484		-0.0107	-0.11633	-0.00142	-0.08648
NIKKEIRETURNS(-20)	0.000909	0.075605	-0.00037	0.147142*	**DAXRETURNS(-20)**	0.006914	0.00072	-0.00058	-0.02229
	-0.01119	-0.11684	-0.00153	-0.0829		-0.01077	-0.11706	-0.00143	-0.08702
NIKKEIRETURNS(-21)	0.02028*	-0.15392	-0.003*	0.028808	**DAXRETURNS(-21)**	0.00254	-0.18037	-0.00073	0.028766
	-0.01129	-0.11785	-0.00154	-0.08362		-0.01056	-0.11482	-0.0014	-0.08535
NIKKEIRETURNS(-22)	0.001262	-0.05329	0.002613	0.047393	**DAXRETURNS(-22)**	-0.00662	-0.06293	0.000369	0.001078
	-0.01163	-0.12141	-0.00159	-0.08614		-0.01057	-0.11495	-0.0014	-0.08545
NIKKEIRETURNS(-23)	-0.00944	-0.07304	-0.00178	-0.05181	**DAXRETURNS(-23)**	-0.01733	-0.07579	-0.00176	-0.02888
	-0.01148	-0.11988	-0.00157	-0.08506		-0.01049	-0.11409	-0.00139	-0.08481
NIKKEIRETURNS(-24)	-0.00514	-0.07592	0.000608	-0.12623	**DAXRETURNS(-24)**	0.002111	-0.09201	-0.00081	-0.02883
	-0.01107	-0.11561	-0.00151	-0.08202		-0.01055	-0.11469	-0.0014	-0.08526
C	0.358619	13.78116**	0.175464**	2.418496	**C**	-0.09372	9.315915	0.117446	-1.17439
	-0.64701	-6.75681	-0.08825	-4.794		-0.56749	-6.17071	-0.07521	-4.58707
D1	-0.12666	-4.71197	-0.0477	-5.1943**					
	-0.32008	-3.34264	-0.04366	-2.37162					
D2	-0.36824	-0.73349	-0.05647	-6.0164***					
	-0.25002	-2.61095	-0.0341	-1.85248					
D3	-0.36218	-0.91382	-0.09848**	-6.01066**					
	-0.32735	-3.41857	-0.04465	-2.4255					
D6	0.260322	-7.47699	0.015662	0.32907					
	-0.46399	-4.84555	-0.06329	-3.43794					
R-squared	0.485165	0.955344	0.984187	0.47123	**R-squared**	0.499372	0.952922	0.972533	0.486715
Adj. R-squared	0.095139	0.921513	0.972207	0.070647	**Adj. R-squared**	0.145988	0.91969	0.953145	0.124397

PRODC is the global oil production change rate (calculated as log difference of oil production), ***REA*** is the monthly global real activity change rate (Kilian index), ***RPO*** is the real price of oil (deflated by U.S. CPI with 2010 as a base year), ***TSXRETURNS*** is the stock market returns for Canada (TSX/S&P500) while ***NORWAYRETURNS*** – for Norway (OSEAX), ***OMXCRETURNS*** – for Denmark (OMXC20), ***USRETURNS*** – for United States (S&P500), ***NIKKEIRETURNS*** – for Japan (NIKKEI225) and ***DAXRETURNS*** – for Germany (DAX30). The dummies are called as D_ (appropriate number) in accordance with each country (look at Table 4). The level of significance for coefficients are expressed as follows: * if significant at 10% level, ** if significant at 5% level and *** if significant at 1%. Each line after independent variables' coefficients shows standard error values.

Table 7
6-variable SVARs of each country

	CANADA							**NORWAY**					
	PRODC	**REA**	**INT_R**	**EXCH**	**RPO**	**TSXRETURNS**		**PRODC**	**REA**	**INT_R**	**EXCH_R**	**RPO**	**NORWAYRETURNS**
PRODC(-1)	-0.05217	1.2844	-0.05676***	-0.001	-0.01361	0.034285	**PRODC(-1)**	-0.09367	-0.34871	-0.06*	0.001266	-0.00993	0.204339
PRODC(-2)	-0.16077*	-0.32226	-0.03674*	-0.00029	-0.00548	-0.04182	**PRODC(-2)**	-0.29798***	0.114205	-0.04226	-0.00284	-0.00665	0.587672
PRODC(-3)	-0.00836	-0.06161	-0.01543	0.002268	-0.00727	0.696877	**PRODC(-3)**	-0.16845*	-0.47056	-0.03483	-0.00327	-0.01032	0.799411
PRODC(-4)	-0.02098	-0.57541	-0.03252	0.000603	-0.00559	0.03641	**PRODC(-4)**	-0.03779	-0.93554	-0.07172**	0.0038	-0.00698	0.972733
PRODC(-5)	-0.11372	-0.66973	-0.01098	0.003953*	-0.00539	0.220256	**PRODC(-5)**	-0.16959*	-0.79582	0.010385	0.004431	-0.01196	-0.44814
PRODC(-6)	-0.00733	-1.98668**	-0.03337	-0.00174	-0.01438	0.070299	**PRODC(-6)**	-0.06719	-1.90112*	-0.01655	0.002829	-0.02442**	0.910933
PRODC(-7)	-0.07608	-0.82806	-0.01489	-0.00029	-0.00546	-0.58296	**PRODC(-7)**	-0.06109	-0.48594	0.039259	0.002741	-0.03023**	-0.83499
PRODC(-8)	-0.06582	-0.39892	-0.01492	-9.66E-05	-0.0072	-0.80062	**PRODC(-8)**	-0.05517	0.267817	0.010765	0.006845	-0.00421	-0.80998
PRODC(-9)	0.105984	-1.68435*	-0.02659	0.002582	-0.01123	-0.99111*	**PRODC(-9)**	-0.00066	-0.34897	-0.00095	0.007517*	-0.01617	-0.38379
PRODC(-10)	0.008118	-1.65754*	0.014154	0.002919	-0.00225	-0.01151	**PRODC(-10)**	-0.09123	-1.07421	-0.04856	0.001792	0.00028	0.536284
PRODC(-11)	-0.06429	-0.15155	-0.00323	0.00041	-0.01268	-0.67151	**PRODC(-11)**	-0.11643	0.360122	-0.04665	0.000997	-0.0197*	-1.12165
PRODC(-12)	0.053209	-1.92824**	-0.02976	0.002912	-0.02886***	-0.89307*	**PRODC(-12)**	0.012141	-2.0944**	-0.01569	0.001746	-0.01207	-0.45311
PRODC(-13)	-0.17507**	-1.59989*	-0.03225	0.002088	0.004911	0.123659	**PRODC(-13)**	-0.18052*	-2.44994***	-0.04926	0.000649	-0.00078	-0.13015
PRODC(-14)	0.108903	-1.30135	-0.02164	0.000189	-0.01007	0.388257	**PRODC(-14)**	0.082485	-1.55481*	-0.07845**	0.002639	-0.01978*	-0.88014
PRODC(-15)	0.118134	-0.27047	-0.01613	-0.00016	-0.03106***	0.2705	**PRODC(-15)**	0.116213	0.010493	-0.03985	-0.00457	-0.03018***	0.293709
PRODC(-16)	0.011159	-0.83366	-0.01152	0.001411	-0.00249	1.250624**	**PRODC(-16)**	0.056012	-1.1893	-0.0356	0.001213	-0.00964	0.442409
PRODC(-17)	-0.05708	0.422933	-0.01699	-0.00082	0.001043	-0.03151	**PRODC(-17)**	0.020843	-0.72352	-0.05709	0.010177***	-0.02799**	-0.97106
PRODC(-18)	0.012849	-0.70609	-0.01704	0.000111	-0.01313	0.6336	**PRODC(-18)**	-0.03868	0.615895	-0.03027	-0.00249	-0.01462	0.40757
PRODC(-19)	-0.0355	-1.80386**	-0.02293	0.001841	0.004187	-0.18508	**PRODC(-19)**	-0.007	-1.5016	-0.02963	0.006938*	0.013104	0.33938
REA(-1)	0.001052	1.205905***	0.000567	-0.0001	0.000621	0.035861	**REA(-1)**	0.011834	1.200509***	-0.00224	0.0000494	-0.00091	0.015534
REA(-2)	0.005744	-0.43494***	0.001011	-3.09E-05	-0.00064	0.006631	**REA(-2)**	-0.01253	-0.36087**	0.008281	-0.00052	0.002073	-0.00393
REA(-3)	-0.00419	0.246944*	-0.00086	0.000102	-0.00013	0.01154	**REA(-3)**	0.009075	0.088205	-0.0008	0.000947	-0.00324*	0.011777
REA(-4)	0.001819	-0.33981**	0.0000199	-0.00038	0.001087	0.088374	**REA(-4)**	0.003852	-0.13163	-0.00643	-0.00048	0.002351	0.102464
REA(-5)	-0.00748	0.413279***	0.000147	0.000258	-0.00047	-0.15893*	**REA(-5)**	-0.00332	0.327881**	-0.00124	-0.00012	-0.00132	-0.12463
REA(-6)	0.003161	-0.11258	0.0000833	-0.00021	-0.00052	0.084933	**REA(-6)**	-0.01655	-0.15068	0.002049	-0.0004	0.003635*	0.156333
REA(-7)	0.000443	-0.01461	-0.00267	0.000126	0.00252	-0.09845	**REA(-7)**	0.010266	-0.10707	-0.00308	0.000678	-0.00077	-0.06866
REA(-8)	0.007837	-0.00698	0.004148	-0.00036	-0.00222	0.141757*	**REA(-8)**	-0.002	0.201369	0.004016	-0.0007	-0.00066	0.035804
REA(-9)	-0.00284	-0.09324	-0.00224	0.0000364	0.000808	-0.0706	**REA(-9)**	0.00355	-0.17398	-0.00174	-0.00022	0.000509	-0.06761
REA(-10)	-0.00463	0.234211*	0.002928	0.000247	-0.00072	0.018243	**REA(-10)**	0.000189	0.125192	-0.00024	0.000741	-0.00075	0.039131
REA(-11)	-0.00881	-0.20741	-0.00646**	-0.00029	0.000416	0.014137	**REA(-11)**	-0.0102	-0.06302	0.002825	-0.0000940	-0.00096	-0.04991
REA(-12)	0.024437*	0.17693	0.00578*	0.000407	-0.00125	-0.0355	**REA(-12)**	0.021546	0.246061	0.000916	-0.0003	0.00066	-0.00555

REA(-13)	-0.02019	-0.37471**	-0.00142	-0.00044	0.000567	0.006868	**REA(-13)**	-0.02867	-0.40198**	-0.00065	0.000376	-0.00058	-0.01753
REA(-14)	-0.00231	0.40417**	-0.00086	0.000199	-0.00029	-0.00121	**REA(-14)**	0.009791	0.346758**	-0.00206	-0.00025	0.000815	0.071676
REA(-15)	0.012412	-0.36808**	-0.00026	0.000109	0.001073	0.02119	**REA(-15)**	0.001026	-0.26798	-0.00013	5.08E-05	0.000997	-0.01045
REA(-16)	-0.01463	0.350709**	0.001127	-0.0000775	-0.00055	0.04166	**REA(-16)**	0.003354	0.141903	0.000167	0.000284	-0.00169	-0.06809
REA(-17)	0.00858	-0.26463*	0.0000770	0.0000367	0.000417	-0.04755	**REA(-17)**	-0.01408	-0.095	0.001933	-0.00064	0.001945	0.090678
REA(-18)	-0.0137	0.17775	-0.00057	-0.000065	0.000808	-0.02802	**REA(-18)**	0.011408	-0.02233	0.003813	0.000283	-0.00154	-0.17825
REA(-19)	0.009878	-0.03789	0.00073	-0.0000001	-0.00113	-0.00494	**REA(-19)**	-0.00412	0.05244	-0.00587*	0.0000593	-0.00034	0.115256*
INT_R(-1)	0.438669	-10.1142**	1.166187***	0.00521	-0.02438	-1.39532	**INT_R(-1)**	-0.13661	-3.24842	1.074117***	-0.0033	0.034031	-0.79229
INT_R(-2)	-0.31371	7.061351	-0.07994	0.000194	-0.01544	-0.75097	**INT_R(-2)**	0.39414	0.358172	-0.05017	-0.00668	-0.02742	-0.16834
INT_R(-3)	0.064589	-6.46978	0.023256	-0.00567	-0.05981	3.528678	**INT_R(-3)**	-0.21791	-3.1643	0.151485	0.00953	-0.06116	-2.99074
INT_R(-4)	-0.69629	10.28287	-0.19004	-0.00131	0.152134**	-0.74653	**INT_R(-4)**	0.058068	8.589714**	-0.1397	0.012464	0.039342	2.08112
INT_R(-5)	0.516767	1.282291	-0.10415	0.000556	-0.11491	-1.25624	**INT_R(-5)**	-0.09224	-5.58845	-0.08834	0.007786	-0.04291	-0.95001
INT_R(-6)	0.493082	-8.00073	0.129293	0.020313	0.022029	-0.74917	**INT_R(-6)**	-0.07199	3.958405	0.122846	-0.02514	0.007151	0.268886
INT_R(-7)	-1.3416**	0.746091	0.307418**	-0.02321	0.022928	2.350887	**INT_R(-7)**	-0.20889	-0.20743	-0.12165	0.004226	0.092888**	2.177334
INT_R(-8)	0.753429	17.06158***	-0.35426**	-0.00901	-0.00381	-4.09548	**INT_R(-8)**	0.110141	0.11553	-0.02809	0.002472	-0.03808	1.613603
INT_R(-9)	0.148737	-4.76721	0.077752	0.017057	0.066658	5.568788	**INT_R(-9)**	-0.7869**	-4.61703	-0.0343	0.010936	0.020812	-0.45814
INT_R(-10)	0.166746	-5.51613	0.120834	0.0000943	0.026688	-2.13937	**INT_R(-10)**	1.14596***	3.016306	-0.01527	-0.01514	-0.089*	-3.1119
INT_R(-11)	-1.19112**	-6.22625	-0.2204	-0.0031	-0.10641	-1.81737	**INT_R(-11)**	-0.07358	0.798993	0.206206	-0.00962	0.090892*	2.023778
INT_R(-12)	0.080049	1.872553	0.008877	0.003315	-0.01235	1.49393	**INT_R(-12)**	-0.42317	-5.77252	-0.04103	0.023717	-0.06387	-0.61485
INT_R(-13)	1.575301***	5.837277	0.1363	-0.00654	0.055938	-2.95002	**INT_R(-13)**	0.277921	5.877692	-0.14759	-0.01392	0.010615	-0.00454
INT_R(-14)	-0.15382	-0.89622	-0.13413	0.00609	-0.02261	2.726666	**INT_R(-14)**	-0.49577	0.69185	0.179275	-0.00144	-0.01456	-2.17426
INT_R(-15)	-0.93408*	-6.19816	0.205836	0.006481	0.001696	1.580977	**INT_R(-15)**	0.548562	-2.61969	-0.10621	0.014885	0.063004	3.688897
INT_R(-16)	-0.22502	0.295235	-0.19543	-0.00145	-0.01883	-3.18393	**INT_R(-16)**	-0.12779	-1.03563	0.056534	-0.00518	-0.07563	-0.88719
INT_R(-17)	0.2961	8.510087	0.021987	-0.01059	-0.01052	0.010046	**INT_R(-17)**	-0.07178	3.672789	-0.0381	0.002801	0.03607	-2.58753
INT_R(-18)	0.939813*	-12.6774**	0.004385	0.002821	0.074263	1.425615	**INT_R(-18)**	0.288789	-1.31607	0.038738	-0.00474	0.018041	2.761243
INT_R(-19)	-0.68267**	7.279938**	0.030735	0.002802	-0.04505	-0.09296	**INT_R(-19)**	-0.17132	-0.7572	-0.04193	-0.00259	-0.02227	-1.29833
EXCH(-1)	5.103688	-88.1653**	-1.42301	1.182102***	-1.78676***	-66.8941***	**EXCH(-1)**	2.459497	-57.4927**	0.034953	0.941677***	-0.31212	-21.0525
EXCH(-2)	0.500515	-36.9269	2.319297*	-0.23412	1.861503***	37.69682	**EXCH(-2)**	-3.0599	15.46301	-0.97168	0.165905	-0.10345	14.59176
EXCH(-3)	-9.86264	51.57574	-0.21668	0.015947	-1.21807*	74.01409**	**EXCH(-3)**	-2.72241	52.4691*	0.078703	-0.14202	0.097177	4.424959
EXCH(-4)	11.43319*	64.79524	1.657593	0.059806	0.511844	-64.9709*	**EXCH(-4)**	4.125799	-39.34	0.7436	-0.08598	0.364369	28.14794
EXCH(-5)	-14.2623**	-83.7114	-2.84244*	-0.0895	0.265984	33.09895	**EXCH(-5)**	5.894881*	20.2754	0.909275	0.073348	-0.46477	-36.2526
EXCH(-6)	8.551253	121.126*	0.90391	-0.11495	1.095553	38.51352	**EXCH(-6)**	-6.60363**	2.396592	0.078382	0.175534	0.410772	-5.48407
EXCH(-7)	-8.60939	-7.08131	0.716426	0.038415	-1.13529	-74.5196*	**EXCH(-7)**	0.20963	-24.2414	-2.11046*	-0.11282	0.162819	26.15193
EXCH(-8)	4.068108	7.771406	0.022895	0.095495	-0.49669	30.63532	**EXCH(-8)**	-0.8563	67.12352**	1.175849	0.003203	-0.34853	-3.47008
EXCH(-9)	-6.64674	-14.905	-0.53224	-0.19098	1.245381	-20.9923	**EXCH(-9)**	-1.37112	-3.335	0.875028	-0.2561*	0.832926**	24.77227
EXCH(-10)	11.98872*	74.35821	0.416379	0.16076	0.133559	45.06594	**EXCH(-10)**	2.971738	-80.05**	-0.7925	0.213218	-0.42399	-30.5303
EXCH(-11)	5.311612	-139.454*	-1.62306	0.047975	-1.16145	-91.6743**	**EXCH(-11)**	-1.54389	17.99403	-1.19835	0.06027	-0.02418	2.355308
EXCH(-12)	-2.30877	0.98775	-0.86322	0.155248	0.544275	67.87109	**EXCH(-12)**	-0.93869	62.97361*	1.014472	-0.20586	-0.10937	8.821736
EXCH(-13)	-10.5329	45.04439	3.136791*	-0.16439	-0.05341	-18.7816	**EXCH(-13)**	2.435998	-28.6245	2.783967**	0.058124	0.218777	-17.9561
EXCH(-14)	17.94315**	3.764679	-1.27571	-0.02706	-0.08759	9.870768	**EXCH(-14)**	-1.5394	-23.5033	-1.43641	-0.03122	-0.31861	-1.02768
EXCH(-15)	-12.1137*	-66.6469	-0.04173	-0.08532	-0.1571	-15.2095	**EXCH(-15)**	-0.03787	29.14264	-0.22644	0.234946*	-0.16345	-3.31949
EXCH(-16)	-5.42761	62.07876	-1.45544	0.172596	0.793593	-21.5843	**EXCH(-16)**	-0.79527	-8.28555	-0.12725	-0.01051	-0.02576	-9.94989
EXCH(-17)	1.90987	3.100565	0.759558	0.091548	-2.3951***	-1.60565	**EXCH(-17)**	-1.77914	25.9198	-0.58057	0.033729	0.27589	32.85121
EXCH(-18)	12.38785*	-94.7032	-1.62114	0.231957	1.239204	39.46707	**EXCH(-18)**	1.90749	0.485827	1.54438	-0.08094	0.222478	17.17602
EXCH(-19)	-9.05445*	94.82392*	1.9069*	-0.26373**	0.371625	-30.2955	**EXCH(-19)**	0.729935	-32.6331	-1.72806*	-0.08163	-0.27637	-37.4592**
RPO(-1)	1.332687*	-3.57471	-0.22593	-0.00201	0.671498***	-5.29366	**RPO(-1)**	0.265003	14.91847*	0.139773	-0.03995	0.824608***	6.642006
RPO(-2)	-0.70731	-4.44353	-0.07421	0.029574	0.20698*	6.840649	**RPO(-2)**	-0.2268	-18.1027*	-0.20757	0.059279	0.119235	-5.24472
RPO(-3)	1.198832	-3.59319	0.480398**	-0.00045	0.008337	-4.4453	**RPO(-3)**	-0.02624	-2.80305	-0.36822	-0.03344	-0.09396	5.849656
RPO(-4)	-2.05736**	-0.32843	-0.31215	0.012956	-0.10422	-9.34226	**RPO(-4)**	-0.08954	4.755424	-0.26321	-0.02702	0.073849	-5.85324
RPO(-5)	0.763897	-4.38405	0.283162	-0.01813	0.080442	2.337335	**RPO(-5)**	2.079736**	-14.666	0.817978**	0.106012**	-0.0278	-13.0061*
RPO(-6)	-1.56007	6.14377	-0.26237	-0.01926	0.064696	4.384491	**RPO(-6)**	-1.91087*	2.446943	-0.35601	-0.05015	0.025217	8.878616
RPO(-7)	0.8904	15.5053	0.249933	0.007509	-0.07248	8.415298	**RPO(-7)**	-0.14017	11.45763	0.335359	0.03492	-0.04897	-5.97426
RPO(-8)	-1.03085	-8.78279	-0.29666	0.014545	-0.06125	-9.13508	**RPO(-8)**	1.218233	4.341743	-0.09917	0.021527	-0.12352	3.851319
RPO(-9)	0.919856	-5.28387	0.239022	-0.01094	0.044207	8.00663	**RPO(-9)**	-0.6358	-8.95967	0.078793	-0.037	0.146075	11.54004
RPO(-10)	-0.4819	0.134427	-0.22958	-0.00974	0.13638	-3.20328	**RPO(-10)**	-1.05086	-4.08265	-0.62	-0.04901	0.172604	4.227844
RPO(-11)	2.128498*	11.67245	-0.10135	0.018635	0.000648	3.537674	**RPO(-11)**	0.195174	15.46394	-0.25187	0.004611	-0.02764	-8.51134
RPO(-12)	-0.67512	-11.2009	0.480057*	-0.01825	-0.04294	-5.98572	**RPO(-12)**	0.796724	-3.17376	0.401214	0.024146	0.029935	2.388453
RPO(-13)	-0.00252	10.73567	-0.49593*	-0.00877	-0.06485	6.737569	**RPO(-13)**	-0.02215	-6.01029	0.247424	-0.00994	-0.08308	2.821155
RPO(-14)	-0.27457	-8.85686	0.388489	-0.00134	0.033649	-6.88809	**RPO(-14)**	0.106599	2.80486	0.014698	-0.00995	-0.08815	-12.8865*
RPO(-15)	1.478383	8.064865	-0.09548	0.024254	-0.01901	-8.27272	**RPO(-15)**	1.075229	13.19328	0.282828	0.047021	-0.0696	-5.41084
RPO(-16)	-2.01641*	-12.3851	-0.00262	0.007361	-0.10045	4.374558	**RPO(-16)**	-1.77006*	-8.65131	-0.14784	0.037352	0.088124	11.5431
RPO(-17)	1.034488	0.277281	-0.36686	0.01307	0.143219	4.41612	**RPO(-17)**	0.457442	-0.10321	-0.05551	-0.03177	0.01268	8.182196
RPO(-18)	-0.88964	9.303277	0.079938	-0.03953	-0.12569	5.891757	**RPO(-18)**	-1.20187	13.41219	-0.07661	-0.07417*	-0.06669	0.946621
RPO(-19)	-0.01347	-2.79094	0.107604	0.04611**	0.011705	-13.6804***	**RPO(-19)**	0.645865	-21.4731***	-0.0032	0.031457	0.029516	-15.1283**
TSXRETURNS(-1)	0.029215*	-0.20903	0.007018*	0.000603	-0.0021	-0.08642	**NORWAYRETURNS(-1)**	-0.00026	-0.07484	0.007892*	0.000413	0.004098***	-0.13316
TSXRETURNS(-2)	0.017593	-0.31521*	0.007004*	0.000947**	0.001584	-0.15702	**NORWAYRETURNS(-2)**	-0.00507	-0.237*	-0.00038	0.000367	0.000609	-0.13582
TSXRETURNS(-3)	0.024487	0.056809	0.01205***	0.000236	-0.00079	0.048827	**NORWAYRETURNS(-3)**	0.001333	0.005161	0.004041	-0.0001	0.001914	-0.09397
TSXRETURNS(-4)	-0.04408**	0.243948	0.003964	-0.0000186	-0.00116	-0.01786	**NORWAYRETURNS(-4)**	-0.01903	0.142793	0.009174*	-0.00014	-0.00037	-0.11016
TSXRETURNS(-5)	-0.00244	0.065324	-0.00267	0.000691	0.000952	-0.07381	**NORWAYRETURNS(-5)**	0.010714	-0.18844	0.0106**	0.00056	-0.00102	-0.20682**
TSXRETURNS(-6)	0.003527	0.129529	0.002726	-0.000019	0.00108	0.048294	**NORWAYRETURNS(-6)**	-0.00976	0.006321	0.006992	0.000208	-0.00178	-0.10238
TSXRETURNS(-7)	-0.0027	0.131668	0.005439	0.000521	-0.00251	-0.06772	**NORWAYRETURNS(-7)**	-0.00178	0.031872	-0.00228	-0.0001	-0.00216	-0.01183
TSXRETURNS(-8)	0.021568	0.497379***	0.003286	-0.0000743	-0.00034	0.05056	**NORWAYRETURNS(-8)**	0.001136	0.29049**	-0.00446	-0.00031	-0.00083	0.105225
TSXRETURNS(-9)	-0.00927	0.288834	0.000557	0.000238	0.005538***	0.047675	**NORWAYRETURNS(-9)**	-0.01854	0.097507	0.005105	-0.00044	0.004894***	0.055065
TSXRETURNS(-10)	0.049517***	0.228541	0.003851	0.000301	0.000851	-0.11049	**NORWAYRETURNS(-10)**	0.025681*	-0.03657	0.001104	0.000236	-0.00246	-0.05819
TSXRETURNS(-11)	-0.00903	-0.17896	0.002492	0.000255	0.000521	-0.08554	**NORWAYRETURNS(-11)**	-0.00895	0.033622	0.012136**	-0.00111*	0.001488	-0.02166
TSXRETURNS(-12)	-0.01331	0.007282	0.00298	0.001012**	-0.00055	-0.24594**	**NORWAYRETURNS(-12)**	-0.0057	-0.22422	0.008305	0.001213**	-0.00197	-0.21205**
TSXRETURNS(-13)	0.012775	0.090853	0.000445	-0.00032	0.000122	-0.07006	**NORWAYRETURNS(-13)**	0.008203	0.016083	0.005974	-0.00051	-0.0016	-0.10438
TSXRETURNS(-14)	0.020024	0.099476	-0.00095	0.000515	0.000927	-0.08491	**NORWAYRETURNS(-14)**	-0.0084	0.117851	0.002172	-0.00041	0.001027	-0.06249
TSXRETURNS(-15)	0.025123	-0.05967	0.003766	0.000433	-0.00228	-0.09919	**NORWAYRETURNS(-15)**	0.009921	-0.09005	0.007242	0.0001	0.000609	-0.02562
TSXRETURNS(-16)	-0.01486	-0.06295	-0.00119	0.001005**	-0.00045	-0.0934	**NORWAYRETURNS(-16)**	-0.00823	-0.02014	0.006226	-0.00019	-0.00025	0.037521
TSXRETURNS(-17)	-0.02051	-0.02156	-0.00324	0.000499	-0.00408**	-0.01646	**NORWAYRETURNS(-17)**	-0.02387*	-0.15202	0.001023	0.000376	-0.00025	-0.04253
TSXRETURNS(-18)	0.022133	-0.34531**	-0.00325	0.000453	-0.00079	0.009332	**NORWAYRETURNS(-18)**	0.023424*	-0.00653	-0.00224	-0.0006	-0.00064	0.001075
TSXRETURNS(-19)	-0.00438	0.276457*	-0.00073	0.000114	0.002556	-0.04764	**NORWAYRETURNS(-19)**	-0.00899	0.130855	0.000908	-0.00038	0.001053	0.10529
C	0.046804	18.29698	0.771282	-0.21442***	0.891586***	53.32831***	**C**	2.380084	34.62737	0.493852	0.067982	0.526341*	42.42053**
D1	0.595752	-3.30563	-0.22354	0.06472***	-0.13142*	-9.84508**	**D1**	0.176688	-0.0791	0.23033	0.005912	0.04891	-7.88264**
							D2	-0.04639	-2.55537	0.12778	-0.01729	0.057827	-1.94687
R-squared	0.580609	0.96502	0.99407	0.993455	0.983983	0.571007	**R-squared**	0.496203	0.962442	0.989515	0.976361	0.978756	0.550674
Adj. R-squared	0.185281	0.932047	0.988481	0.987286	0.968886	0.166628	**Adj. R-squared**	0.013224	0.926437	0.979462	0.953699	0.95839	0.119915

DENMARK

	PRODC	REA	INT_R	EXCH	RPO	OMCXRETURNS
PRODC(-1)	-0.10489	0.09845	0.01543	0.00102	-0.02290**	0.48162
PRODC(-2)	-0.19381**	-0.19853	-0.04087*	-0.00136	-0.01081	0.45035
PRODC(-3)	-0.04895	0.31152	-0.02047	-0.00317	-0.01611	0.77503
PRODC(-4)	0.06033	-0.31067	-0.02212	0.00414	-0.00042	0.69408
PRODC(-5)	-0.06464	-0.76813	-0.04962**	0.00129	-0.00569	-0.16917
PRODC(-6)	-0.02196	-1.48466*	0.00847	-0.00300	-0.02555**	0.81343
PRODC(-7)	-0.01836	-0.84416	-0.02913	0.00188	-0.02234**	-0.88626
PRODC(-8)	0.01592	0.02279	0.00718	-0.00157	-0.00845	0.15977
PRODC(-9)	0.06068	-0.05650	-0.00464	0.00147	-0.01219	-0.43897
PRODC(-10)	0.00380	-1.38004	-0.01855	-0.00124	-0.00812	0.02221
PRODC(-11)	0.00685	0.43285	0.00177	-0.00200	-0.01624	-0.89850*
PRODC(-12)	0.04568	-1.50423*	-0.00455	0.00021	-0.02853***	-0.35540
PRODC(-13)	-0.04283	-0.61703	-0.03670*	0.00157	0.00096	-0.10404
PRODC(-14)	0.03634	-0.80405	-0.02998	0.00321	-0.01351	-0.07947
PRODC(-15)	0.13697*	-0.03657	-0.05084**	-0.00322	-0.01866**	0.11578
REA(-1)	0.01230	1.19152***	-0.00395*	-0.00003	0.00107	0.00681

JAPAN

	PRODC	REA	INT_R	EXCH	RPO	NIKKEIRETURNS
PRODC(-1)	-0.08970	-0.19582	0.00675	0.00039	-0.00282	-0.72572
PRODC(-2)	-0.22920**	0.55087	0.00012	0.00050	-0.00567	0.16771
PRODC(-3)	-0.11278	0.22733	-0.02170	0.00673*	-0.01735	-0.75192
PRODC(-4)	0.05020	-0.16428	-0.00407	0.00495	0.00979	-0.63116
PRODC(-5)	0.00418	0.90332	0.00177	0.00998***	-0.00029	0.15165
PRODC(-6)	-0.08787	-1.63886*	-0.01733	0.00517	-0.01144	0.46446
PRODC(-7)	-0.05104	-0.06912	0.00512	0.00362	-0.00512	-0.44555
PRODC(-8)	-0.03221	0.68147	-0.02274	0.00142	0.00407	0.39392
PRODC(-9)	0.02282	-0.31574	-0.01447	0.00854**	-0.01557	-0.51940
PRODC(-10)	-0.04267	-1.83428*	-0.00418	0.00254	-0.00294	-1.20717
PRODC(-11)	-0.04357	1.24255	-0.03618**	-0.00005	-0.01608	-1.91620**
PRODC(-12)	0.02316	-2.31160**	-0.00407	0.00555	-0.02975**	-1.35328*
PRODC(-13)	-0.23210**	-0.82347	-0.02105	-0.00052	-0.00506	-1.09823
PRODC(-14)	0.04902	-0.89576	-0.01153	0.00312	-0.01746	0.30812
PRODC(-15)	-0.02996	0.00340	-0.00904	0.00437	-0.03999***	0.93932
PRODC(-16)	-0.00170	-0.63699	-0.01616	-0.00290	-0.03076**	-0.76069

REA(-2)	-0.01535	-0.35805***	0.00672**	-0.00045	0.00029	-0.03995	**PRODC(-17)**	-0.01989	0.11061	-0.01536	0.00567	-0.03063**	0.10366
REA(-3)	0.00496	0.10959	-0.00128	0.00060	-0.00186	0.10399	**PRODC(-18)**	-0.06670	-0.46361	-0.02092	0.00201	-0.02990**	0.38604
REA(-4)	0.01447	-0.25155*	0.00051	-0.00059	0.00096	-0.00733	**PRODC(-19)**	0.01512	-1.60169	-0.00870	-0.00284	-0.00809	-0.70554
REA(-5)	-0.00637	0.32872**	-0.00073	0.00015	0.00115	0.00832	**PRODC(-20)**	0.09016	0.81400	-0.00384	-0.00231	-0.01004	-0.30970
REA(-6)	-0.01083	-0.07402	-0.00186	0.00003	-0.00040	-0.06167	**PRODC(-21)**	-0.05929	-0.83375	-0.01960	-0.00100	-0.01949*	-0.71780
REA(-7)	0.00318	-0.02481	0.00056	-0.00012	0.00184	0.12727	**REA(-1)**	-0.00097	1.20286***	-0.00281**	-0.00011	0.00128	0.04607
REA(-8)	0.00342	0.01954	-0.00033	-0.00008	-0.00227	-0.12130	**REA(-2)**	0.01191	-0.29148*	0.00354*	-0.00011	0.00024	0.01806
REA(-9)	-0.00356	-0.02237	0.00125	-0.00011	0.00174	0.09808	**REA(-3)**	-0.01117	0.10244	-0.00205	0.00045	-0.00232	-0.03044
REA(-10)	-0.00106	0.15132	-0.00373	0.00030	-0.00034	-0.03300	**REA(-4)**	0.01199	-0.33135**	0.00248	-0.00069	0.00297	0.02438
REA(-11)	-0.01476	-0.08875	0.00052	-0.00003	-0.00013	0.07590	**REA(-5)**	-0.00536	0.39969**	-0.00251	-0.00040	-0.00144	-0.00711
REA(-12)	0.02207	0.08852	0.00372	-0.00004	-0.00078	-0.09751	**REA(-6)**	-0.00022	-0.18702	0.00195	0.00053	-0.00008	-0.00234
REA(-13)	-0.02003	-0.26287*	0.00127	0.00004	-0.00124	-0.13380	**REA(-7)**	-0.00658	-0.03110	-0.00015	0.00069	0.00059	0.02338
REA(-14)	0.02054	0.28621**	-0.00667*	-0.00042	0.00192	0.17359**	**REA(-8)**	0.00191	0.10153	0.00212	-0.00127**	-0.00048	-0.09214
REA(-15)	-0.01167	-0.12198	0.00467**	0.00040	-0.00069	-0.09630*	**REA(-9)**	0.00810	0.03512	-0.00478**	0.00094	0.00101	0.17236
INT_R(-1)	-0.23574	-3.50377	1.00433***	-0.00942	-0.05438	0.09628	**REA(-10)**	-0.01297	0.05750	0.00285	-0.00004	-0.00081	-0.16100
INT_R(-2)	0.41139	4.06064	-0.07700	-0.00130	0.03249	-2.55272	**REA(-11)**	0.00229	-0.03480	-0.00067	-0.00008	0.00101	0.01394
INT_R(-3)	0.15665	-0.14264	0.16927	0.01982	-0.06103	3.18417	**REA(-12)**	0.01429	0.19857	0.00173	-0.00029	-0.00008	-0.00141
INT_R(-4)	-0.10755	-1.12799	-0.03018	0.00484	0.08693*	-3.60115	**REA(-13)**	-0.02000	-0.37271**	-0.00191	0.00052	-0.00071	0.01273
INT_R(-5)	0.04391	-0.74183	-0.29441***	-0.00723	-0.10248**	2.25518	**REA(-14)**	-0.00964	0.26462	0.00105	-0.00045	0.00255	-0.00561
INT_R(-6)	-0.07580	0.30698	0.41446***	-0.01306	0.08707*	-1.85582	**REA(-15)**	0.03065	-0.24116	0.00143	0.00039	-0.00084	0.08652
INT_R(-7)	-0.10339	3.78435	-0.19101*	-0.00631	0.00716	0.45903	**REA(-16)**	-0.02426	0.23508	-0.00193	-0.00058	-0.00136	-0.07620
INT_R(-8)	0.07397	0.99882	0.02411	0.02346	-0.03813	-1.20854	**REA(-17)**	0.01500	-0.25095	-0.00107	0.00093	0.00230	-0.04040
INT_R(-9)	-0.74265*	-4.19025	-0.02426	-0.01392	0.05361	1.60531	**REA(-18)**	-0.01208	0.20247	0.00207	-0.00028	-0.00023	0.02728
INT_R(-10)	0.62271	1.84460	-0.03383	0.01966	-0.03091	4.86412**	**REA(-19)**	0.01468	0.01630	-0.00256	-0.00024	0.00055	-0.01036
INT_R(-11)	-0.51753	-3.02695	0.08519	-0.00238	0.04766	-1.81680	**REA(-20)**	-0.01563	-0.17776	0.00332	0.00069	-0.00091	0.08835
INT_R(-12)	0.46549	2.80140	-0.15848*	-0.00556	-0.01155	0.42005	**REA(-21)**	0.00143	0.12503	-0.00195	-0.00050	-0.00037	-0.04605
INT_R(-13)	-0.10123	-3.12265	0.00002	-0.00198	-0.04516	-3.65515	**INT_R(-1)**	-0.73284	-7.30572	0.59122***	0.05294**	-0.05691	-1.19109
INT_R(-14)	0.06800	-1.92643	0.25886***	-0.02417*	0.02210	2.13936	**INT_R(-2)**	-0.63184	27.11979***	0.01155	-0.08466***	0.13439	-3.36992
INT_R(-15)	0.06584	3.42753	-0.17746***	0.02007**	-0.01628	-0.88302	**INT_R(-3)**	1.12460	-0.04718	0.18316	0.06529**	0.04052	-1.96961
EXCH(-1)	2.81745	-51.65893**	0.25605	0.94337***	-0.55242**	-28.99350**	**INT_R(-4)**	-0.68996	-16.75080**	-0.04221	-0.01345	-0.26514**	-6.80892
EXCH(-2)	-4.93081	30.68398	-0.08252	-0.05566	0.61323*	32.76534*	**INT_R(-5)**	-0.03096	-11.17074	0.06510	0.00592	0.15001	-3.54400
EXCH(-3)	0.30156	52.03699*	0.10748	0.15646	-0.44093	-19.06302	**INT_R(-6)**	1.37191	16.79916**	0.19411	-0.01719	0.03509	12.93413**
EXCH(-4)	1.90980	-69.81327**	-0.38905	-0.17392	0.18515	12.15110	**INT_R(-7)**	-0.49090	11.24433	-0.23271*	0.05127	-0.04661	-1.55666
EXCH(-5)	6.11112*	19.59281	-1.45367*	0.03423	-0.05865	2.54910	**INT_R(-8)**	-0.10036	-16.14813**	0.08799	0.00363	-0.03033	-0.47227
EXCH(-6)	-6.44202*	24.87220	2.36515***	0.06323	0.23772	-2.30719	**INT_R(-9)**	0.14829	1.28578	-0.02499	-0.04622	0.18998*	-0.34674
EXCH(-7)	0.75389	15.01492	-0.70641	-0.07100	0.58446	17.14181	**INT_R(-10)**	-0.25967	5.75234	-0.15706	0.04883*	-0.08988	5.46373
EXCH(-8)	-2.00974	-18.74255	0.02512	0.18392	-0.80558**	-12.98523	**INT_R(-11)**	0.22819	-7.13166	-0.05169	0.01612	-0.11949	-10.75527*
EXCH(-9)	-0.65500	13.27068	1.45586*	-0.22448*	0.48208	20.18650	**INT_R(-12)**	-0.09564	3.85968	0.37034***	-0.01449	0.19635**	-4.16133
EXCH(-10)	2.22104	-41.38382	-1.50596*	0.23923*	-0.24344	-9.47466	**INT_R(-13)**	-0.48824	0.69973	0.01366	-0.02054	-0.06916	3.06352
EXCH(-11)	0.38575	16.46387	-0.76071	-0.11685	0.33717	12.33406	**INT_R(-14)**	-0.34791	-5.31442	-0.19645*	0.03191	-0.02508	-4.45669
EXCH(-12)	-0.58918	36.67272	0.01314	-0.18277	-0.03032	-17.46882	**INT_R(-15)**	0.43726	-6.18418	0.20568*	-0.00136	-0.01449	1.04080
EXCH(-13)	-1.95768	-16.95017	1.07143	0.08934	-0.37140	-23.09815	**INT_R(-16)**	-0.00209	10.80535	-0.14286	-0.02276	-0.06060	7.58291
EXCH(-14)	0.00024	-46.03574	1.12912	-0.10125	0.18959	6.68009	**INT_R(-17)**	-0.16068	-6.70440	0.08347	0.02168	0.00961	0.31685
EXCH(-15)	1.54799	36.74108	-1.28399**	0.17033*	-0.21822	-7.92450	**INT_R(-18)**	-0.35058	1.40487	-0.20227*	-0.00223	-0.02757	1.17605
RPO(-1)	0.69866	7.96335	0.44048**	-0.03581	0.72267***	-6.36966	**INT_R(-19)**	0.07791	-7.19216	0.11114	-0.01978	0.12362	0.16632
RPO(-2)	0.01063	-5.51536	-0.21004	0.06283*	0.22577**	2.50593	**INT_R(-20)**	0.25095	-7.15195	0.07704	-0.00769	-0.10292	5.79625
RPO(-3)	0.29726	-2.65761	0.01114	-0.01961	0.02000	3.77166	**INT_R(-21)**	0.64875	10.27658*	-0.02689	-0.01106	-0.06155	-9.06136**
RPO(-4)	-0.75478	4.00441	-0.46274**	-0.04274	0.03881	-8.00709	**EXCH(-1)**	1.69542	-4.55353	0.26234	0.97787***	0.01358	13.33504
RPO(-5)	0.70378	-12.65184	0.66130***	0.08025**	-0.15916	0.23171	**EXCH(-2)**	-5.74649	-8.75378	-0.04288	-0.10204	-0.45662	8.46713
RPO(-6)	-1.79444*	3.66158	-0.25613	-0.04960	0.15150	0.77769	**EXCH(-3)**	4.56925	8.33710	0.58956	0.02548	0.18742	-27.55974
RPO(-7)	-0.17675	13.89960	0.05936	0.08361**	-0.11775	5.41299	**EXCH(-4)**	1.98729	-5.27623	0.01763	-0.02076	-0.32560	42.85626
RPO(-8)	0.16189	-7.60558	-0.32262	-0.01690	-0.01235	9.46628	**EXCH(-5)**	-1.06911	-30.41146	-0.66124	-0.09881	-0.48445	-64.60405**
RPO(-9)	1.17063	-5.81260	0.27200	0.00336	-0.05796	-1.80192	**EXCH(-6)**	1.43106	38.98669	0.80813	0.01681	0.98169**	26.88099
RPO(-10)	-0.68138	-0.49391	-0.05027	-0.06272*	0.28413**	-4.33076	**EXCH(-7)**	4.85131	75.48668**	-0.77727	0.13342	-0.58555	9.87900
RPO(-11)	1.04720	11.94971	-0.12620	0.00914	-0.00730	1.61089	**EXCH(-8)**	-9.77252**	-80.43515**	0.20011	0.15180	-0.02036	-14.43768
RPO(-12)	-0.02723	-11.65424	0.18722	0.01074	-0.10251	0.17632	**EXCH(-9)**	2.55113	-17.39223	-0.18056	-0.12814	0.73098	-26.25026
RPO(-13)	-0.36142	7.19069	-0.24299	-0.03180	-0.10493	1.07101	**EXCH(-10)**	-2.66916	13.32155	-0.49841	0.12019	-0.54286	43.95413*
RPO(-14)	-0.73337	-4.97501	0.12569	0.02793	0.03042	0.09864	**EXCH(-11)**	-1.13727	-32.77292	0.48963	0.06843	-0.08836	-19.87336
RPO(-15)	0.46171	1.13704	-0.13679	-0.01746	-0.03223	-7.90114*	**EXCH(-12)**	4.10859	37.19684	0.25947	-0.31293**	0.48997	-30.89010
OMCXRETURNS(-1)	0.00491	0.06664	0.00548	-0.00002	0.00230	-0.05497	**EXCH(-13)**	4.94110	26.41453	-0.81711	0.32683**	-0.27611	20.43665
OMCXRETURNS(-2)	0.01294	-0.04892	0.00673**	0.00045	0.00126	-0.15974*	**EXCH(-14)**	-6.14164*	-52.63798	0.10242	-0.03909	-0.47876	-11.46847
OMCXRETURNS(-3)	-0.00081	0.00191	0.00679**	0.00019	0.00153	-0.04159	**EXCH(-15)**	1.19555	14.45792	0.96007*	-0.04305	0.41252	17.87472
OMCXRETURNS(-4)	-0.01414	0.14635	0.00233	0.00072	-0.00022	-0.11624	**EXCH(-16)**	-1.20911	-1.28706	0.15067	-0.14767	0.15884	33.61967
OMCXRETURNS(-5)	-0.02831**	-0.09027	0.00778**	0.00077	-0.00250	-0.01715	**EXCH(-17)**	-2.37045	-19.46604	-0.54663	0.15649	-0.86615**	-43.08511*
OMCXRETURNS(-6)	0.00749	0.01810	0.00903***	-0.00001	0.00044	-0.01478	**EXCH(-18)**	5.23336	-13.71949	0.63074	-0.11518	0.53372	7.06534
OMCXRETURNS(-7)	0.00326	-0.05803	0.00012	0.00005	-0.00119	-0.12781	**EXCH(-19)**	0.23553	74.47062**	-1.20292**	0.02169	-0.38110	26.40687
OMCXRETURNS(-8)	0.02464*	0.17844	0.00120	0.00011	0.00205	-0.00873	**EXCH(-20)**	-0.45551	-47.94060	0.17413	0.11200	-0.29356	-1.86798
OMCXRETURNS(-9)	-0.00835	0.05046	0.00424	-0.00034	0.00427***	-0.03577	**EXCH(-21)**	-0.61111	10.95530	0.36343	-0.22116**	0.51129	-23.94141
OMCXRETURNS(-10)	0.00714	-0.03322	0.00282	-0.00010	0.00114	0.10227	**RPO(-1)**	0.31109	4.69273	0.26159**	-0.05405*	0.69310***	-6.10948
OMCXRETURNS(-11)	-0.00669	-0.13676	0.00322	0.00004	0.00088	-0.08832	**RPO(-2)**	1.16249	3.90548	-0.12485	0.03643	0.18463	13.82866*
OMCXRETURNS(-12)	-0.02341*	-0.18640	0.00126	0.00065	-0.00098	-0.05924	**RPO(-3)**	-0.85845	-24.54907**	-0.12280	0.00571	-0.26238**	-5.85548
OMCXRETURNS(-13)	-0.00697	-0.04613	-0.00131	0.00021	-0.00039	0.09443	**RPO(-4)**	-0.54303	0.75489	0.21581	-0.04768	0.15713	-21.51227***
OMCXRETURNS(-14)	-0.01415	-0.12591	0.00216	-0.00061	0.00060	-0.11035	**RPO(-5)**	2.07988*	7.71641	0.03242	0.03337	-0.02509	9.04043
OMCXRETURNS(-15)	0.01920	0.08210	0.00125	-0.00048	-0.00129	-0.04104	**RPO(-6)**	-2.72450**	-2.99306	-0.28035*	0.05897	-0.08849	7.75947
C	0.97154	7.37729	-0.20871	0.07167	0.71296***	48.34676***	**RPO(-7)**	0.16345	-2.57924	0.14091	-0.00845	0.00085	-6.97236
D1	-0.13854	-1.26041	0.15668	0.00080	0.02575	-7.75368***	**RPO(-8)**	1.19433	11.24221	0.03127	-0.07383*	-0.02300	8.05512
D2	0.09930	-2.53676	-0.03359	-0.00684	0.04594	-1.63934	**RPO(-9)**	0.38834	-16.87643	-0.02079	0.07278*	-0.01645	-2.32484
							RPO(-10)	-0.86548	-4.07352	-0.18614	-0.01519	0.05211	-2.89430
							RPO(-11)	0.60746	20.38855**	0.18254	-0.01524	0.15745	-2.62621
R-squared	0.36657	0.94918	0.99185	0.97329	0.97905	0.48326	**RPO(-12)**	0.08527	-15.84888	0.15017	-0.02538	-0.09601	-0.34906
Adj. R-squared	-0.02454	0.91780	0.98682	0.95681	0.96611	0.16420	**RPO(-13)**	0.24729	7.52835	-0.14278	0.05205	-0.12627	2.47788
							RPO(-14)	-1.49293	-0.56795	-0.00214	-0.00825	0.03115	5.06405
							RPO(-15)	2.17973**	7.22091	-0.03154	-0.06675*	-0.12517	-5.21311

GERMANY

	PRODC	REA	INT_R	EXCH	RPO	DAXRETURNS	**RPO(-16)**	-1.49419	-11.31489	0.11316	0.07376*	0.15393	9.89337
							RPO(-17)	0.32031	-1.94540	-0.11697	-0.04172	-0.04953	-6.12398
PRODC(-1)	-0.09743	0.06139	0.00122	0.00125	-0.02015*	-0.39683	**RPO(-18)**	-0.40144	8.67559	0.21134	-0.05360	0.08171	11.79873
PRODC(-2)	-0.25427**	0.30356	-0.00628	-0.00400	-0.00591	0.00550	**RPO(-19)**	0.23002	-3.11071	-0.18588	0.01060	0.01504	-11.30795
PRODC(-3)	-0.16217	1.35492	-0.00768	-0.00651*	-0.00908	0.15475	**RPO(-20)**	-0.28239	-7.33878	0.00333	0.05263	-0.00597	-6.01332
PRODC(-4)	-0.04546	-1.11159	0.00063	0.00417	0.00087	1.23005*	**RPO(-21)**	0.15505	12.22358	-0.06562	-0.01420	0.04995	5.66612
PRODC(-5)	-0.08926	-0.27545	-0.01854	0.00143	0.00582	-0.72137	**NIKKEIRETURNS(-1)**	-0.00641	0.14687	-0.00359*	0.00117**	0.00270	-0.11034
PRODC(-6)	-0.02114	-2.05680**	0.00328	-0.00325	-0.02678**	1.07175	**NIKKEIRETURNS(-2)**	-0.01839	-0.02693	-0.00054	0.00134**	0.00134	-0.19521*
PRODC(-7)	-0.01268	-0.47927	-0.01456	0.00091	-0.02116*	-1.16880	**NIKKEIRETURNS(-3)**	-0.00591	-0.01158	0.00180	-0.00004	0.00269	-0.11161
PRODC(-8)	0.01673	-0.46716	-0.01147	0.00058	-0.00728	-0.77548	**NIKKEIRETURNS(-4)**	0.00086	0.27456*	-0.00152	0.00073	0.00089	-0.12040
PRODC(-9)	0.10949	-0.73327	0.00312	0.00413	-0.01998*	-0.90200	**NIKKEIRETURNS(-5)**	-0.01587	-0.08548	-0.00127	0.00073	0.00003	-0.07281
PRODC(-10)	-0.08807	-1.36407	-0.01580	-0.00269	0.00104	0.62482	**NIKKEIRETURNS(-6)**	-0.00201	-0.24557*	-0.00066	0.00053	0.00090	-0.18764*
PRODC(-11)	-0.02478	0.12563	0.00342	0.00212	-0.02052*	-1.28873*	**NIKKEIRETURNS(-7)**	-0.00477	0.20081	-0.00132	-0.00026	0.00124	0.01354
PRODC(-12)	-0.09499	-1.77456*	-0.00419	-0.00026	-0.02590**	-1.81749**	**NIKKEIRETURNS(-8)**	0.00454	0.19043	0.00083	0.00024	0.00161	-0.05426
PRODC(-13)	-0.17739*	-0.78579	-0.02947*	-0.00240	-0.00797	-0.56461	**NIKKEIRETURNS(-9)**	0.00564	-0.02007	0.00297	-0.00016	0.00078	-0.02262
PRODC(-14)	0.01876	-1.12726	-0.03768**	-0.00115	-0.01604	-0.14803	**NIKKEIRETURNS(-10)**	0.01403	0.00457	0.00131	0.00058	0.00144	-0.09513
PRODC(-15)	0.04633	0.93508	-0.02339	-0.00677*	-0.01661	1.07527	**NIKKEIRETURNS(-11)**	-0.00439	0.02985	0.00450**	-0.00054	0.00082	-0.09706
PRODC(-16)	0.01703	-0.62174	-0.03568**	-0.00230	-0.00229	0.88511	**NIKKEIRETURNS(-12)**	0.01598	-0.12390	-0.00073	0.00097*	-0.00100	-0.05268
PRODC(-17)	0.02612	-1.40499	-0.01065	0.00664*	-0.00586	-1.00532	**NIKKEIRETURNS(-13)**	-0.03663**	-0.14335	0.00333*	0.00011	-0.00107	0.09541
PRODC(-18)	0.03590	-1.57656	-0.02655	-0.00153	-0.01690	-0.13571	**NIKKEIRETURNS(-14)**	-0.01811	0.14939	-0.00140	-0.00061	0.00128	0.04072
PRODC(-19)	-0.02134	-2.12562**	-0.00288	0.00695*	-0.01110	-0.44067	**NIKKEIRETURNS(-15)**	-0.00362	0.04929	-0.00120	0.00053	0.00278	0.15863
PRODC(-20)	0.12649	-0.48706	-0.03039*	0.00048	-0.01003	0.09288	**NIKKEIRETURNS(-16)**	-0.00788	-0.09859	-0.00327*	0.00004	-0.00064	-0.07841
PRODC(-21)	-0.14061	-1.37132	0.00062	0.00331	-0.00973	-0.08528	**NIKKEIRETURNS(-17)**	-0.01138	0.10743	0.00324*	-0.00087*	0.00343**	-0.20916**
REA(-1)	0.01147	1.26877***	0.00248	0.00000	0.00146	0.07946	**NIKKEIRETURNS(-18)**	0.01505	-0.01348	-0.00146	-0.00032	-0.00042	-0.05824
REA(-2)	-0.00614	-0.41042***	-0.00073	-0.00040	-0.00054	-0.06813	**NIKKEIRETURNS(-19)**	-0.01491	-0.11219	0.00025	0.00061	0.00057	0.10912

REA(-3)	-0.00462	0.06775	-0.00029	0.00123**	-0.00126	0.05664	**NIKKEIRETURNS(-20)**	-0.00036	0.01820	0.00379**	-0.00049	0.00169	0.08732
REA(-4)	0.02535	-0.16788	-0.00005	-0.00121**	0.00058	0.04053	**NIKKEIRETURNS(-21)**	0.03217**	-0.11011	0.00251	-0.00022	-0.00180	0.14793
REA(-5)	-0.01490	0.33572**	-0.00044	0.00048	-0.00088	0.00768	**C**	-9.07841	99.19235	-1.53073	0.64638*	4.63322***	81.04897
REA(-6)	-0.01332	-0.23876	-0.00285	-0.00011	0.00168	-0.06055	**D1**	0.08557	-5.65884	0.08118	-0.03519**	-0.06734	-2.94188
REA(-7)	0.00469	-0.04000	0.00268	0.00083	0.00141	0.09646	**D2**	-0.39802	-1.52733	-0.03534	0.01221	-0.00075	-7.69389***
REA(-8)	0.00902	0.13065	-0.00057	-0.00062	-0.00134	-0.02992	**D3**	-0.24965	-0.80384	0.04668	-0.02994	0.01740	0.27972
REA(-9)	-0.00614	-0.03843	0.00247	-0.00013	0.00017	0.10731	**D6**	-0.01186	-0.40738	-0.08457	-0.01058	0.05185	-0.54004
REA(-10)	-0.00472	0.17289	-0.00441	0.00014	0.00086	-0.18457							
REA(-11)	-0.00288	-0.18540	0.00189	0.00070	-0.00109	0.02068							
REA(-12)	0.02236	0.12054	-0.00149	-0.00070	-0.00192	0.01865	**R-squared**	0.51052	0.96736	0.94138	0.98165	0.98996	0.57593
REA(-13)	-0.03126*	-0.20164	0.00505*	0.00022	-0.00010	0.09787	**Adj. R-squared**	-0.09551	0.92694	0.86880	0.95892	0.97754	0.05088
REA(-14)	0.01642	0.31076*	-0.00519*	-0.00031	0.00076	-0.04734							
REA(-15)	-0.00488	-0.42340**	0.00247	0.00018	0.00061	-0.05345							
REA(-16)	0.00147	0.36787**	-0.00186	-0.00018	0.00061	-0.02591	**GERMANY**						
REA(-17)	-0.01256	-0.22293	0.00461*	0.00002	0.00060	0.05856		**PRODC**	**REA**	**INT_R**	**EXCH**	**RPO**	**DAXRETURNS**
REA(-18)	0.00760	0.12794	-0.00051	0.00013	-0.00035	-0.11114	**RPO(-1)**	-0.19901	9.16038	0.01179	-0.07221**	0.72220***	-8.36273
REA(-19)	0.01597	-0.07128	-0.00139	-0.00051	0.00025	-0.09215	**RPO(-2)**	0.56202	-8.47816	0.10038	0.08291**	0.25877**	0.57826
REA(-20)	-0.01534	0.10816	-0.00144	-0.00009	-0.00099	0.16987	**RPO(-3)**	-0.21272	-7.91420	0.11388	-0.05604	-0.01095	5.90231
REA(-21)	-0.00164	0.01390	0.00080	0.00023	0.00066	-0.03132	**RPO(-4)**	-1.19555	13.08478	-0.17941	-0.02572	0.14152	-9.96683
INT_R(-1)	-0.17695	-11.32865**	1.20348***	0.03977**	-0.01180	8.12180*	**RPO(-5)**	1.42833	-22.02900**	0.43744**	0.10631***	-0.20073	-9.52576
INT_R(-2)	0.62689	4.11876	-0.43726***	-0.03555	-0.01047	-14.19199**	**RPO(-6)**	-0.83384	15.34277	-0.37702*	-0.11436***	0.05999	2.98561
INT_R(-3)	-0.90055	0.84038	0.30526**	0.00227	-0.05923	16.37743**	**RPO(-7)**	-0.74252	21.59956*	-0.15449	0.03685	0.02762	12.88441
INT_R(-4)	1.12970	6.75046	-0.15171	0.02267	0.02261	-17.88527**	**RPO(-8)**	1.75432	-12.70259	0.03934	0.03016	-0.12626	10.72576
INT_R(-5)	-0.38658	-2.55298	-0.16093	-0.01122	-0.07098	-1.99674	**RPO(-9)**	-0.18482	-3.30376	0.20040	0.02993	0.16602	0.36473
INT_R(-6)	-0.28777	-6.03227	0.28427*	0.00039	-0.01110	6.40043	**RPO(-10)**	-0.87648	-17.11667	0.11172	-0.01413	0.13271	1.47192
INT_R(-7)	-0.28079	12.79562	-0.03835	-0.04610	0.07837	-1.68299	**RPO(-11)**	1.78512	10.27668	-0.21360	0.01046	-0.06408	-13.94756
INT_R(-8)	-0.04330	-7.55853	0.06302	0.00636	-0.02184	1.59847	**RPO(-12)**	-0.61738	-2.31205	0.16274	0.00184	-0.02133	2.59496
INT_R(-9)	-1.10248	5.62714	-0.26223*	-0.01417	0.11876	-2.12997	**RPO(-13)**	0.63955	5.89264	-0.36967*	-0.00272	-0.21852	5.11605
INT_R(-10)	1.85301**	5.71091	0.25282*	-0.00143	-0.00365	6.34789	**RPO(-14)**	-0.89688	-2.35543	0.32195*	-0.00808	0.06175	3.66814
INT_R(-11)	-0.88460	-9.43971	-0.05033	0.02065	0.02700	-10.18613*	**RPO(-15)**	1.05869	11.81683	-0.17056	0.00132	-0.04911	-19.21040**
INT_R(-12)	-0.05298	9.80807	0.06051	-0.01360	0.04180	10.16317	**RPO(-16)**	-2.63875**	-19.64578*	-0.02046	0.03671	0.03189	15.71363*
INT_R(-13)	0.47560	-15.12816**	-0.04182	0.00889	-0.10032	-1.13729	**RPO(-17)**	1.56891	-0.92302	0.18971	0.00359	0.02649	2.16076
INT_R(-14)	0.43343	12.95534*	-0.21609*	0.02601	0.04073	-5.54191	**RPO(-18)**	-0.94877	9.74573	-0.19928	-0.05016	-0.08483	-5.88834
INT_R(-15)	-0.21487	-10.17993	0.23988*	-0.01631	-0.18282*	9.32140	**RPO(-19)**	-0.36361	5.96814	0.14958	-0.02125	0.06615	-3.01425
INT_R(-16)	-0.69096	6.89986	-0.19294	-0.01425	0.14539	-4.28886	**RPO(-20)**	0.35388	-6.80945	-0.39969**	-0.05366	0.15798	-13.68560*
INT_R(-17)	1.26316	-3.99070	0.19577	0.04842*	-0.03273	3.58536	**RPO(-21)**	0.10592	0.13370	0.24934*	0.03514	-0.13974	9.19205
INT_R(-18)	-1.09702	-4.49842	-0.07451	-0.02979	0.01321	-4.75527	**DAXRETURNS(-1)**	-0.02172	0.03172	0.00318	-0.00034	0.00123	-0.02153
INT_R(-19)	-0.40088	6.62510	-0.10365	0.03094	0.05061	3.47065	**DAXRETURNS(-2)**	-0.00249	0.08229	0.00747***	-0.00012	-0.00017	-0.06710
INT_R(-20)	1.52028*	-12.17691	0.25972**	0.04541*	-0.12218	-2.76736	**DAXRETURNS(-3)**	-0.00473	0.20858	0.00222	-0.00114**	0.00231	-0.09982
INT_R(-21)	-0.87970*	10.19889**	-0.16109*	-0.07676***	0.06621	-1.29436	**DAXRETURNS(-4)**	-0.02656*	0.38057***	0.00459*	-0.00081*	0.00018	-0.11923
EXCH(-1)	0.67433	-20.18117	0.47353	0.84923***	-0.17662	-11.02347	**DAXRETURNS(-5)**	-0.00756	0.22433	0.00384	-0.00090*	-0.00001	-0.02735
EXCH(-2)	-1.13469	8.74190	-0.85523	0.06528	0.41889	6.76483	**DAXRETURNS(-6)**	0.01602	0.12705	0.00382	-0.00087*	0.00305*	-0.13135
EXCH(-3)	-3.86101	32.78464	0.15125	0.14544	-0.54914	1.10943	**DAXRETURNS(-7)**	-0.00293	-0.00317	0.00451*	-0.00118**	-0.00012	-0.03349
EXCH(-4)	3.79986	-53.39562	-0.13522	-0.17837	0.27079	-12.64637	**DAXRETURNS(-8)**	0.01512	0.34824**	0.00236	-0.00084*	0.00273	0.17585*
EXCH(-5)	5.45241	7.63915	0.81352	0.04606	-0.34475	21.90618	**DAXRETURNS(-9)**	0.00693	0.06696	0.00273	0.00025	0.00592***	-0.12976
EXCH(-6)	-7.06757*	25.90261	-0.55729	-0.00324	0.41687	-22.03704	**DAXRETURNS(-10)**	0.01372	0.00467	0.00600**	0.00003	0.00256	-0.09334
EXCH(-7)	1.32459	-10.68438	-0.19374	0.04006	0.29895	11.42768	**DAXRETURNS(-11)**	0.00006	0.13812	0.00428*	-0.00067	0.00050	0.05683
EXCH(-8)	1.02504	0.34983	0.91712	0.08982	-0.43293	14.20098	**DAXRETURNS(-12)**	-0.01355	0.05313	0.00443*	0.00072	0.00006	-0.00078
EXCH(-9)	-1.14930	69.05553**	-0.12614	-0.25934**	0.49306	1.57977	**DAXRETURNS(-13)**	0.00372	0.01106	-0.00252	0.00004	-0.00093	-0.04598
EXCH(-10)	0.74514	-98.79949***	0.23005	0.31432**	-0.39354	7.85488	**DAXRETURNS(-14)**	-0.02837*	0.09928	0.00101	-0.00035	0.00202	0.04688
EXCH(-11)	0.64317	16.68740	-0.75142	-0.09344	0.16176	-42.72961	**DAXRETURNS(-15)**	0.00934	0.12812	0.00277	0.00026	0.00047	0.16523
EXCH(-12)	-0.64407	55.11850	-0.39375	-0.18406	0.04284	31.19824	**DAXRETURNS(-16)**	-0.01446	-0.16853	0.00579**	0.00042	0.00127	0.10855
EXCH(-13)	-1.16018	-32.10609	1.44594**	0.15236	-0.02436	5.64021	**DAXRETURNS(-17)**	-0.02693*	0.02784	0.00125	0.00028	0.00119	-0.08730
EXCH(-14)	2.43433	-11.95533	-0.35788	-0.17944	0.08654	-5.17152	**DAXRETURNS(-18)**	0.01275	-0.21223*	0.00000	-0.00024	-0.00176	-0.05957
EXCH(-15)	-4.62103	45.63085	0.38859	0.14541	-0.31753	1.32093	**DAXRETURNS(-19)**	0.00474	0.18227	0.00064	-0.00073	0.00130	0.05852
EXCH(-16)	1.80994	-25.83742	-1.51227**	-0.00509	-0.07582	-49.98149	**DAXRETURNS(-20)**	0.00477	0.04849	0.00071	0.00004	0.00032	-0.02561
EXCH(-17)	-1.25364	-16.21487	0.75561	0.19373	-0.13875	38.08815	**DAXRETURNS(-21)**	-0.00128	-0.23185*	0.00131	0.00102**	-0.00109	0.07042
EXCH(-18)	0.47226	44.12056	0.40192	-0.07559	0.20697	-5.24268	**C**	1.99097	7.38853	0.10093	0.16744**	0.34227	44.19182***
EXCH(-19)	1.90018	-37.74855	-0.10803	-0.11910	-0.47990	18.31747							
EXCH(-20)	-2.23926	-3.80539	-0.20155	-0.23099*	0.86697**	-59.73886**	**R-squared**	0.51884	0.96648	0.99638	0.98341	0.97968	0.60253
EXCH(-21)	1.32086	24.82917	0.06463	0.13944	-0.15882	28.88915	**Adj. R-squared**	-0.03735	0.92774	0.99219	0.96424	0.95618	0.14307

PRODC is the global oil production change rate (calculated as log difference of oil production), ***REA*** is the monthly global real activity change rate (Kilian index), ***INT_R*** is the interest rates, ***EXCH*** is exchange rate of each country local currency against US dollar (expressed in logarithm), ***RPO*** is the real price of oil (deflated by U.S. CPI with 2010 as a base year), ***TSXRETURNS*** is the stock market returns for Canada (TSX/S&P500) while ***NORWAYRETURNS*** – for Norway (OSEAX), ***OMXCRETURNS*** – for Denmark (OMXC20), ***USRETURNS*** – for United States (S&P500), ***NIKKEIRETURNS*** – for Japan (NIKKEI225) and ***DAXRETURNS*** – for Germany (DAX30). The dummies are called as D_(appropriate number) in accordance with each country (look at Table 4). The level of significance for coefficients are expressed as follows: * if significant at 10% level, ** if significant at 5% level and *** if significant at 1%.

Table 8
Crude oil production and trade position for a sample of countries

	Daily Export	Daily Import	Daily Net export/import	Daily Production	Share of daily net export / import to daily production	Reserves
Oil-exporting countries						
Canada	2469.64	735.76	1733.88	3137.8388	55.26%	173.62
Norway	1324.11	28.08	1296.02	1606.63	80.67%	5.32
Denmark	137.10	87.22	49.87	202.24	24.66%	0.9
Oil-importing countries						
United States	399.42	9812.43	-9413.01	6496.69	-145.89%	28.95
Japan	0	3723.63	-3723.63	5	-74472.62%	0.04
Germany	3.81	1888.09	-1884.27	49	-3845.46%	0.27

Each indicator is expressed in thousands of barrels per day, only reserves are in billions of barrels. The data is obtained from U.S. Energy Information Administration for 2012 year – www.eia.gov.

Table 9
External balance on goods and services (% of GDP), 1994-2014

	Oil-exporting countries			Oil-importing countries		
	Canada	**Norway**	**Denmark**	**United states**	**Japan**	**Germany**
1994	1.16	5.95	5.81	-1.27	1.99	0.20
1995	3.12	6.04	4.71	-1.17	1.36	0.47
1996	3.93	8.76	5.66	-1.19	0.46	0.82
1997	1.91	8.05	4.36	-1.18	1.08	1.18
1998	1.93	1.79	3.07	-1.79	1.87	1.32
1999	3.57	7.20	6.00	-2.66	1.59	0.71
2000	5.64	16.81	6.71	-3.65	1.45	0.27
2001	5.69	16.64	7.14	-3.47	0.64	1.76
2002	4.37	13.14	6.51	-3.88	1.34	4.38
2003	3.83	12.71	6.80	-4.38	1.66	3.66
2004	4.42	13.18	5.47	-5.04	1.96	5.04
2005	3.90	16.00	5.57	-5.51	1.41	5.06
2006	2.69	16.94	3.92	-5.56	1.26	5.30
2007	2.12	13.41	2.83	-4.96	1.69	6.65
2008	1.73	16.96	3.28	-4.91	0.19	5.97
2009	(1.47)	11.30	4.36	-2.74	0.37	4.94
2010	(1.90)	11.23	6.11	-3.43	1.19	5.20
2011	(1.20)	12.84	5.55	-3.74	-0.91	4.89
2012	(1.85)	12.93	5.36	-3.50	-1.98	6.09
2013	(1.60)	10.18	5.74	-3.03	-2.84	6.01
2014	(0.91)	8.74	5.35	-3.04	-3.11	6.74
Average	**1.96**	**11.47**	**5.25**	**-3.34**	**0.60**	**3.65**

External balance on goods and services equals exports of goods and services minus imports of goods and services. The data is obtained from The World Bank website and based on World Bank national accounts data and OECD National Accounts data files, accessed on 1st of May, 2016 - www.worldbank.org

Table 10
Crude oil share of the total primary energy supply within 1994-2013

	Oil-exporting countries									Oil-importing countries									World		
	Canada			Norway			Denmark			United States			Japan			Germany					
	Crude oil	TPES	*Share (&)*	Crude oil	TPES	*Share (&)*	Crude oil	TPES	*Share (&)*	Crude oil	TPES	*Share (&)*	Crude oil	TPES	*Share (&)*	Crude oil	TPES	*Share (&)*	Crude oil	TPES	*Share (&)*
1994	83573	228089	**36.64**	15378	23050	**66.72**	9027	19578	**46.11**	816813	2041287	**40.01**	236066	481731	**49.00**	111106	332984	**33.37**	3399255	8987720	**37.82**
1995	84199	230770	36.49	14093	23505	59.96	10466	19397	53.96	819672	2067317	39.65	229490	494428	46.42	106009	336488	31.50	3434994	9218949	37.26
1996	87401	236090	37.02	15292	22796	67.08	11745	21948	53.51	840679	2113253	39.78	229309	504846	45.42	107278	347656	30.86	3549116	9451920	37.55
1997	91159	238864	38.16	15471	24131	64.11	9725	20337	47.82	867604	2134517	40.65	232460	510403	45.54	104360	344822	30.26	3658442	9545737	38.33
1998	93073	237069	39.26	15439	25192	61.29	8825	20008	44.11	873219	2152681	40.56	223530	500955	44.62	111374	342735	32.50	3652503	9594262	38.07
1999	93956	244348	38.45	15511	26385	58.79	9125	19173	47.59	867263	2210896	39.23	219131	508811	43.07	109462	334963	32.68	3666933	9801038	37.41
2000	96682	251501	38.44	15727	26165	60.11	9331	18633	50.08	887052	2273344	39.02	220097	519132	42.40	110007	336579	32.68	3745410	10056562	37.24
2001	99333	247852	40.08	14399	26888	53.55	9093	19206	47.34	896216	2230705	40.18	209604	510943	41.02	109524	346675	31.59	3786265	10139332	37.34
2002	98732	248390	39.75	19172	24976	76.76	8686	19004	45.71	883799	2255944	39.18	210308	510538	41.19	109936	338896	32.44	3798543	10340864	36.73
2003	103571	262030	39.53	21131	27090	78.00	8519	20095	42.39	902390	2261170	39.91	213343	506377	42.13	112203	337111	33.28	3892963	10697393	36.39
2004	108062	267632	40.38	20975	26500	79.15	8226	19441	42.31	921893	2307768	39.95	210465	522625	40.27	115666	339506	34.07	4050625	11203287	36.16
2005	103995	270296	38.47	22476	26838	83.75	7867	18901	41.62	911615	2318771	39.31	215701	520531	41.44	118698	337020	35.22	4086611	11480903	35.59
2006	100385	267067	37.59	24199	27202	88.96	8125	20271	40.08	917936	2296825	39.97	207722	519808	39.96	115499	346378	33.34	4125075	11806984	34.94
2007	102863	267398	38.47	23669	27619	85.70	7864	19785	39.75	910919	2337002	38.98	211644	515204	41.08	113193	327898	34.52	4131467	12082874	34.19
2008	96687	265125	36.47	24289	32211	75.41	7546	19236	39.23	890963	2277080	39.13	202602	495370	40.90	111404	331465	33.61	4159214	12220871	34.03
2009	93293	249935	37.33	24392	31325	77.87	7751	18388	42.15	860997	2164818	39.77	185411	472317	39.26	103773	310448	33.43	4087098	12135667	33.68
2010	94506	251358	37.60	22036	33929	64.95	7336	19477	37.66	875559	2215393	39.52	185351	498920	37.15	98274	326867	30.07	4178010	12788992	32.67
2011	90535	257027	35.22	23633	27997	84.41	6689	17994	37.17	884230	2191149	40.35	180962	461981	39.17	96321	310649	31.01	4205688	13133738	32.02
2012	96532	252269	38.27	23930	29658	80.69	7573	17322	43.72	872512	2139821	40.77	182283	451985	40.33	97802	311805	31.37	4284350	13327934	32.15
2013	92921	253198	**36.70**	24537	32706	**75.02**	7207	17446	**41.31**	889569	2188363	**40.65**	182282	454655	**40.09**	95263	317657	**29.99**	4279539	13541283	**31.60**
Historical average			**38.02**			**72.11**			**44.18**			**39.83**			**42.02**			**32.39**			**35.56**
Share change			***0.06***			***8.31***			***-4.8***			***0.64***			***-8.91***			***-3.38***			***-6.22***

The annual data were manually collected from International Energy Agency Statistic reports, various issues since 1994 till 2013 (last available on the 17th of May, 2016). The starting year was determined to be 1994 because it is the first year of the present research' data sample. Total primary energy supply (TPES) is calculated as following: energy production + imports – exports ± stock changes (for world calculations), energy production + imports – exports – international marine bunkers – international aviation bunkers ± stock change (for countries). The historical average share of TPES is made up simply as the arithmetic average for 20 years of data. The share change is calculated as the absolute (not percentage) difference between TPES share of the source in 2013 and 1994 and has a meaning of direction change in world dependency on the particular source of energy. Crude oil and TPES expressed in thousands of tons of oil equivalent on a net calorific value basis (ktoe). The International Energy Agency website is www.iea.org

Table 11
Breakdown of total primary energy supply (TPES) within 1994-2013 for Germany

	Coal	**Crude oil**	**Oil products**	**Natural gas**	**Nuclear**	**Hydro**	**Geothermal, solar, *etc*.**	**Biofuels and waste**	**Electricity**	**Heat**	**Total TPES**
1994	28.75%	33.37%	5.54%	18.37%	11.80%	0.51%	0.05%	1.56%	0.06%	0.00%	100.00%
1995	27.23%	31.50%	7.08%	19.99%	11.86%	0.56%	0.06%	1.59%	0.12%	0.00%	100.00%
1996	26.10%	30.86%	7.36%	21.64%	12.00%	0.54%	0.01%	1.62%	-0.13%	0.00%	100.00%
1997	25.20%	30.26%	8.31%	20.86%	12.88%	0.43%	0.09%	2.03%	-0.06%	0.00%	100.00%
1998	24.74%	32.50%	6.47%	21.21%	12.29%	0.43%	0.14%	2.23%	-0.02%	0.00%	100.00%
1999	24.10%	32.68%	5.66%	21.49%	13.23%	0.50%	0.17%	2.14%	0.03%	0.00%	100.00%
2000	25.20%	32.68%	4.40%	21.34%	13.13%	0.56%	0.27%	2.34%	0.08%	0.00%	100.00%
2001	24.95%	31.59%	5.26%	21.80%	12.88%	0.56%	0.30%	2.56%	0.09%	0.00%	100.00%
2002	24.82%	32.44%	3.73%	22.29%	12.68%	0.59%	0.46%	2.75%	0.25%	0.00%	100.00%
2003	25.14%	33.28%	2.26%	22.50%	12.76%	0.45%	0.56%	3.13%	-0.08%	0.00%	100.00%
2004	25.19%	34.07%	0.87%	22.43%	12.82%	0.51%	0.74%	3.43%	-0.07%	0.00%	100.00%
2005	24.30%	35.22%	-0.74%	23.07%	12.61%	0.50%	0.82%	4.34%	-0.12%	0.00%	100.00%
2006	24.86%	33.34%	0.18%	22.89%	12.58%	0.50%	0.92%	5.15%	-0.42%	0.00%	100.00%
2007	26.26%	34.52%	-2.83%	23.32%	11.17%	0.56%	1.24%	6.20%	-0.43%	0.00%	100.00%
2008	24.20%	33.61%	-0.28%	23.27%	11.68%	0.53%	1.30%	6.21%	-0.52%	0.00%	100.00%
2009	23.21%	33.43%	-0.09%	23.42%	11.33%	0.53%	1.42%	7.10%	-0.34%	0.00%	100.00%
2010	24.15%	30.07%	2.13%	23.22%	11.21%	0.55%	1.48%	7.60%	-0.39%	0.00%	100.00%
2011	25.14%	31.01%	1.83%	22.40%	9.06%	0.49%	2.10%	8.09%	-0.10%	0.00%	100.00%
2012	25.71%	31.37%	1.17%	22.39%	8.31%	0.60%	2.34%	8.69%	-0.57%	0.00%	100.00%
2013	25.70%	29.99%	2.40%	23.01%	7.98%	0.62%	2.47%	8.70%	-0.87%	0.00%	100.00%
Share change	**-3.05%**	**-3.38%**	**-3.13%**	**4.64%**	**-3.82%**	**0.11%**	**2.42%**	**7.14%**	**-0.93%**	**0.00%**	

The annual data were manually collected from International Energy Agency Statistic reports, various issues since 1994 till 2013 (last available on the 17th of May, 2016). The starting year is determined to be 1994 because it is the first year of the present research' data sample. Total primary energy supply (TPES) is calculated as following: energy production + imports – exports – international marine bunkers – international aviation bunkers ± stock changes. The share change is calculated as the absolute (not percentage) difference between TPES share of the source in 2013 and 1994 and has a meaning of direction change in world dependency on the particular source of energy. The absolute figures are expressed in thousands of tons of oil equivalent on a net calorific value basis (ktoe). The International Energy Agency website is www.iea.org

Table 12
Share of world total primary energy supply (TPES) within 1994-2013

	Coal	*Share (&)*	Crude oil	*Share (&)*	Oil products	*Share (&)*	Natural gas	*Share (&)*	Nuclear	*Share (&)*	Hydro	*Share (&)*	Geothermal, solar, *etc.*	*Share (&)*	Biofuels, waste	*Share (&)*	Elect-ricity	*Share (&)*	Heat	*Share (&)*	Total TPES
1994	2151040	***23.93***	3399255	***37.82***	-94204	***-1.05***	1750979	***19.48***	584922	***6.51***	202998	***2.26***	41834	***0.47***	950588	***10.58***	-64	***0.00***	372	***0.00***	8987720
1995	2208249	*23.95*	3434994	*37.26*	-63062	*-0.68*	1807264	*19.60*	608208	*6.60*	213315	*2.31*	42449	*0.46*	967280	*10.49*	-148	*0.00*	399	*0.00*	9218949
1996	2244865	*23.75*	3549116	*37.55*	-90218	*-0.95*	1873101	*19.82*	630479	*6.67*	216218	*2.29*	45025	*0.48*	981237	*10.38*	1673	*0.02*	423	*0.00*	9451920
1997	2228495	*23.35*	3658442	*38.33*	-112858	*-1.18*	1889322	*19.79*	624149	*6.54*	218820	*2.29*	45931	*0.48*	991814	*10.39*	1250	*0.01*	373	*0.00*	9545737
1998	2222207	*23.16*	3652503	*38.07*	-96566	*-1.01*	1907067	*19.88*	637684	*6.65*	219885	*2.29*	48871	*0.51*	1000938	*10.43*	1184	*0.01*	489	*0.01*	9594262
1999	2230830	*22.76*	3666933	*37.41*	-41398	*-0.42*	1993541	*20.34*	660100	*6.74*	220437	*2.25*	53724	*0.55*	1015375	*10.36*	922	*0.01*	573	*0.01*	9801038
2000	2342519	*23.29*	3745410	*37.24*	-85827	*-0.85*	2067141	*20.56*	675588	*6.72*	225297	*2.24*	60130	*0.60*	1024702	*10.19*	917	*0.01*	685	*0.01*	10056562
2001	2359836	*23.27*	3786265	*37.34*	-82348	*-0.81*	2077403	*20.49*	687922	*6.78*	220377	*2.17*	61763	*0.61*	1026830	*10.13*	597	*0.01*	687	*0.01*	10139332
2002	2424606	*23.45*	3798543	*36.73*	-60777	*-0.59*	2152040	*20.81*	693936	*6.71*	226153	*2.19*	59202	*0.57*	1045343	*10.11*	1048	*0.01*	771	*0.01*	10340864
2003	2603896	*24.34*	3892963	*36.39*	-77433	*-0.72*	2228953	*20.84*	687313	*6.43*	227167	*2.12*	62779	*0.59*	1071110	*10.01*	-79	*0.00*	724	*0.01*	10697393
2004	2822866	*25.20*	4050625	*36.16*	-75750	*-0.68*	2284713	*20.39*	714091	*6.37*	241858	*2.16*	67234	*0.60*	1096943	*9.79*	-32	*0.00*	739	*0.01*	11203287
2005	2950231	*25.70*	4086611	*35.59*	-79995	*-0.70*	2352181	*20.49*	721835	*6.29*	252164	*2.20*	70225	*0.61*	1126952	*9.82*	-161	*0.00*	860	*0.01*	11480903
2006	3122799	*26.45*	4125075	*34.94*	-72756	*-0.62*	2411961	*20.43*	728009	*6.17*	261678	*2.22*	75107	*0.64*	1154305	*9.78*	-20	*0.00*	827	*0.01*	11806984
2007	3233655	*26.76*	4131467	*34.19*	-48494	*-0.40*	2523886	*20.89*	709338	*5.87*	265089	*2.19*	82277	*0.68*	1184554	*9.80*	2	*0.00*	1101	*0.01*	12082874
2008	3255156	*26.64*	4159214	*34.03*	-78692	*-0.64*	2590305	*21.20*	712921	*5.83*	276047	*2.26*	91765	*0.75*	1213314	*9.93*	-88	*0.00*	929	*0.01*	12220871
2009	3279020	*27.02*	4087098	*33.68*	-85335	*-0.70*	2532679	*20.87*	703307	*5.80*	280743	*2.31*	102346	*0.84*	1234631	*10.17*	280	*0.00*	899	*0.01*	12135667
2010	3506053	*27.41*	4178010	*32.67*	-46623	*-0.36*	2736089	*21.39*	718959	*5.62*	295927	*2.31*	112067	*0.88*	1286840	*10.06*	518	*0.00*	1152	*0.01*	12788992
2011	3789812	*28.86*	4205688	*32.02*	-67638	*-0.51*	2790360	*21.25*	673713	*5.13*	301535	*2.30*	127370	*0.97*	1311078	*9.98*	701	*0.01*	1119	*0.01*	13133738
2012	3837862	*28.80*	4284350	*32.15*	-76595	*-0.57*	2840781	*21.31*	641830	*4.82*	315573	*2.37*	142082	*1.07*	1340194	*10.06*	733	*0.01*	1126	*0.01*	13327934
2013	3907214	***28.85***	4279539	***31.60***	-63687	***-0.47***	2901938	***21.43***	646497	***4.77***	325964	***2.41***	161521	***1.19***	1377102	***10.17***	2996	***0.02***	2198	***0.02***	13541283
Historical average		**25.35**		**35.56**		**-0.70**		**20.56**		**6.15**		**2.26**		**0.68**		**10.13**		**0.01**		**0.01**	
Growth rate		81.64		25.90		-32.39		65.73		10.53		60.57		286.10		44.87		4781.25		490.86	
Share change		**4.92**		**-6.22**		**0.58**		**1.95**		**-1.73**		**0.15**		**0.73**		**-0.41**		**0.02**		**0.01**	

The annual data were manually collected from International Energy Agency Statistic reports, various issues since 1994 till 2013 (last available on the 17th of May, 2016). The starting year was determined to be 1994 because it is the first year of the present research' data sample. Total primary energy supply (TPES) is calculated as following: energy production + imports – exports ± stock changes. The historical average share of TPES is made up simply as the arithmetic average for 20 years of data. The growth rate is computed as the division between the absolute change of TPES (2013, 1994) and the absolute value of TPES world for 1994. The share change is calculated as the absolute (not percentage) difference between TPES share of the source in 2013 and 1994 and has a meaning of direction change in world dependency on the particular source of energy. The absolute figures are expressed in thousands of tons of oil equivalent on a net calorific value basis (ktoe). The International Energy Agency website is www.iea.org

Table 13
Percent contribution of demand and supply shocks in the crude oil market to the overall variability of real stock returns

Country	Horizon	Oil supply shock	Aggregate demand shock	Oil-specific shock	Other shocks	Total oil shocks
Canada	**1**	**0.00**	**2.29**	**6.66**	**91.05**	**8.95**
	2	0.00	2.35	6.76	90.88	9.12
	3	0.55	2.63	7.21	89.61	10.39
	6	3.55	3.89	12.46	80.10	19.90
	9	6.50	5.92	12.02	75.56	24.44
	12	**6.86**	**7.34**	**11.80**	**73.99**	**26.01**
	18	9.74	7.57	12.35	70.34	29.66
	24	10.00	8.58	18.37	63.05	36.95
	30	10.51	8.94	19.21	61.34	38.66
	36	11.00	9.36	19.47	60.17	39.83
	48	11.64	10.72	19.85	57.78	42.22
	60	**11.89**	**11.11**	**20.17**	**56.84**	**43.16**
Norway	**1**	**0.96**	**2.61**	**11.53**	**84.89**	**15.11**
	2	0.93	5.11	12.09	81.88	18.12
	3	2.02	5.07	11.95	80.95	19.05
	6	4.58	6.75	15.10	73.56	26.44
	9	6.32	6.94	15.84	70.90	29.10
	12	**7.22**	**8.48**	**17.40**	**66.90**	**33.10**
	18	8.68	9.34	18.06	63.92	36.08
	24	9.02	10.38	19.83	60.77	39.23
	30	10.43	10.63	20.77	58.17	41.83
	36	10.49	11.37	20.79	57.36	42.64
	48	11.16	11.65	20.72	56.46	43.54
	60	**11.42**	**12.08**	**20.67**	**55.83**	**44.17**
Denmark	**1**	**0.03**	**1.74**	**5.50**	**92.73**	**7.27**
	2	1.06	1.71	5.44	91.79	8.21
	3	1.50	2.01	5.40	91.10	8.90
	6	5.07	4.92	5.87	84.13	15.87
	9	8.57	5.45	6.87	79.11	20.89
	12	**8.79**	**5.90**	**7.52**	**77.80**	**22.20**
	18	10.16	7.84	9.02	72.99	27.01
	24	9.83	7.92	15.40	66.85	33.15
	30	10.15	8.14	15.96	65.75	34.25
	36	10.65	8.69	16.48	64.18	35.82
	48	11.09	9.67	16.77	62.47	37.53
	60	**11.16**	**9.89**	**17.02**	**61.94**	**38.06**
United states	**1**	**0.00**	**1.48**	**1.82**	**96.70**	**3.30**
	2	0.10	1.65	1.84	96.42	3.58
	3	1.44	2.85	2.67	93.05	6.95
	6	7.83	5.64	8.77	77.76	22.24
	9	8.56	6.24	9.34	75.87	24.13
	12	**8.44**	**7.92**	**9.44**	**74.20**	**25.80**
	18	10.38	8.70	10.40	70.52	29.48
	24	12.98	10.85	15.69	60.48	39.52
	30	12.80	12.29	16.41	58.50	41.50
	36	13.53	12.49	16.77	57.21	42.79
	48	14.84	13.14	16.88	55.14	44.86

	60	**15.12**	**13.40**	**17.11**	**54.37**	**45.63**
Japan	**1**	**2.47**	**6.03**	**1.50**	**90.00**	**10.00**
	2	2.67	6.01	1.49	89.83	10.17
	3	2.66	6.05	2.29	89.01	10.99
	6	2.90	6.71	8.90	81.49	18.51
	9	5.36	8.19	8.51	77.95	22.05
	12	**7.04**	**10.08**	**8.23**	**74.64**	**25.36**
	18	11.81	10.48	8.98	68.74	31.26
	24	13.42	11.13	13.73	61.72	38.28
	30	13.53	11.86	14.82	59.78	40.22
	36	14.00	11.85	15.59	58.55	41.45
	48	14.77	12.19	15.75	57.28	42.72
	60	**14.87**	**12.47**	**16.07**	**56.60**	**43.40**
Germany	**1**	**0.13**	**0.05**	**0.05**	**99.77**	**0.23**
	2	0.14	0.82	0.05	98.99	1.01
	3	1.18	0.83	0.66	97.33	2.67
	6	7.55	4.63	5.28	82.54	17.46
	9	8.96	5.22	6.31	79.51	20.49
	12	**10.66**	**6.54**	**6.49**	**76.32**	**23.68**
	18	13.46	6.74	9.15	70.66	29.34
	24	14.58	8.81	13.45	63.16	36.84
	30	14.10	10.14	14.81	60.96	39.04
	36	14.45	10.30	15.96	59.29	40.71
	48	15.59	11.21	16.27	56.93	43.07
	60	**15.84**	**11.59**	**16.30**	**56.26**	**43.74**

Based on variance decomposition of the 4-variable SVARs after 1000 Monte Carlo repetitions

Table 14

Percent contribution of demand and supply shocks in the crude oil market to the overall variability of real stock returns

Country	**Horizon**	**Oil supply shock**	**Aggregate demand shock**	**Interest rate shock**	**Exchange rate shock**	**Oil-specific shock**	**Other shocks**
Canada	**1**	**0.01**	**2.60**	**10.56**	**10.07**	**0.21**	**76.56**
	2	0.10	2.62	10.10	14.61	1.21	71.36
	3	0.35	2.88	9.99	14.27	1.59	70.92
	6	2.48	5.61	9.16	15.55	7.22	59.98
	9	4.22	5.66	10.15	16.70	8.00	55.27
	12	**4.12**	**6.69**	**10.57**	**18.42**	**7.54**	**52.66**
	18	7.41	6.93	10.55	17.16	9.42	48.54
	24	7.05	6.78	10.10	19.41	15.28	41.38
	30	7.67	7.91	9.87	19.53	15.25	39.78
	36	7.95	8.05	10.47	19.57	15.11	38.84
	48	8.12	8.15	10.46	19.94	15.07	38.27
	60	**8.15**	**8.31**	**10.44**	**20.20**	**15.03**	**37.88**
Norway	**1**	**2.31**	**1.06**	**5.63**	**5.07**	**2.32**	**83.60**
	2	2.41	1.53	5.40	6.32	2.72	81.61
	3	2.98	1.53	5.33	6.23	2.69	81.25
	6	5.08	3.28	7.92	7.25	5.50	70.97
	9	6.81	4.32	10.53	8.23	5.59	64.51
	12	**8.58**	**4.95**	**10.04**	**8.26**	**8.30**	**59.86**
	18	10.01	6.33	9.78	9.28	9.85	54.76

	24	10.07	6.87	10.39	10.33	10.15	52.19
	30	10.49	7.30	10.43	10.72	10.49	50.57
	36	11.26	7.65	10.75	10.63	10.43	49.28
	48	11.63	7.64	10.78	11.02	10.64	48.29
	60	**12.07**	**7.81**	**10.73**	**11.00**	**10.55**	**47.84**
Denmark	**1**	**0.42**	**1.48**	**0.63**	**1.83**	**0.64**	**95.00**
	2	1.08	1.45	0.60	4.06	1.96	90.85
	3	1.87	2.27	0.96	4.05	1.90	88.96
	6	4.75	5.58	1.76	4.00	2.68	81.22
	9	6.14	5.73	2.77	4.81	4.47	76.09
	12	**6.81**	**5.99**	**4.62**	**5.37**	**4.91**	**72.30**
	18	6.96	8.41	4.86	8.69	5.53	65.54
	24	7.52	8.45	5.13	9.62	6.36	62.92
	30	8.28	8.71	5.08	9.89	7.13	60.90
	36	9.00	8.73	5.13	9.92	7.18	60.05
	48	9.23	8.93	5.20	10.03	7.36	59.26
	60	**9.35**	**8.94**	**5.19**	**10.07**	**7.37**	**59.07**
Japan	**1**	**3.73**	**7.07**	**0.11**	**4.84**	**6.58**	**77.68**
	2	4.10	6.90	0.13	4.87	7.88	76.12
	3	4.38	7.30	0.83	4.83	8.45	74.21
	6	4.45	6.65	1.92	7.58	18.07	61.33
	9	7.57	8.44	2.00	7.71	16.72	57.55
	12	**10.36**	**8.66**	**2.13**	**8.40**	**15.89**	**54.56**
	18	14.58	8.91	3.01	8.97	15.81	48.72
	24	17.84	8.14	3.83	9.24	17.38	43.57
	30	17.51	8.30	4.36	9.97	17.73	42.13
	36	17.43	8.37	4.76	10.78	17.28	41.38
	48	17.93	8.70	5.21	10.87	17.00	40.28
	60	**17.77**	**8.90**	**5.58**	**11.00**	**17.00**	**39.76**
Germany	**1**	**0.99**	**0.91**	**0.15**	**0.17**	**1.46**	**96.33**
	2	0.95	1.55	2.94	0.21	2.84	91.50
	3	0.98	1.54	4.53	0.24	3.01	89.71
	6	6.08	2.48	15.73	0.57	7.29	67.85
	9	7.50	2.79	16.05	1.29	8.02	64.36
	12	**9.49**	**4.11**	**15.57**	**2.08**	**8.23**	**60.53**
	18	12.02	4.37	14.64	3.42	9.53	56.02
	24	12.78	6.98	14.96	4.52	11.24	49.53
	30	12.87	8.17	14.74	5.32	11.07	47.82
	36	12.69	8.28	15.31	5.81	11.83	46.09
	48	13.29	8.78	15.08	6.07	12.01	44.77
	60	**13.88**	**8.89**	**14.88**	**6.10**	**12.25**	**44.00**

Based on variance decomposition of the 6-variable SVARs after 1000 Monte Carlo repetitions