Research in International Business and Finance 42 (2017) 1040–1056

Contents lists available at ScienceDirect

Research in International Business and Finance

journal homepage: www.elsevier.com/locate/ribaf

Full length Article

Oil price shocks and American depositary receipt stock returns

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ARTICLE INFO

JEL Classification:
F30
G12
G15
Q43

Keywords:
Oil price shocks
ADR returns
Financial crisis
Oil price volatility

ABSTRACT

In this paper we examine the impact of oil price shocks on twelve countries American Depositary Receipt (ADR) returns using monthly data from 1999.01 to 2014.12. The results show that oil price shocks have a positive and statistically significant impact on ADR return in all twelve countries. These results are robust to the inclusion of other explanatory variables such as oil price volatility and the spillover of the United States stock market. Further analysis shows that this effect is stronger in the post financial crisis time period compared to the pre-financial crisis time period.

1. Introduction

This paper examines the impact of oil price shocks on American Depository Receipt (ADR)[1] returns. Recently there has been an increase in oil price volatility with the price of UK Brent crude oil falling from $133 per barrel in July 2014 to less than $27 per barrel in January 2016. This increase in instability has amplified the importance of being able to diversify against oil price volatility. As such, investors who are looking to diversify their portfolio by investing in ADR's may look to invest in countries whose economy is less tied to crude oil such as Germany or Japan, instead of oil producing countries such as Norway, Russia, or the United Kingdom, but is this an effective strategy? Additionally, as global economies are intertwined due to importing and exporting of goods and services, ADR's present an inquisitive study beyond examining a countries' aggregate stock market because the stock is dually listed in the home country and the United States and is subject to the impact of both countries' stock market.

There is a large body of existing literature on the impact of oil price on real economic activity. Examining data from post-World War II, Hamilton (1983) finds an inverse relationship between United States GNP growth and crude oil prices. Furthermore, Jiménez-Rodríguez and Sánchez (2005) find that oil price increases have a negative impact on GDP growth in the United States, France, Italy, Germany, and the United Kingdom, with no significance for Japan, and a positive impact on Norway. Additionally, Cavalcanti and Jalles (2013) find no evidence that oil prices have any impact on Brazilian GDP.

Oil prices not only impact macroeconomic factors such as real economic activity, but also financial variables, such as stock market returns. Jones and Kaul (1996) show that it is rational for investors to react to oil price shocks in the stock market, as changes in oil prices can directly influence future cash flows. A large amount of literature examines the impact of oil price shocks on stock market returns throughout many countries, such as the United States (Sadorsky, 1999), European nations (Park and Ratti, 2008; Cunado and Perez de Gracia 2014), and Asia (Fang and You 2014; Wang et al., 2013) with the majority of results showing that oil importing

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[1] An ADR is a certificate that represents equity in a non-United States company issued by United States Bank that is backed by a fixed number of underlying shares of the firm in its domestic market. ADR's are cross listed on both their domestic market and any of the United States exchanges.

http://dx.doi.org/10.1016/j.ribaf.2017.07.040
Received 18 November 2016; Received in revised form 11 May 2017; Accepted 3 July 2017
Available online 08 July 2017

countries have a negative response to oil price shocks, while oil exporting countries have a positive response. Therefore, the relationship between oil price shocks and ADR returns should also hold. However, no study has examined the impact of oil price shocks on ADR stock returns.

We examine the impact of oil price shocks on ADR returns using both real world and national oil prices by utilizing an ADR index for each of the twelve countries from 1999:01–2014:12.[2] We argue that it is important to examine the impact of oil price shocks on ADR stock prices across importing and exporting countries as well as developed and emerging countries as the effect may be systematic across countries. Additionally, the recent financial crisis of 2007–2008 has made drastic changes in several asset class relationships. We suspect that there is a time-varying impact of the financial crisis on the relationship between oil price shocks and ADR returns. Therefore, the sample is divided into sub-categories: pre-crisis (January 1999–November 2007) and post-crisis (July 2009–December 2014) to analyze any permanent shift in relationship between oil price shocks and ADR returns while controlling for macroeconomic factors.[3]

Our main finding is that the ADR returns a have positive and significant response to oil price shocks for all twelve countries examined during the full sample period. This finding is robust to the inclusion of other variables such as the spillover effect from the United States stock market and oil price volatility. Additionally, the variance decomposition shows that oil price contributes a statistically significant amount of variance to the ADR stock returns of all twelve countries ranging from 9.6% to 24.6%. Furthermore, this finding is examined in the context of pre-financial crisis and post-financial crisis periods. Results from the pre-crisis time period show that China, Italy, Norway, and South Korea demonstrate a positive and statistically significant response to real world oil price while controlling for the spillover effect of the U.S. stock market, while China shows a positive response when examining national oil price shock. This indicates that during the pre-crisis time period ADR returns are highly correlated with the United States stock market and provides the implication that ADR's provide very little diversification against oil price shock for investors during the pre-crisis time period.

The examination of the post-financial crisis time period shows that eight of the twelve countries, including Germany and Japan, have a positive and significant response to oil price shocks, even after accounting for the spillover from the United States stock market. This implies that oil price shocks still have a positive and significant impact on ADR returns even after controlling for the impact of the United States stock market. Therefore, in the post-financial crisis time period, investors cannot disregard the impact of oil price shocks on ADR returns. This result shows that investors can't diversify their portfolio against oil price shocks by investing in oil importing countries such as Germany and Japan. Several explanations are given for the results, such as economic structure, causes of shocks, a possible emerging market crisis, and how oil price can be tied to global demand for goods.

The structure for the remainder of this paper is as follows. Section 2 provides an overview of the literature. Section 3 puts forth the methodology employed. Section 4 presents the empirical analysis. Finally, Section 5 provides the conclusion.

2. Overview of literature

Research shows that oil price shocks have a negative impact on the United States stock market returns (Park and Ratti, 2008; Sadorsky, 1999). In fact, Chen (2010) uses a Markov switching model and finds that as oil prices increase there is a higher probability of a bear market in the United States. Conversely, research shows that subsequently following the start of the United States recession, oil price changes have a positive impact on the United States aggregate markets (Mollick and Assefa, 2013) and industry returns (Tsai, 2015), which provides evidence that there may be a time varying impact of the United States recession on the impact of oil price shocks and stock market returns.

Park and Ratti (2008) examine oil price shocks from January 1986 to December 2005 in European countries and find a negative response of oil price shocks on the stock markets in France, Germany, and Italy, a positive response in Norway, and no response in the United Kingdom. Similarly, Cunado and Perez de Gracia (2014) examine the impact of different types of oil shocks on European countries from February 1973 to December 2012. They find a negative response of oil price shocks on the aggregate stock markets in France, Germany, Italy, and the UK.

Wang et al. (2013) studies oil price shocks in oil importing and exporting countries from January 1999 to December 2012. Their results show that oil demand shocks and oil specific shocks have a positive impact on the stock return of oil exporting countries such as Mexico, Norway, and Russia and no impact on oil importing countries such as France, Germany, Italy, Japan, South Korea, UK, and USA demonstrating the fact that since the late 1990's, research no longer finds the consistent negative relationship between oil price shocks and the stock market returns in oil importing countries.

Nandha and Faff (2008) find an inverse relationship to oil prices and all DataStream global industry indices, except for the oil and gas and mining industries, from 1983 to 2005. Similarly, Scholtens and Yurtsever (2012) examine industry level returns in the European countries from 1983 to 2007 and find a negative linear relationship for all industries except for oil intensive industries (oil and gas producing, oil equipment, and mining).

Basher et al. (2012) find that oil price shocks decrease emerging market's stock prices measured by the MSCI emerging stock market index from 1988 to 2008. However, Cong et al. (2008) find that oil price shocks do not impact the majority of Chinese stock market indices when examining monthly data from 1996 to 2007. In contrast, Fang and You (2014) find that oil specific demand shocks have a negative impact on the Chinese stock market. Additionally, the Russian stock market has a negative response to global

[2] The beginning period for the sample is based on the first available date of the euro currency.

[3] The dates of the recession of December 2007–June 2009 follow U.S. NBER dateline.