Applied Energy 88 (2011) 354–360

Contents lists available at ScienceDirect

Applied Energy

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

Volatility spillover from world oil spot markets to aggregate and electricity stock index returns in Turkey

Ugur Soytas *, Adil Oran [1]

METU, Dept. of BA, 06531 Ankara, Turkey

ARTICLE INFO

Article history:
Received 8 April 2010
Received in revised form 8 July 2010
Accepted 16 July 2010
Available online 13 August 2010

Keywords:
Oil price
Stock market returns
Volatility spillover
Electricity index returns
Emerging market
Cheung–Ng procedure

ABSTRACT

This study examines the inter-temporal links between world oil prices, ISE 100 and ISE electricity index returns unadjusted and adjusted for market effects. The traditional approaches could not detect a causal relationship running from oil returns to any of the stock returns. However, when we examine the causality using Cheung–Ng approach we discover that world oil prices Granger cause electricity index and adjusted electricity index returns in variance, but not the aggregate market index returns. Hence, our results show that the Cheung–Ng procedure with the use of disaggregated stock index returns can uncover new information that went unnoticed with the traditional causality tests using aggregated market indices.

© 2010 Elsevier Ltd. All rights reserved.

1. Introduction

The recent rise and subsequent fall in world oil prices has renewed the interest on impacts of oil shocks on the economy and financial markets as also stated by Chen et al. [2]. Policy makers are mostly concerned about the short run and the long run effects on the macroeconomy. Whereas, investors try to understand how the financial asset returns will respond to these shocks and whether the impacts are permanent or transitory. Several studies have examined the relationship between oil prices and macroeconomic and financial variables for both developed and developing countries. Oil price changes are generally found to have significant effects both on the economy and financial markets. Some studies focus on the impact of oil shocks on stock markets, where academicians and practitioners alike have been trying to understand the dynamic link between world oil prices and stock returns. The "traditional" view holds that as oil prices rise they will cause input prices to increase, driving down profits and returns. Obviously, these effects may be drastically different for firms (or industries or even countries) that are in businesses that may benefit from higher oil prices. However, as the majority of firms in most markets tend to be oil consumers, the effects of increasing oil prices are expected to be negative for the majority. Although there is support for the negative impact of oil price increases on stock market performance in general, the results are not unanimous and differ across countries.

The fluctuations in world oil prices naturally bring forth a number of questions regarding the stock market returns. For example, are oil price shocks transmitted to the stock markets of open economies? One expects to observe a positive shock in world oil prices providing a downward pressure on financial asset returns. If a transmission occurs, then how long it lasts is the natural extension of the question in concern. Another interesting outcome would be the lack of transmission, which would then be followed by a search for the reasons for the neutrality of stock returns to oil price changes. One may be tempted to question the country specific characteristics such as the degree of openness in the presence of this neutrality. However, this explanation does not seem satisfactory in a globalized world, at least for most countries. A following question is: Is there volatility spill over between financial markets and energy markets? As markets become more integrated [6] and global investors view alternative markets as possible arenas of speculative behavior, one expects significant volatility transmissions across these markets. Another question is: Do different industry stocks (for example utilities vs. oil and gas stocks) respond differently to oil price shocks? Industries that are closely related to energy markets may be more sensitive to fluctuations in world oil markets than other industries. Hence, the responses of different industries may have an offsetting effect in the stock index return behavior if one focuses on the aggregate stock market index returns. Another plausible explanation may be the inadequacy of the analytic approach used in uncovering the effect of an oil shock.

---

* Corresponding author. Tel.: +90 312 2102048; fax: +90 312 2107962.
E-mail addresses: soytas@metu.edu.tr (U. Soytas), adiloran@metu.edu.tr (A. Oran).

[1] Tel.: +90 312 2102041; fax: +90 312 2107962.

0306-2619/$ - see front matter © 2010 Elsevier Ltd. All rights reserved.
doi:10.1016/j.apenergy.2010.07.018

The introduction of powerful time series techniques allowed examination of temporal relationships via creation of large models with many lags. Since the interpretation of lagged variable coefficients poses a problem, in the literature many have referred to the Granger causality tests as well as impulse response and variance decomposition analyses (which are viewed as out of sample Granger causality tests) in order to interpret the results. If lags of a variable *X* improve the forecasts of another variable *Y*, then it is said that *X* Granger causes *Y*. In the context of the oil price-stock market prices literature, one expects to observe that oil price changes lead the prices of financial instruments, but not vice versa, especially in small markets relative to the world markets. The empirical results do not always support this expectation. There may be several reasons ranging from the problems related to the methodologies used to the characteristics of the financial market under investigation. The lack of a causal link running from oil price changes to financial assets may also arise because the dynamic link may be between the variances of the variables rather than between the variables themselves. Furthermore, the lack of Granger causality in mean does not necessarily imply that there is also non-Granger causality in variance. Hence, in order to achieve a full examination of the dynamic links between oil and stock returns, one should not limit his/her attention to mean spillovers.

This paper fits the literature on the impact of oil price changes on stock returns; however, distinguishes itself from the rest of the literature by examining the impact of oil shocks on specific electricity index returns in an emerging economy. To that respect, we first investigate the temporal relationship between oil prices and Istanbul Stock Exchange 100 index (ISE100) returns. Then, we follow a recent trend in the literature and extend our analysis to a disaggregate level, specifically to the link between world oil prices and the electricity index returns in ISE. The stocks of companies operating in energy markets are expected to be more sensitive to world oil price changes. Furthermore, another issue that we explore in this study is that the information transmission may not be directly between the returns themselves but may be in terms of volatility spillovers.

We show that world oil markets have a significant contemporaneous impact on both the ISE100 and ISE electricity returns. However, the test results based on traditional tests failed to detect any Granger causality relationships between world oil prices and stock returns in Turkey. The generalized impulse responses confirm these results, since no significant impact of oil price shocks is observed. This came as a surprise because Turkey is a net oil importer and one expects to see the impact of oil price shocks on the ISE or at least on the electricity index. When we proceed to the Granger causality in variance tests proposed by Cheung and Ng [3], we find that there is volatility spillover from world oil spot markets to the electricity stock index returns in Turkey. Hence, use of disaggregated index returns and looking for volatility spillovers seem to uncover the link between oil prices and financial asset returns which has been undetected using more traditional methods. Our results provide important implications for investors and interesting insights for further research.

The next section introduces the literature review on the relationship between stock returns and oil price. Then in Section 3, we discuss data characteristics and methodology followed by empirical results in Section 4. Section 5 concludes and provides implications for investors, policy makers and further research.

2. Literature review

The early literature on the macroeconomic effects of oil price shocks has been led by Hamilton [8] who shows that "oil shocks were a contributing factor in at least some of the US recessions prior to 1972." Furthermore, he states that almost all US recessions after World War II were preceded by large increases in oil prices. The following literature has extended into examining the impact of oil shocks on other economies and other macroeconomic variables (see for example [32,16,22,30,31]). Within this vast literature, there are also a quite a number of studies on how oil price changes influence the stock market returns. Along this line, most of the studies are on developed countries [7,26,27,24], but there is an increasing interest on developing countries [23,10,11,1,29] as well. Furthermore, most of the earlier work on stock indexes has usually focused on how a level shift in oil prices influences the aggregate stock market returns. Recently, however, the literature is extending into a disaggregate analysis of oil price and industry and/or individual stock returns [27,9,11,28,4,21]. Another line that the literature takes is how oil price volatility influences the volatilities in stock markets.

For example, Sadorsky [26] employs monthly data for 1947–1996 to investigate the interaction between oil prices and economic activity. He finds that oil prices and oil price volatility affect real stock returns, though the effects may not be symmetric. Additionally, the dynamics of the relation seem to have changed after 1986 with the explanatory power of oil price shocks with regard to real stock returns rising and exceeding that of interest rates.

In a disaggregated study, Hammoudeh et al. [9] use daily data for 1995–2001 to study the dynamic relationship between five US oil sector indices and five different oil prices. They find that oil prices are cointegrated amongst themselves but oil sector indices are not. For mixed systems (oil sector indices plus one oil price) only one cointegrating equation is found. Their results show that oil prices can be used to predict changes in some oil sector indices. Furthermore, they also report significant volatility spillovers from oil prices to the stock indices. However, the effect is to increase the volatility in some indices, while decreasing it in others.

Another disaggregated analysis is due to Sadorsky [27] where he uses a multifactor model to estimate expected returns for the Canadian oil and gas industry on a monthly basis between 1983 and 1999. He finds that exchange rates, oil prices and interest rates, in addition to the usual market factor, all affect Canadian oil and gas industry stock returns. Increases in oil prices lead to increases in Canadian oil and gas industry stock returns. This study focuses on energy industries in Canada only, but there are other works that examine the link between oil markets and other related industries. For example, Sadorsky and Henriques [28] use weekly data for 2001–2007 in a LA-VAR model to examine the relationship between alternative energy company stock prices, technology company stock prices, oil prices and interest rates in the US. They find that oil prices, technology stock prices and interest rates Granger cause alternative energy stock prices, with technology stock price shocks having a larger impact. This is interpreted as alternative energy stocks behaving more like technology stocks.

The literature also includes studies on several other countries including emerging markets. Basher and Sadorsky [1], for example, employ daily and monthly data to study 21 emerging markets (including Turkey, which contains the highest market risk among all) in an international CAPM model. Their results show a significant negative impact of oil prices on stock market returns. They argue that the results are sensitive to the frequency of the data and the world CAPM model may not hold for all countries. In their work there is also evidence of a nonlinear and asymmetric conditional relationship between oil price risk and stock returns. In another study, taking into account economic activity and employment, Papapetrou [23] finds that oil price shocks affect stock returns in Greece. Narayan and Narayan [18] report the theoretically unexpected positive impact of oil price shocks on Vietnamese stock prices for the 2000–2008 period, using daily data and accounting for the nominal exchange rate.

دریافت فوری ← متن کامل مقاله

ISIArticles
مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات