The impact of oil price shocks on stock market activities: Asymmetric effect with quantile regression

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Abstract

This paper examines the impact of changes in real oil prices on the real stock returns of G7 countries. In addition to investigating the asymmetric effect of oil price shocks on stock returns, we also examine the effect of the performances of stock markets themselves, which are relevant to firms' strategies in the future. Although the responses of stock markets to oil price shocks are diverse among G7 countries, we present the inconsistent reflections of stock markets based on their performances. In many cases, quantile regression estimates are quite different from OLS models. These results carry crucial implications for the linkage between oil and stock markets.
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Keywords: Oil prices; Stock returns; Quantile regression; Structural breaks; G7 countries

1. Introduction

Many studies recently have investigated the linkage between oil and stock markets [12,23,28]. In valuing firms we usually adopt a dividend discount model or a discounted free cash flow model. Within these models, we are concerned about what the discount rates should be, in which firms' future performances and all future situations among economies are the prime considerations. In the energy realm, the asymmetric impact of oil price shocks on economic activities has been verified in many economies [7–9]. Oil price hikes have a large likelihood to affect economic development, though drops in oil prices do not [29]. In the financial realm, evidence exists about investors' irrational behavior. The activities of stock markets are related to the states of bullish or bearish markets [6,11].

This paper raises the following specific questions: Do multiple structural breaks exist for the relationships between real oil–stock price shocks? What effects will result when break points exist. Does the asymmetric impact of oil price shocks on stock returns exist? Do the performances of stock markets affect the impact of oil price shocks on real stock returns? Specifically, we compare the difference between results of a traditional OLS model and a quantile regression model in developed countries. This quantile technique enables us to examine whether the relationship between oil–stock returns differs throughout the distribution of the dependent variable (i.e., stock returns).

We contribute to existing empirical analyses in several ways. First, we consider the impact regarding the structural breaks, which is possibly caused by the occurrence of global events.[1] The findings of Lee and coworkers

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[1] For example, the Iran–Iraq War induced oil price fluctuations in the mid-1980s.