



Oil price risk exposure and the cross-section of stock returns: The case of net exporting countries



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ABSTRACT

The main goal of this paper is to examine whether oil price risk is systematically priced in the cross-section of stock returns in net oil-exporting countries even after controlling for market and firm-level risk factors. Using firm-level data from the Gulf Arab stock markets, we find that stocks that are more sensitive to oil price changes indeed yield significantly higher returns, suggesting that oil price exposure can serve as a return predictor in these stock markets. However, we also find that it is the absolute exposure of a stock that drives returns, suggesting fluctuations in the oil price as a source of stock return premia in these markets. Our tests further suggest that a portfolio strategy based on a stock's absolute exposure to oil price risk yields significant positive subsequent returns as well, suggesting an investment strategy based on the absolute oil price risk exposure of stocks in net exporting nations.

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1. Introduction

Throughout the last half century, energy has played a significant role in the economic development of both importing and exporting nations, in some cases providing investors clues about corporate profits and the future performance of stock markets in these countries. Energy prices, in particular crude oil price as the main driver of the energy market, can affect stock prices through multiple channels. First, the price of oil can have a direct effect on business costs and thus corporate earnings and projected earnings growth rates which in turn affect cash flow values that go into stock valuation models (e.g. Jones et al., 2004). Furthermore, as Gogineni (2010) notes, oil price increases can potentially drive consumers to cut back their expenditures on other goods and services, either due to a reduction in discretionary income or due to an increase in precautionary savings, extending the oil price effect to beyond oil-sensitive industries. Second, oil price fluctuations can affect macroeconomic variables including GDP growth rates, inflation, and exchange rates, (e.g. Hamilton, 2005; Hamilton and Herrera, 2004) and thus, indirectly drive equity risk premiums which in turn affect discount rates applied to cash flows in stock valuation models. Third, volatility in oil prices can contribute to risk premiums required by investors on assets that have greater risk exposures with respect to oil price fluctuations. Depending on the sign of the risk premium associated with a

firm's exposure to oil price, oil price sensitivity can positively or negatively affect stock prices.

Overall, the effect of oil price on the stock market largely depends on whether oil price risk is indeed priced at the firm level and, if so, the sign of the risk premium associated with a firm's risk exposure to oil price. Clearly, such inferences cannot be made using aggregate market or sector level data as aggregation would bypass valuable firm characteristics that potentially drive returns. Therefore, the main goal of this study is to provide a firm-level analysis of the effect of oil price risk exposure on stock returns from an asset pricing perspective. To the best of our knowledge, such a cross-sectional analysis at the firm level is the first in the literature.

Examining the relation between stock market returns and oil prices using firm-level data can provide valuable insight from several aspects. First, it allows one to test the significance of oil price exposure as a risk factor even after controlling for market and firm-specific factors. For example, it is possible that smaller firms are particularly more sensitive to oil price fluctuations and the size factor in an asset pricing model sufficiently accounts for the oil price risk exposure in stock returns. Second, comparison of firm-level returns sorted on their sensitivities to oil price fluctuations can provide valuable insight to the firm characteristics that drive oil price sensitivities, i.e. the nature of the firms that have greater risk exposures with respect to oil prices. Furthermore, this information can be used in hedging strategies to manage oil price risk exposures. Finally, from a corporate decision making perspective, identification of a risk premium associated with a firm's risk exposure with

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respect to oil price can help improve project (as well as IPO) valuations as investors would require a compensation for the added risk due to oil price risk exposure of firms.

This study contributes to the literature on the relationship between oil and stock markets by formally testing whether oil price risk is systematically priced in the cross-section of stock returns in net oil exporting nations, with a focus on the Gulf Cooperation Council (GCC) nations of Saudi Arabia, Kuwait, Qatar, UAE, Oman and Bahrain. Several characteristics of GCC stock markets make it especially interesting to examine the oil-stock market relationship using data from these developing stock markets. First, the GCC economies are largely dependent on oil exports with energy export revenues as a percentage of total exports ranging between a low of 60% for Bahrain and high of 95% for Kuwait (see Table 1). The region possesses about 48.5% of the world's proved oil reserves and controls 33% of oil exports globally.¹ With the oil sector accounting for a significant portion of their GDP, it can be argued that oil price fluctuations have direct effects on not only macroeconomic variables in these economies, but also corporate profits and earnings growth projections which in turn affect stock prices (see Fig. 1). Second, the lack of risk management tools like futures and options available to investors in these developing markets may hinder investors' ability to hedge oil price risks in their portfolios. If investors have limitations on properly diversifying oil price risk in their portfolios, they will require a compensation for this undiversifiable risk; leading to a risk premium in stock returns associated with oil price risk exposure. However, since a liquid market for hedging exists in advanced financial markets, one can argue that oil price risk would be considered as a diversifiable risk factor and oil price risk should not be priced in these markets.

Furthermore, the stock markets of GCC countries experienced significant growth both in terms of market size and trading activity during much of 2000s, fueled by the flow of large sums of petro-dollars into these economies, creating an environment that can be characterized by the phenomenon "too much money chasing too few stocks" (Balcilar et al., 2013). To that end, GCC stock markets are different from other developing markets in the sense that they suffer from limited investment opportunities and under-populated stock exchanges and yet possess large amounts of cash available for investments thanks to oil export revenues. It can therefore be argued that oil-based revenues as the main driver of financing for these economies indirectly affects demand for equity securities in these under-populated stock markets and could be a major driver for mispricing in these markets. In fact, as our findings suggest, the book-to-market ratio as an indicator of the cheapness (or mis-pricing) of a stock is a consistent determinant of returns in these markets. Finally, a number of studies including Hammoudeh and Choi (2006), Yu and Hassan (2008), Cheng et al. (2010), Balli et al. (2013) and more recently, Balcilar et al. (2014) document that these markets are generally segmented from global markets. Therefore, it can be argued that the segmented nature of these markets and the dominance of regional and idiosyncratic shocks over common market shocks may limit the extent of oil price risk diversification in these markets, further supporting the presence of an oil premium embedded in stock prices.

Looking ahead, our findings indicate that stocks that are more sensitive to oil price changes indeed yield significantly higher returns, suggesting that oil price exposure can serve as a return predictor in these stock markets. However, we also find that it is the absolute exposure of a stock that drives returns, suggesting fluctuations in the oil price as a source of return premia in these markets. The return spread between the highest and lowest absolute exposure portfolios ranges between a high of 4.173% per month for Saudi Arabia and a low of 1.416% per month for UAE, which is both economically and statistically significant. Interestingly however, our cross-sectional tests do not yield evidence of a statistically significant risk premium associated with oil

Table 1
Stock market and economic characteristics of the GCC markets.

	S. Arabia	UAE	Kuwait	Qatar	Bahrain	Oman
Number of listed firms	150	104	206	42	44	123
Market cap. (\$billions)	338.9	71.3	100.9	125.4	17.1	19.7
Trading volume (million shares)*	152.1	324.4	228.3	9.8	37.2	22.5
Energy exports (% of total)	90	45	95	85	60	62
Oil exports global rank	1	6	10	18	34	27
Composition of GDP:						
Agriculture	1.9%	0.8%	0.3%	0.1%	0.4%	1%
Industry	64.8	56%	50.2%	73.6%	51.3%	66%
Services	33.3%	43.2%	49.5%	26.3%	48.4%	33%

Note: The data are compiled from the World Bank database (2011), the CIA World Factbook (2012) and Gulfbase.

* Average daily trading volume (2013).

price risk exposure in the presence of firm-level risk factors. We observe that firm-level factors, in particular book-to-market ratio and idiosyncratic volatility, control for the oil price risk in returns, rendering the oil factor insignificant in our tests. On the other hand, we find that oil price exposure has significant predictive power for subsequent returns, particularly in the case of Saudi Arabia. We observe that a portfolio strategy based on a stock's absolute risk exposure with respect to oil price yields significant positive subsequent returns, suggesting a possible investment strategy based on the absolute oil price risk exposure of stocks in net exporting nations.

The remainder of this paper is organized as follows. Section 2 briefly discusses the literature on the relationship between oil and stock markets, Section 3 explains the data and methodology, Section 4 presents empirical findings and Section 5 concludes the paper.

2. Literature review

The relationship between energy and stock markets has been examined in numerous studies from different angles and in different contexts. One strand of the literature has focused on the effect of oil price on macroeconomic variables (e.g. Cologni and Manera, 2008; Jones et al., 2004; Kilian, 2008).² Another strand of the literature has examined the effect of oil price fluctuations on return and volatility in equity markets (e.g. Chiou and Lee, 2009; Choi and Hammoudeh, 2010; Hammoudeh and Aleisa, 2004). Motivated by the rapid growth of index investment in commodity markets, particularly during the second half of 2000s, another strand of the literature has examined the oil-stock market relationship in the context of commodity financialization (e.g. Falkowski, 2011; Hache and Lantz, 2013; Irwin and Sanders, 2012; Singleton, 2011; Tang and Xiong, 2012).

Starting with earlier studies focusing on industrialized countries (e.g. Huang et al., 1996; Jones and Kaul, 1996), numerous studies in the literature have examined the effect of oil price on stock returns in the context of emerging stock markets. Examining the relationship between oil price shocks and stock market returns for 22 emerging economies, Maghyreh (2004) reports that higher level of energy consumption intensity for a country leads to greater sensitivity of its stock market to oil price shocks. Similarly, Basher and Sadorsky (2006) find strong evidence that oil price risk is relevant for explaining variations in stock returns. On the other hand, Nandha and Hammoudeh (2007) examine the relationship between market beta risk and stock returns in the presence of oil price risk and exchange rate sensitivity and find no evidence of country-level sensitivity to oil price measured in U.S. dollar. Focusing on the cost- and demand-side factors and using industry level data from the U.S. market, Gogineni (2010) documents a significant oil effect even in industries like entertainment and food services that use little, if any, oil in their production processes.

¹ BP Statistical Review of World Energy (June 2013).

² Hamilton and Herrera (2004) provide a comprehensive survey of this literature.

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