



International oil price uncertainty and corporate investment: Evidence from China's emerging and transition economy



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ABSTRACT

We develop and estimate a dynamic model of investment to investigate the impact of international oil price uncertainty on corporate investment expenditures in China's emerging and transition economy. We further examine whether state ownership affects the relationship between oil price uncertainty and corporate investment. Consistent with the model's prediction, the main finding is that oil price uncertainty exerts a negative impact on corporate investment expenditures. In addition, compared with state-owned listed companies, the negative influence of oil price uncertainty on corporate investment is more significant for non-state-owned listed companies. Our further analysis, using the market-oriented reform of refined oil pricing in 2008 as a quasi-natural event, shows the variation between the low-degree marketization period and the high-degree one in terms of the relationship between international oil price uncertainty, state ownership and corporate investment expenditures.

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1. Introduction

As a core component of total demand in a macroeconomic growth model, investment can increase capital stock and create economic growth and prosperity. From the perspective of microeconomics, corporate investment and its efficiency not only determine corporate operating performance and intrinsic value but also have an influence on the stable and healthy development of the whole national economy (Porter, 1980, 1998; Makadok, 2003).

In reality, however, corporate investment is associated with various uncertainties from output price, factor input cost, exchange rate and government regulation (Pindyck, 1991). The uncertainty affects not only the value of a specific investment project but also the intrinsic value of an enterprise (Miller, 1998). The existing literature has shown that, as an important production factor, crude oil price fluctuations have a significant impact on investment decisions in the real economy, which has received much attention from scholars and practitioners

(Henriques and Sadorsky, 2011; Yoon and Ratti, 2011; Ratti et al., 2011; Mohn and Misund, 2009).

Ratti et al. (2011), Henriques and Sadorsky (2011) and Yoon and Ratti (2011) provide empirical evidence showing that international oil price uncertainty has a significantly negative effect on corporate investment expenditures. However, the existing research mainly focuses on developed markets. In view of national differences of industrial structure, energy structure, energy consumption intensity, energy import dependence and energy pricing mechanisms, the impact of oil price shocks may be different across markets (Crompton and Wu, 2005). China is important to world energy markets because it has recently become the largest oil consumer and the largest net oil importer in the world. Due to the development of China's industrialization process, the consumption of crude oil and the degree of dependence on imported crude oil for China has been rising rapidly.¹ Meanwhile, to

¹ The BP Statistical Review of World Energy 2012 shows that, from 2001 to 2011, annual growth rate of trans-continental trade volume of crude oil was only 1.71%, and the annual growth rate of China's net crude oil imports over the same period was 13.99%. Correspondingly, China's dependence on imported crude oil (apparent consumption) increased from 28.2% in 2000 to 54.8% in 2011.

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some extent, Chinese government regulates refined oil pricing and the co-movement between the domestic refined oil price and the international crude oil price is relatively weak and hysteretic. Given the above special institutional environment, our first aim is to study whether oil price uncertainty influences corporate investment expenditures in China.

As the world's largest emerging and transition economy, Chinese capital markets are dominated by state-owned enterprises (hereafter called SOEs). In view of the strong relationship between local economic growth and political promotion, governments at various levels have a strong incentive to promote local corporate investment to maintain stable economic development. As the controlling shareholders of SOEs, governments at various levels have a strong ability to incorporate government targets such as economic growth, employment and taxes into SOEs' business activities. Compared with SOEs, the degree to which non-state-owned enterprises (non-SOEs) are subject to government intervention is low, and their investment and financing decisions are more independent and flexible. Therefore, the observed relationship between oil price uncertainty and corporate investment might be distorted by companies' state ownership within China's institutional environment. Therefore, our second aim is to investigate whether there is variation between SOEs and non-SOEs in terms of the relationship between oil price uncertainty and corporate investment.

As a transition economy, China maintained strict regulation of domestic refined oil pricing for quite a long time. As a result, the impact of international crude oil price uncertainty on China's domestic real economy was weak and even insulated. With the refined oil pricing marketization reform, Chinese government has gradually reduced direct intervention and the co-movement between the price of domestic refined oil and the one of international crude oil is much stronger and more instantaneous. The reform raises another question of whether the market-oriented reform of refined oil pricing influences the aforementioned relationship between oil price uncertainty, state ownership and corporate investment.

To empirically investigate the impact of international oil price uncertainty on corporate investment expenditures, we develop and estimate a dynamic model of investment using a sample of listed companies on the Shanghai and Shenzhen Stock Exchanges from the third quarter of 2004 to the fourth quarter of 2014. Our analysis further incorporates state ownership and examines the impact of state ownership on the relationship between oil price uncertainty and corporate investment expenditures. Furthermore, using the market-oriented reform of refined oil pricing at the end of 2008 as a quasi-natural event, we partition our whole sample into the low-degree marketization period (LDMP) subsample and the high-degree marketization period (HDMP) subsample and empirically investigate the impact of the refined oil pricing marketization reform on the relationship between oil price uncertainty, state ownership and corporate investment.

Consistent with the model's prediction, our baseline results show that international oil price uncertainty has a negative impact on corporate investment expenditures. We also find that compared with SOEs, the negative influence of oil price uncertainty on corporate investment expenditures is more significant for non-SOEs. Our further analysis on the impact of China's refined oil pricing marketization reform shows that the negative effect of international oil price uncertainty on corporate investment expenditures during the LDMP is much weaker than that during the HDMP. Furthermore, the difference between SOEs and non-SOEs in terms of the relationship between oil price uncertainty and corporate investment is more significant during the HDMP.

This study contributes to the existing literature in several important ways. First, the paper develops a dynamic model of investment to examine the relationship between international oil price uncertainty and corporate investment expenditures in China's emerging and transition economy, which enriches both theoretical and empirical evidence about the impact of international oil price uncertainty on micro-corporate investment. Second, given the prevalence of state ownership

in Chinese listed firms (Li and Zhang, 2010), this study examines the moderating effect of state ownership on the relationship between oil price uncertainty and corporate investment. Findings on the effect of ownership type have implications on other countries also with prevalent state ownership, such as Finland, Austria, Singapore and Malaysia (Claessens et al., 2000; Faccio and Lang, 2002). Third, this study uses the market-oriented reform of refined-oil pricing at the end of 2008 as a quasi-natural event and empirically investigates the impact of the refined oil pricing marketization reform on the relationship between oil price uncertainty, corporate investment and state ownership. Findings in this study could be useful to commodity investors, producers, consumers, and policy makers alike.

The rest of the paper is organized as follows. Section 2 discusses China's refined oil pricing marketization reform process, i.e., the institutional background of this paper. Section 3 conducts the theoretical analysis and develops the model and testable hypotheses. Section 4 discusses the sample-collection process and the empirical research design adopted. We present our baseline empirical findings in Section 5 where we also undertake further analysis by incorporating the impact of the refined oil pricing marketization reform. Section 6 concludes the paper.

2. Institutional environment – China's refined oil pricing marketization reform process

Since 1998, the refined oil pricing marketization reform in China has gone through five phases. The details are as follows:

Phase one: the market-oriented phase under the government control (June 1998–June 2000). The refined oil was priced according to the government guidance under which the refined-oil-benchmark price consisted of the cost of crude-oil-import duties paid plus the corresponding distribution costs. Domestic oil companies then determined the specific retail price based on the refined oil benchmark price with a floating range of 5%.

Phase two: the phase linked with the international oil market (June 2000–November 2001). The refined oil pricing was based on the average price in the Singapore market half a month earlier. After one year of operation, the new pricing mechanism was found to have serious flaws in that all oil suppliers and even customers can calculate the oil prices of the following month according to a fixed formula, and such pricing predictability resulted in excessive speculation in the domestic oil market.

Phase three: the phase linked with the oil prices of three regional markets (November 2001–March 2006). The refined oil pricing was based on the average price of the Singapore, Rotterdam and New York crude oil markets, with the weights being 60%, 30% and 10%, respectively, plus a basic fee, a domestic tariff and refined oil circulation costs determined by the government. Meanwhile, the government applied the “one-month tracking method”, under which the State Planning Commission (SPC) formulated and promulgated the new retail standard price when the monthly average price of the three markets fluctuated 8% or more over the preceding period.

Phase four: the phase with four supporting mechanisms (March 2006–November 2008). In mid-2005, some areas in China suffered oil shortages, and the refined oil pricing mechanism incurred tremendous criticism as it was designed to apply during the stable periods, and did not adapt to sudden or high fluctuations in oil prices. The pricing mechanism was also oversimplified and too hysteretic. On March 26, 2006, the National Development and Reform Commission (NDRC, the previous SPC) issued a comprehensive oil-pricing-adjustment program, under which the domestic refined oil pricing reference changed from the refined oil price to the crude oil price in the international market. In addition, the regulating range of the refined oil price was also adjusted, and the price-

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