

Executive Summary

SHOCKS AND STOCKS: A BOTTOM-UP ASSESSMENT OF THE RELATIONSHIP BETWEEN OIL PRICES, GASOLINE PRICES AND THE RETURNS OF CHINESE FIRMS

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China is in a unique stage of transformation and economic development, global oil prices continue to boom and bust, as do the Chinese financial markets: factors all of which create an urgency to develop an up-to-date, innovative and detailed understanding of how international oil prices pass through to the domestic economy. Additionally China is heavily exposed to international energy markets, especially for oil: domestic production of oil accounted for 68.3% of consumption in 2000, but by 2013 this had fallen dramatically to just 38.9%.

Motivations underlying the research

This research was chiefly motivated out of three reasons:

- First is that China is of special interest in today's global economic climate, which owing to its scale, pace of economic development and substantial resource consumption, has the ability to influence the dynamics of global energy markets and wider economic stability. Maintaining an up to date understanding of this unique economy is of strategic interest to the international community;
- Second is that although it is broadly accepted that oil commodity prices and stock markets are connected, there remains to date very little understanding of how the financial values of *individual firms* react to energy price changes i.e. a 'bottom-up' view of the world, as opposed to 'top-down' evaluations of aggregate markets or industry portfolios;
- Lastly, in a country like China where domestic gasoline prices are highly regulated, and follow a different trend than international oil prices, there is potential to observe different reactions to both gasoline and oil prices. Doing so makes it possible to comment on the value of the existing regulation schemes. Further, considering gasoline prices is intuitive since very few firms require oil as an intermediate input into their production supply chain in any scale, but all firms require gasoline (either directly or indirectly) to support the delivery of goods, and movement of staff between home and work.

A short account of the research performed;

The research uses weekly frequency historical stock price data for more than 950 firms listed on the Shanghai Composite Index over the period 2005-2013. Although stock market data is available earlier to this, gasoline price information is not, limiting the sample period to start from 2005. These firms are many of the largest firms in China, and are drawn from many sectors of the economy, allowing for detailed inspection of the different effects across industry types.

A statistical asset pricing model is developed and applied to each firm separately, ensuring that firm specific reactions are understood in detail. The approach takes into consideration several important features including: the general

volatility present in financial markets; that the stock price changes of a firm are partly dictated by the market it sits within; that major events such as the global financial crisis can cause relationships between market variables to change abruptly; that markets may take some time to react to energy price changes; and lastly that markets may react in different ways to price rises than to price falls. These controls all help to increase the confidence and accuracy of understanding behind the effects of energy price shocks.

The main conclusions

The leading result is that in the long-run e.g. after accounting for the fact that some effects may take several weeks to occur, international oil price shocks impact the asset returns of around 90% of firms. Gasoline price shocks are even more widespread, affecting the financial outcomes of more than 95% of firms.

The reaction to price shocks may be either positive or negative, even for firms within the same industry, thus in effect and for want of a better term ‘anything is possible’. This result is not surprising since the unique reaction to price changes by specific firms will vary for a number of reasons, including internal managerial processes, the regulations and governance structures that may exist for the industry as well as (and perhaps most importantly) the choices and behaviors of investors.

Potential benefits, applications and policy implications of the work.

There are two areas of policy that this study contributes to. The first is related to financial markets and behaviors. The study offers information of direct interest to investors, in terms of providing information to help better understand portfolio choices when faced by volatile international energy markets. In application this may provide insights useful for portfolio design and hedging against commodity price risk.

The results contain information also of relevance to broader economic policy. The most obvious area is that of gasoline price regulation. Price regulation schemes are often initially implemented to help shield domestic firms against price shocks from international oil markets, allowing at the same time domestic oil producers to grow and mature, after which the extent of regulation can be lessened and in time removed. Over the years since the market reforms in China, the regulations on prices have clearly followed this trend, being particularly tight in the 1990’s, and becoming increasingly closely tied to international prices after this.

If such ‘shielding’ principles were the reason for implementing regulation, it is not at all clear they are being successful. Gasoline price revisions clearly impact firm value. The impacts are as large and in many cases even larger than those due to oil price changes. However it must be conceded that since regulated gasoline prices change less frequently than international oil prices generates a degree of stability which has its own advantages. It is difficult to say with any certainty that relaxing, or even removing, existing price regulation schemes could be advantageous, since the data make it difficult to set out counter-factual environments to test such hypotheses. It nonetheless appears that consideration on the role and value of existing price regulation in China may be worthwhile.