

ENERGY PRICES AND INDUSTRIAL COMPETITIVENESS: IS SHALE GAS TRIGGERING A US MANUFACTURING RENAISSANCE?

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Overview

The shale gas revolution has led to a significant decrease in the wholesale price of natural gas in the United States over the past decade, particularly with respect to other regions of the world. From 2005 to 2015, the ratio between the local wholesale natural gas price and the Henry Hub U.S. benchmark increased from 0.9 to 3.2 in Europe, and from 0.8 to 5.2 in East Asia. This price differential has been expected to trigger a relocation of manufacturing activity in the United States, particularly in the energy intensive sectors such as primary metals, and in sectors where natural gas is an important feedstock, such as plastics and organic chemicals.

This paper evaluates the extent of this relocation and assesses the impact of low domestic natural gas prices made available by shale gas extraction on US manufacturing competitiveness. To identify the impact of lowered domestic natural gas prices on industrial investment in the US, I consider a panel of developed economies to take advantage of the large gas price differentials aforementioned. Drawing on the empirical pollution haven hypothesis literature, I introduce a simple dynamic model of inward FDI flows to estimate the specific contribution of natural gas price to industrial FDI while controlling for market size, labour costs, real exchange rate, corporate tax rate and tariffs. This model is estimated using a generalized method of moments estimator on a panel of inward foreign direct investment (FDI) data in OECD countries from 2000 to 2014 across 14 manufacturing sectors, both energy intensive and non-energy intensive.

Methods

Dynamic panel data model, Generalized method of moments

Results

Natural gas prices have a statistically significant, yet limited impact on manufacturing competitiveness. The effect is limited to the most energy and/or natural gas intensive industries, most notably primary metals and plastics. While significant, the impact of natural gas prices on industrial FDI inward flows is smaller than that of labour costs differentials, corporate tax rate and real exchange rates. In particular, the improvement of the real exchange rate of the US dollar vis-a-vis the rest of the world and the reduction in US labour costs since the Great Recession appear to have had a greater impact on the relocation of some manufacturing capacity in the US.

Conclusions

The extent of the US manufacturing “renaissance” has remained limited so far. The decrease in natural gas price made possible by the extension of domestic shale gas production has been a significant yet small contributor to this renewal of US industry, and its impact has only been felt in the most energy and/or natural gas intensive sectors. This paper also offers a contribution to the broader literature on the linkage between energy prices and economic performance, illustrating the existence of a real positive impact of reduced energy price on the competitiveness of energy-intensive industrial sectors, even though this contribution is smaller than that of labor costs or real exchange rate differentials.

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