

Electricity Market Introduction in China: Form over Function?

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Overview

Following renewed central government efforts to set up electricity markets in 2015, China's provinces are adopting market-based approaches to replace portions of government production planning. The implementation of these markets varies by province, affecting short-run efficiency as well as longer term questions of investment and proposed regional market linkages. However, the drivers of this variation are unclear.

Methods

In this project, we examine whether provincial governments' implementation of markets depends on distributional goals for producers and consumers. In China, provinces can be characterized by the relative extent of provincially-controlled, state-owned energy producing firms and energy consuming firms located within their borders. These firms typically major contributors to the local tax base, as well as influential players in provincial industrial policy. We hypothesize that provinces with larger relative revenue shares of energy producing firms will enact systems that tend to preserve rents for these producers by keeping electricity prices above costs, while larger relative shares of energy consuming firms (weighted by energy requirement) will see systems where electricity prices approach costs, performing closer to the market ideal of full cost pass through. We further hypothesize that provinces where effective markets pose unfavourable outcomes for state-connected firms will implement markets later than those where outcomes are favourable. We test these hypotheses using a novel dataset at the provincial level comprised of monthly electricity market prices together with coal prices and ownership by sector. Implications for the continued evolution of electricity markets, as well as for coal and other energy types, are explored.

Results

Our early results suggest that distributional goals are only of several considerations that affect the way provinces implement electricity markets. We focus initially on evidence from two provinces (Guangdong and Shandong) that differ in their relative shares of electricity consuming and producing provincially-controlled, state-owned firms. We find evidence of relatively efficient pass-through of coal prices in Shandong province, which has a large share of state-connected energy consuming firms, while in Guangdong, which has a substantial share state-connected energy producing firms, we do not find such a relationship.

Conclusions

Our analysis of each province's market design suggest that political economy considerations affect the pace and direction of market reform. In particular, the relative distribution of rents across producers and consumers are consistent with more rapid and effective electricity market introduction in Shandong, while in Guangdong distributional effects alongside other factors may have also shaped market design. Our study provides new insight into the determinants of the pace and effectiveness of electricity market reform in a large developing country. Specifically, it highlights how local political economy and distributional considerations can shape system design and deployment. We also discuss how the creation of markets may be serving state goals beyond cost effectiveness alone.