

Measuring the Impact of Electricity Market Reform in a Chinese Context

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This paper seeks to discuss how the impact of electricity market reform should be measured in the context of the 2015 Power Sector Reform (PSR) in China which is the subject of this special issue.

A central idea in this paper is that the measurement of the impact of power market reform is not straightforward and therefore needs to focus on variables that are relevant and important for public policy. Better monitoring and data reporting by regulators can focus attention on the key variables and highlight problems that need to be addressed both ahead of and in real time.

We draw on extensive experience from around the world that would seem to be relevant to China. We proceed by first reviewing some relevant international reform experience and then applying this to the Chinese context. Our examples are necessarily selective but intended to be informative for a Chinese (and other reforming jurisdictions) audience.

We focus on some of the extensive previous literature which has documented reforms in cross-country and in single country studies. We pay particular attention to the European Union (EU) single electricity market, which is the largest integrated electricity market in the world, and covers (until the end of 2020) 518 million people. This market provides a model for a Chinese electricity market built out of provincial and regional (multi-provincial) markets. We also look at social cost benefit analyses of UK electricity market reforms. These reforms started early (from 1990) and provide well documented experiences of both how to measure reform impacts and how big the impacts might be. Chinese power market reform has been running for more than 6 years (since at least March 2015, with some trialing before then) and it has had a substantial impact on the price of industrial electricity (which we show below).

We look at the evidence from two leading provinces – Guangdong and Zhejiang - on the price effect and on exactly how those price effects have been achieved. We go on to offer some insights from the extensive regulatory reporting by leading regulators on market performance that is relevant to the 2015 PSR in China. We show that UK, Australian and US federal regulators and individual US market monitoring of reformed electricity markets

provide excellent examples of annual reporting on market performance that are worthy of study.

We conclude that there are many examples of good practice in this area, from around the world, which provide useful templates for China to follow. One important conclusion from previous studies is that in market economies individual electricity market reform elements can be expected to have a small net effect and hence that it is important to measure these carefully.

We show how the effects of PSR on industrial electricity prices have been measured for Guangdong and Zhejiang. The effects of the 2015 PSR look substantial and much larger than the impacts in market economies, indicating that there are multiple elements to Chinese power sector reform, the most significant of which appears to be the reduction of regulated generation prices and network charges, within a largely state owned industry. However, more detailed analysis is required to establish the extent to which this large price fall is due to the natural effect of the increasing scale of the Chinese electricity sector or the reduction of government revenues from the power sector. Even if the actual overall PSR effect in China is large, as suggested by simulation studies, it is important to separate out the impact of individual reform elements, such as the introduction of wholesale power markets.

We observe that proper state of the energy market reporting can ensure sustained benefits from PSR and appropriate regulatory learning from a process that is constantly evolving in the light of new information.

Finally, we note that China's PSR is a massive and worthy undertaking with global consequences. It therefore deserves careful attention to its measurement.

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