

Electricity Demand and Basic Needs: Empirical Evidence from China's Households

EPRG Working Paper 1416

Cambridge Working Paper in Economics

Xiaoping He and David Reiner

Abstract <An increasing block tariff (IBT) has been implemented nationwide in the residential sector in China since July 2012 as part of a process towards liberalizing electricity prices. However, knowledge about IBT design is still limited, particularly how to determine the electricity volume for the first block of an IBT scheme. Assuming the first block should be set based on some measure of electricity poverty, we attempt to model household electricity demand such that the range of basic needs can be established. We find that in Chinese households there exists a threshold for electricity consumption with respect to income, which might be considered a measure of electricity poverty, and the threshold differs between rural and urban areas. For rural (urban) families, electricity consumption at the level of 7th (5th) income decile households can be considered the threshold for basic needs or a measure of electricity poverty since household electricity demand in rural (urban) areas does not respond to income changes until after the 7th (5th) income decile. Further, for the case of China's electricity consumption, we find that if there is a saturation point, after which household energy needs would not rise further proportionately with increasing income, it is far from having been reached. Whereas the first IBT block was set at 240 kWh per household for Beijing, we estimate basic needs to be roughly 90 kWh per month for rural households and 150 kWh for urban households. The first IBT block therefore appears to have been set at a level that is too high, roughly equivalent to the average consumption of the *top* decile of urban residents. Over time however, given continued rapid growth, the IBT will begin to better reflect actual basic needs. >

Keywords Key Words

JEL Classification N55, P28, Q41, O13, I3

Contact xphe@xmu.edu.cn; dmr40@cam.ac.uk
Publication October, 2014