



Wind Energy Sector: Generating the Innovation Measure*

Dali T. Laxton

CERGE-EI†

ABSTRACT

In recent years, innovations in wind technology have substantially reduced the cost of electricity production. However, wind technologies still require subsidies to compete with conventional power generators. Whether these subsidy policies drive technological innovation is a valuable policy question. To investigate the matter, we first generate a unique innovation dataset which represents the production cost of wind machines installed in the US between 1998-2014, and is calculated using an engineering wind machine scaling model. Our data is exclusive because it identifies the purely engineering-driven process in innovation and isolates all the factors that change the production cost but do not contribute to innovation. Subsequently, we study the US wind technology policy environment and find that the subsidy policies determine the wind technology deployment targets. We then conjecture that government subsidy policies may influence production cost reduction through increased deployment. This kind of causality is usually known as the learning curve. Our data reveals very low predicting power of learning curves, implying that it might not be the best way to model the innovation process.

Keywords: innovation; learning curves; levelized engineering cost of energy; subsidies; wind machine vintages.

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