Impact of the Feed-in Tariff Policy on Renewable Innovation: Evidence from Wind Power Industry and Photovoltaic Power Industry in China

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Technological innovation is the key to develop wind power and photovoltaic power industries. Moreover, the feed-in tariff policy as a demand-pull policy is an important policy to support renewable energy technological innovation. Hence, the effect of the FIT policy on innovation in wind power and photovoltaic power technologies is investigated in this paper. However, the DID method is widely applied in estimating the policy impact, and the essence of which is to estimate the net benefits from the effect of a certain policy on its object.

Using the "difference-in-differences" method, this paper selects the patent counts of wind power technologies into the experiment group and the patent counts of photovoltaic power technologies into the control group to investigates the impact of feed-in tariff policy of wind power and the impact of the feed-in tariff policy designed according to differences in the distribution of resources on innovation in wind power technologies The conclusions drawn are as follow(1) The FIT policy can drive patenting in wind power technologies during the implementation period, but may play a relatively weak promoting role in technological innovation in the latter term due to the fact that fixed benchmark prices are not duly adjusted during the period; (2) The FIT policy designed according to differences in distribution of resources leads to higher level of innovation, which is beneficial from relatively reasonable zoning benchmark prices to reduce excessive support and unnecessary waste.

Finally, based on the fixed effect negative binomial regression model, this paper finds that the higher feed-in tariffs can increase the patent counts in photovoltaic power technologies. Though the higher FITs can promote innovation, with the commercial and mature development of renewable energy, the innovation will not only depend on higher FITs. The reasonable FITs make renewable energy more competitive than fossil fuel. Besides, the renewable portfolio standard (RPS) policy is also a way of renewable energy subsidies. Although the RPS policy has been implemented, it is still not perfect and there are still many problems. At present, the government needs to combine the FIT policy with the RPS policy. Furthermore, the FIT policy should be also connected with R&D spending, deployment strategy, electricity market, carbon trading market system and so on.

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