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POLICY CHANGE

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Energy Sustainability

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ABSTRACT: The increase in the share of supply from intermittent power sources changes the demand for power from traditional power plants. The power system demands more volume flexibility from traditional plants. Our goal is to better understand the impact of a reduction of flexibility in power supply on the costs of volume adjustments. We define flexibility as the capacity with which nominated power plants can adjust their output to unexpected changes in residual demand. We exploit a policy change in Spain that affected the power market. The policy, implemented in 2010, aims to provide a stimulus for producing power with domestic coal. The policy, in combination with a year with scant rainfall in the year after the policy was implemented, decreased the amount of flexibility in power supply and we use this to examine the effect of a change in flexibility on the costs of the power system. We find that a decrease in flexibility resulted in an increase in the costs of adjustments as those flexible plants driven out of the spot market by the coal fired plants compensated themselves by charging higher prices in the adjustment market. Policies as the one evaluated in this paper oriented to stimulate generation from less flexible and more pollutant conventional plants should therefore in any case be abandoned. In contrast to the Spanish coal policy, more flexible power plants should remain online and be prioritised against less flexible power plants.

JEL Codes: Q48, L11, L52, G14

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