Do Costs Fall Faster than Revenues? Renewable Electricity Subsidies' Dynamics by R. Green and T.-O. Léautier

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Energy Conference - TIGER Forum

June 6th 2014

Main Idea

- learning-by-doing externality on renewables
- market failure: too little entry
- common policy: feed-in-tariff paid to renewable producers
- subsidies' dynamics: more renewables reduce prices *and* marginals costs
- objective: provide a framework for quantifying this trade-off

Model Ingredients

- stochastic demand: consumtion unpredictability
- stochastic renewable supply: intermittent production
- one-dimensional uncertainty
- multiple generation technologies: stair-case supply curve
- price clears the market: renewables have dispatch priority

Main Results

- how tariff varies with renewable capacity?

1. more capacity leads to smaller marginal costs
2. more capacity leads to lower prices

- dynamics of feed-in-tariffs depends on slopes of:

1. learning curve
2. demand curve

- numerical results to UK market

Questions

- observability of learning curve
- carbon tax or renewable subsidy?
- role of uncertainty in the model
- relation between demand uncertainty and supply uncertainty
- measure of welfare: short and long-term

Further Questions

- economic rents and heterogeneity among renewable producers
- would more cost-efficient producers learn faster?
- timing of entry and adverse selection
- commitment or no commitment?