

Seminar 5: Electricity

1. In the lecture note the long-run supply curve for fossil power is assumed horizontal, while it is assumed rising for wind and solar. Explain why.
2. Describe the long-run equilibrium in a mixed system with fossil and wind power.
3. Assume that the government has two goals: (i) CO₂ from electricity should not exceed an exogenous limit E ; (ii) the share of wind in total electricity production per year should be at least s (where s is exogenous and between 0 and 1). Discuss how these two goals can be achieved using appropriate policy tools.
4. Assume that the government only has goal (ii) above. Discuss how this goal can be achieved using appropriate policy tools.
5. Assume now and below that the wind power capacity and capital stock in fossil power is given. Describe the properties of equilibrium prices and quantities through a year.
6. Assume that all power is from hydro, and the only constraint is the reservoir capacity (assumed given). Describe the properties of equilibrium prices and quantities through a year.
7. Consider the same problem as above, but assume that there is an upper limit on production for each hour. Assume this constraint is binding for some hours. How will the size of this constraint affect prices and quantities in all periods?
8. Consider finally a mix of fossil, wind and hydro power, and assume that the hydro part is large and there are no transmission constraints. Describe the properties of equilibrium prices and quantities through a year.