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Biofuels

Economics and Policy Issues: Comparative Values

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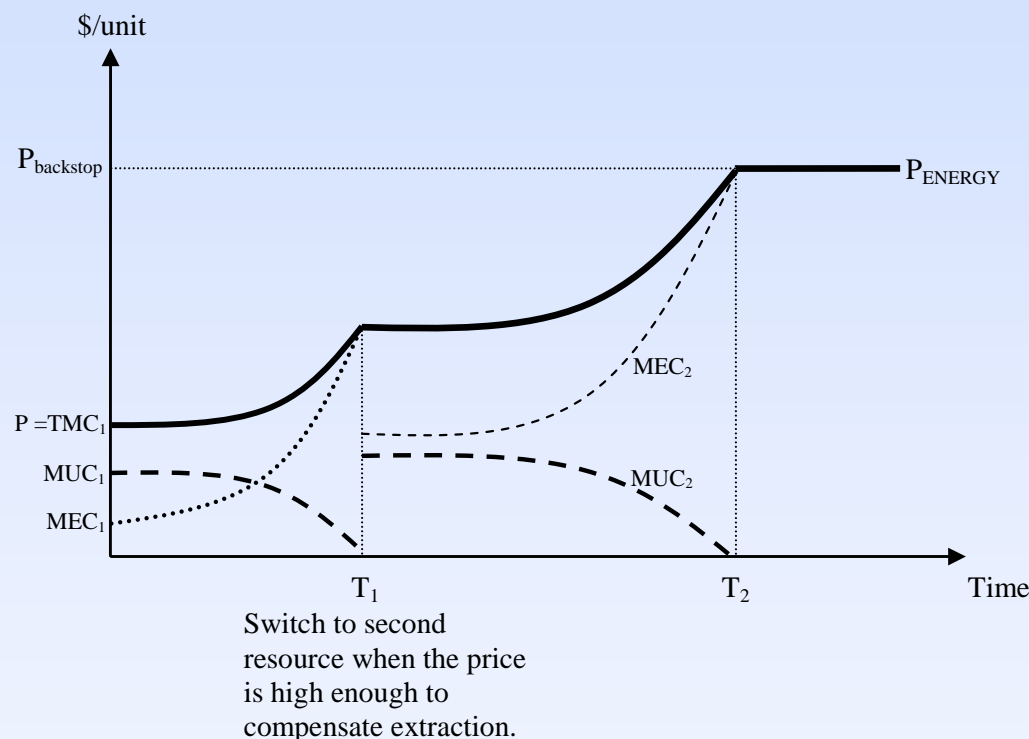
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Substitution in Energy Use

- Long run total marginal cost determines fuel choice through capital investment. Higher cost energy sources will be delayed until all other options are exhausted.



- Short run “switching” capabilities are constrained by the capital in place. The ability to switch is a real option that has value, especially in periods of high uncertainty.



Substitution in Energy Use (cont.)

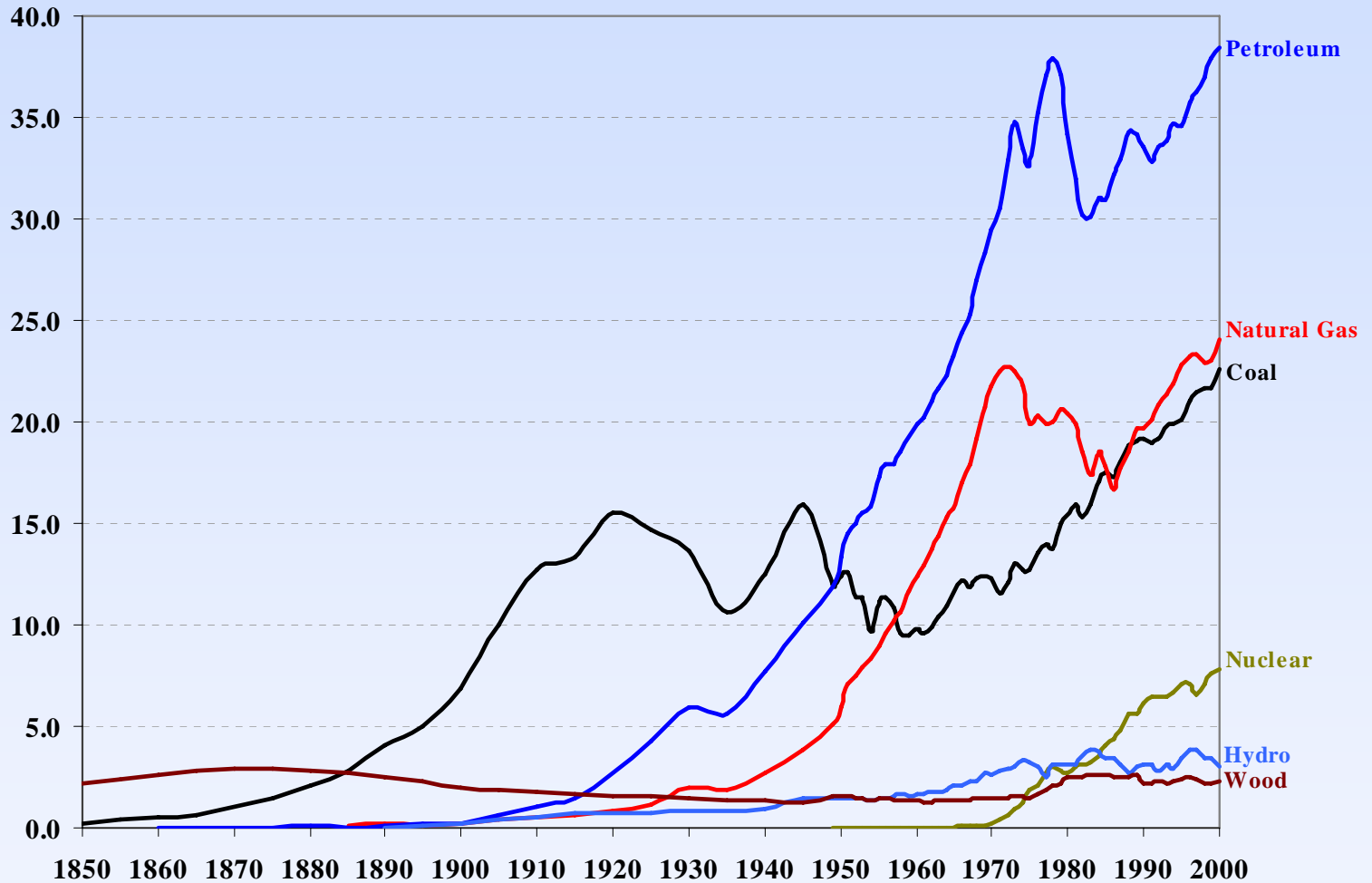
- Energy investments are long run decisions with lots of capital at risk. Thus, short run price fluctuations should not generally factor into the decision to invest. The energy firm will...
 - ◆ Assess the value of possible investments (must make assumptions regarding future prices and costs)
 - ◆ Rank investment opportunities based on merit
 - ◆ Develop assets with highest expected return
 - ◆ When prices and/or costs change relative rankings may be affected
 - ◆ In general, alternatives (non-conventional and frontier resources, renewables, etc.) only make commercial sense when they move up in the merit order
- So, we must ask ourselves whether or not prices are higher for long run or short run reasons!
- However, if price volatility is persistent, then some capital investments can be supported by short run rents.
- Moreover, spill-over benefits can be touted as ample reason for “exercising the option” of viable alternatives.



U.S. Energy Use (1850-2000)

Data source: EIA

Quadrillion BTUs



Industrialization →

Mobilization →

Electrification &
"Post" Industrialization →

Next?



Forces behind change...

- The influence of economics
 - ◆ Prices, cost, and technology determine the merit order of fuel choice
 - ◆ Investments will be made in order to maximize returns
- The influence of politics
 - ◆ Policy can drive the commercial decisions through direct subsidy, taxation, and/or regulation
 - ◆ The pretext of energy security/energy independence is a powerful one
 - ◆ Will it be used to change the merit order of alternatives relative to conventional technologies in end use?
 - ◆ Recent issue of Petroleum Economist the lead articles are
 - ❖ “Alternative Energy – Policy Sparks Interest”
- Merit order issues are often debated in the academic and commercial literature
 - ◆ Energy accounting, competing energy sources, other alternatives
- History teaches us that, regardless of the prevailing force, the long run promises change