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## Chapter 1: Oil prices, exhaustible resources and economic growth



James D. Hamilton

## Extract

One of the most elegant theories in economics is Hotelling's (1931) characterization of the price of an exhaustible natural resource. From the perspective of overall social welfare, production today needs to be balanced against the consideration that, once consumed, the resource will be unavailable to future generations. One option for society would be to produce more of the commodity today, invest the current marginal benefits net of extraction costs in some other form of productive capital, and thereby accumulate benefits over time at the rate of interest earned on productive capital. An alternative is to save the resource so that it can be used in the future. Optimal use of the resource over time calls for equating these two returns. This socially optimal plan can be implemented in a competitive equilibrium if the price of the resource net of marginal production cost rises at the rate of interest. For such a price path, the owner of the mine is just indifferent between extracting a little bit more of the resource today and leaving it in the ground to be exploited at higher profit in the future. This theory is compelling and elegant, but very hard to reconcile with the observed behavior of prices over the first century and a half of the oil industry. Figure 1.1 plots the real price of crude petroleum since 1860. Oil has never been as costly as it was at the birth of the industry.

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