Self Test

Sustainable Wealth in Fossil Fuel Rich Developing Countries

Click on True or False to test your knowledge of the chapter.

1. True False. Increasing efficiency in extraction can be a good way to extend oil resources. (contributed by LI, Ang)

2. True False. Energy reserves can be a blessing and a curse.

3. True False. Among the resource rich countries, Norway is the most developed in terms of the criteria discussed in the chapter. (contributed by YANG, Yang)

4. True False. Solar power is rather expensive compared to the other sources, so it is not good energy. (contributed by LIU, Cui)

5. **True False.** We can use the R/P ratio in industrial countries to estimate how long their fossil reserves will last. (contributed by WU Qianyu)

6. **True False.** Energy intensity is a good measure of how long fossil fuel reserves will last.

7. True False. Economically profitable reserves will eventually run out for RR countries. However, they can extend the revenues from natural resources by using the rents to invest in foreign assets or other forms of capital. (contributed by WU Qianyu)

8. True False. Suppose you have reserves of 90 that you will produce for 30 years and the interest rate is 6%. If you want to consume the same amount per year forever, you should produce 3 per year, save 0.51 and consume 2.49. (WU Qianyu)

9. **True False.** Suppose there are two countries-China and USA and two goods produced and consumed-resources (R) and non-resource good (N). If USA has an absolute advantage in both goods, there would not be any potential for gain by specialization. (contributed by LIU Sijing)

10. True False. For the resource rich countries discussed in the text, Mongolia is the only one where coal is the dominant fuel. (contributed by GE Lina)

11. True False. Norway is the only OECD country included in the resource rich countries. (contributed by GE Lina)

12. True False. The fuel industries in many of these RR countries were built up by foreign investment and expertise. (contributed by GE Lina)

13. True False. Carbon capture and sequestration (CCS) can also be used for CO2 disposal without enhance oil recovery (EOR). (contributed by GE Lina)

14. True False. The largest source of world primary electricity production in 2010 is nuclear.

15. True False. China is the largest fossil fuel producer included in the fossil rich countries in chapter 21. (contributed by SHA Jingjing)

16. True False. Russia is the only one of our RR countries that has any nuclear power. (contributed by SHA Jingjing)

17. **True False.** Fossil Fuel Rich Developing Countries are rich and people have affluent life styles from receiving the government's allowance. (contributed by Fan Tianxiao)

18. True False. If a household consumes an average 2.0 kWh/hour, a solar photovoltaic cell has an efficiency of 20% (useable W perWatt of solar insolation) and useable sun shine averages 10 hours per day, the number of square meters of PV required would be 30. (contributed by LI Shuai)

19. True False. There is a tendency for the RR-countries to have poorer infrastructure and health than their non-RR counterparts. (contributed by LIU Jing)

20. True False. A tax or permit requirement on carbon dioxide cannot affect untapped fossil fuels. (contributed by LUO Tian)

21. **True False.** Many of the RR countries are more energy intensive. (contributed by LUO Tian)

mines.edu/b2101.pdf. See this file for model assumptions and proofs of the results.

22. True False. Ramsey (1928) is the earliest economic growth model. His objective was to choose hours worked and savings to be invested in productive capital to move society towards a bliss point or maximum level of consumption in an optimal way.

23. True False. In Solow's neoclassical growth model, the change in the capital labor ratio across time is:

$$\dot{k} = (\delta + n)k - sf(k)$$

Where k is the capital labor ratio, $\dot{k}$ is the change in capital labor ratio or the time derivative of k, δ is the rate of depreciation of capital, n is the growth rate of capita, s is the rate of savings, and $f(k)$ is output per labor.

24. **True** **False.** The steady state capital accumulation rule in Solow's model is

$$sf(k) = (\delta + n)k$$

25. **True** **False.** Solow's *Golden Rule of Capital Accumulation* shows us the steady state capital labor ratio (*k*) that maximizes steady state per capita consumption (*c*). The rule tells us to choose *k* such that $f_k = (n + \delta)$.

26. **True** **False.** In Solow's model, there is no discounting or utility maximization. In his model with no technical change, when we reach steady state, income per capita stays constant. With discounting and utility maximization, Chiang (1992) finds that if the marginal product of capital per capita is greater than the discount rate (ρ) plus depreciation (δ), income per capita will be increasing, if it is smaller income per capita will be decreasing.

27. **True** **False.** Das Gupta and Heal (1974) specifically include natural resource non-reproducible capital and reproducible capital in their model. Since nature gives us fossil resources for free, they show that non-reproducible capital should be extracted until its marginal return is zero.

28. **True** **False.** In a classic article, Hartwick (1977) shows that income per capita can be maintained if all resource rents are invested.