

**MBA603**

**HOMEWORK 1**

**Instructor: Stephen Layson**

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**(4) 1.** The world short run demand and supply for crude oil are given by:

$$P = 105 - Q_d \text{ (demand)}$$

$$P = 5 + \frac{1}{3}Q_s \text{ (supply)}$$

In the equations above,  $P$  is price per barrel measured in dollars,  $Q_d$  is quantity demanded per day measured in millions of barrels, and  $Q_s$  is quantity supplied per day also measured in millions of barrels.

- (a) Solve algebraically for the equilibrium price and output in this market. Explain the meaning of the concept of equilibrium price in this context. Illustrate the equilibrium with a diagram. Calculate total daily expenditure on oil (assume the oil market is in equilibrium).
- (b) Suppose that world income increases sharply over the next few years because of an unusually robust recovery. Explain what effect this would have on the price and output of oil. Illustrate your answer with a supply and demand diagram. Make sure you show and explain whether the demand and/or supply curve shifts.
- (c) Suppose over the next year that there is turmoil in the Mideast due to war in Iraq which curtails oil exports from this region. Explain how this would affect the world oil market. Make sure you show and explain whether the demand and/or supply curve shifts.
- (d) Suppose that there is a major technological advance in fuel cells which leads to the widespread replacement of the internal combustion engines in cars. How would this affect the world market for oil? How would it affect the market for oil exploration? Explain and illustrate with supply and demand diagrams.

(2) 2. Under what circumstances will a change in supply (with no change in the demand curve) result mainly in a change in quantity? Under what circumstances will a change in supply (with no change in the demand curve) result mainly in a change in price?

Under what circumstance will a change in demand (with no change in the supply curve) result mainly in a change in quantity? Under what circumstance will a change in demand (with no change in the supply curve) result mainly in a change in price?

In what special case will a change in supply (with no change in the demand curve) have no effect on price? Use diagrams to illustrate your answers.

(2) 3. Let + stand for increase, let – stand for decrease and let 0 stand for no change. A question mark (?) means ambiguous. Let D stand for demand, let S stand for supply, let  $\bar{P}$  stand for equilibrium price, let  $\bar{Q}$  stand for equilibrium quantity and let TE stand for total expenditure. Fill out the following table and illustrate each row with a diagram.

S	D	$\bar{P}$	$\bar{Q}$	TE
-	0			
0	-			
+	0			
0	+			
-	+			
+	-			
+	+			

(2) 4. Assume the world short-run price elasticity of demand for oil is -.3 and the world long-run price elasticity of demand for oil is -.7. Assume the world income elasticity of demand for oil is .6.

If the world price of oil decreases from \$30 per barrel to \$25 per barrel because of an increase in OPEC production, how will this price decrease affect world consumption in the short-run? in the long-run? What will happen to world expenditure on oil in the short run and long run?

Suppose initially that world oil output is 70 million barrels of oil a day. If world oil production suddenly decreased by 7 million barrels per day because the OPEC cartel decided to increase its output, how would this affect the price of oil in the short-run? Explain.

If world income is growing at 4% per year, what will be the annual growth in world oil consumption? Assume in answering this question that oil prices remain constant. How would your answer change if you didn't assume that oil prices were constant? Explain.

