

**Q1:** Suppose that the current management chooses the value of the firm,  $q \in [0, 1]$ , through some policy, and has utility is  $U(q) = 1 - \sqrt{q}$ .

(i): If he faces no threat of takeover, which value of the firm will he choose?

Now suppose that the charter of the firm allows for dilution  $1 > \phi > 0$  so that the management faces the threat of takeover in the future (note that the firm's value could be 1 if it is properly run). The management does not know the exact cost of takeover ( $c$ ), but the raider knows. For the management, it is a random variable uniformly distributed on  $[0, 1]$ .

(ii): Show that takeover happens if  $\min(\phi, 1 - q) \geq c$ .

(iii): What is now the optimal choice of  $q$  for the current management?

(iii): What is the optimal choice of  $\phi$  for the founding investors?