It has been observed that many commercial enterprises charge annual membership dues instead of pricing each unit of consumption (amusements parks, sport clubs, theaters, etc.)

Oi (1971) proposed an explanation for this observation

The Monopoly is unable to extract the entire consumer surplus.

Club-visiting consumers: Suppose that consumers gains satisfaction from club visits

$Q$ is the number of visits and $m$ the amount of money spent on other goods

The consumer’s fixed income is $I$

$\phi$ is the membership dues and $p$ the price per visit
Two-Part Tariff

- The consumer’s budget constraint is
  \[ m + \phi + pQ \leq I \]

- The consumer’s utility is
  \[ U \equiv m + 2\sqrt{Q} \]
Two-Part Tariff

- Let us derive the consumer’s demand curve
  \[
  \max_Q U = I - \phi - pQ + 2\sqrt{Q}
  \]
  yielding the demand function
  \[
  p = \frac{1}{\sqrt{Q^d}} \text{ or } Q^d = \frac{1}{p^2}
  \]

- **No club annual membership dues**
  - suppose that the club has a limited capacity \( K > 0 \) and it only charges a price \( p \). Hence, \( \phi = 0 \)

- The monopoly club chooses \( Q \) to maximize
  \[
  \pi \equiv pQ = \frac{1}{\sqrt{Q}} Q = \sqrt{Q}
  \]
  Hence the monopoly club sets the price so that the demand equal its capacity. \( p = \frac{1}{\sqrt{K}} \) or \( Q = K \) and \( \pi = \sqrt{K} \)
Two-Part Tariff

- **Annual membership dues**
- *The club offers the consumer to pay a fixed amount of $\phi > 0$ and to receive a package containing a fixed number of free visits.*

\[ \max \pi(\phi) = \phi \]
\[ \text{s.t. } I - \phi + 2\sqrt{K} \geq I \]

Hence $\phi = 2\sqrt{K}$ and $\pi(\phi, p = 0) = 2\sqrt{K}$ which is higher than the case of no annual membership dues!
In practice a club would hesitate charging exactly $\phi = 2\sqrt{K}$. Reasons:

- A small mistake in estimating the exact location of $U_0$ or consumer’s income may result in no sales at all.
- Consumers may have heterogeneous preferences (a high membership may induce only a partial participation).
Nonuniform Pricing

- A tariff for one or more goods in which the consumer’s total outlay does not simply rise proportionately with the amounts of goods the consumer buys.
- Demand for local phones Households $p_H = 12 - 2q_H$ and Business $p_B = 6 - \frac{q_B}{2}$. assume $c = 0$
How to set the price schedule in a way that would induce the two different groups of consumers to pay different prices and consume different quantities.

Let us investigate the following price schedule.