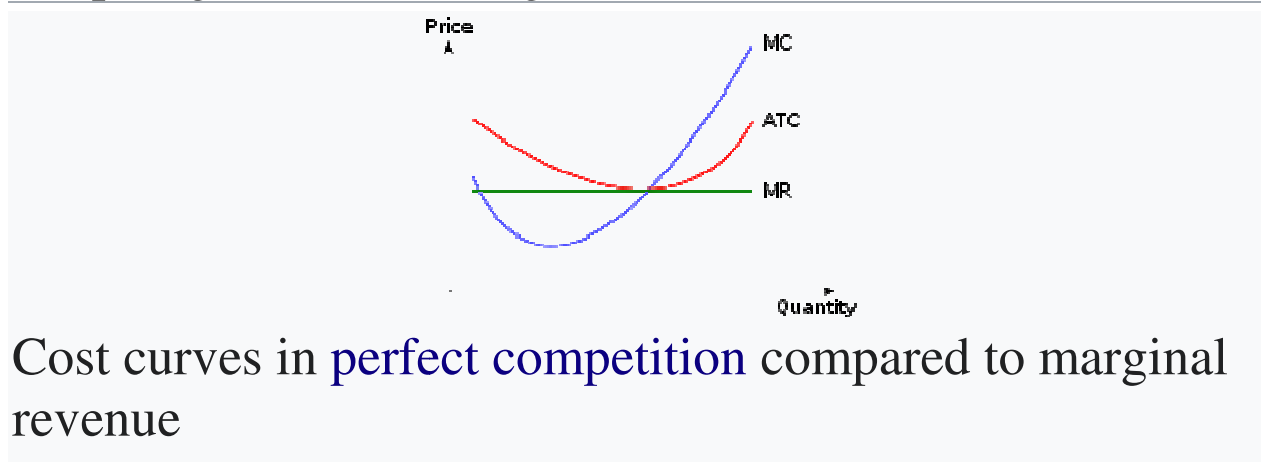


Graphing cost curves together with revenue curves[[edit](#)]



Cost curves in [perfect competition](#) compared to marginal revenue

Cost curves can be combined to provide information about firms. In this diagram for example, firms are assumed to be in a [perfectly competitive](#) market. In a perfectly competitive market the price that firms are faced with in the long run would be the price at which the marginal cost curve cuts the average cost curve, since any price above or below that would result in entry to or exit from the industry, driving the market-determined price to the level that gives zero [economic profit](#).

Cost curves and production functions[[edit](#)]

Assuming that factor prices are constant, the production function determines all cost functions.^[4] The variable cost curve is the constant price of the variable input times the inverted short-run production function or total product curve, and its behavior and properties are determined by the production function.^{[3]:209 [nb 1]} Because the production function determines the variable cost function it

necessarily determines the shape and properties of marginal cost curve and the average cost curves.^[4]

If the firm is a perfect competitor in all input markets, and thus the per-unit prices of all its inputs are unaffected by how much of the inputs the firm purchases, then it can be shown that at a particular level of output, the firm has economies of scale (i.e., is operating in a downward sloping region of the long-run average cost curve) **if and only if** it has increasing returns to scale.^{[7][8][9]} Likewise, it has diseconomies of scale (is operating in an upward sloping region of the long-run average cost curve) if and only if it has decreasing returns to scale, and has neither economies nor diseconomies of scale if it has constant returns to scale. In this case, with perfect competition in the output market the long-run market equilibrium will involve all firms operating at the minimum point of their long-run average cost curves (i.e., at the borderline between economies and diseconomies of scale).

Relationship between different curves[[edit](#)]

- Total Cost = Fixed Costs (FC) + Variable Costs (VC) = Average Total Cost (ATC) x Quantity (Q)
- Marginal Cost (MC) = dC/dQ ; MC equals the slope of the total cost function and of the variable cost function
- Average Total Cost (ATC) = Total Cost/Q
- Average Fixed Cost (AFC) = FC/Q
- Average Variable Cost (AVC) = VC/Q.

- $ATC = AFC + AVC$
 - At a level of Q at which the MC curve is above the average total cost or average variable cost curve, the latter curve is rising. ^{[10]:212}
 - If MC is below average total cost or average variable cost, then the latter curve is falling.
 - If MC equals average total cost, then average total cost is at its minimum value.
 - If MC equals average variable cost, then average variable cost is at its minimum value.