

**Questions: When exactly you would use the average total cost, average profit, marginal profit, total cost, total variable cost, and total fixed cost.**

I will give you one example:

How do you know when enough is enough? That is, how long can you lose money (defined as negative economic profit) as a producer before you shut the doors?

Profit maximizing firms operate at an economic loss as long as they can cover their variable costs, that is they choose a profit maximizing output level  $Q$  such that  $MR = MC$ .

If you are making a loss at this  $MR=MC$ , that is if at  $MR=MC$  level of output  $Q$  you have  $TR < TC$  then should you shut down?

$TR < TC$  at  $Q$  is the same as  $TR/Q < TC/Q$  which is  $AR < ATC$  (but also remember  $AR = TR/Q = P * Q / Q = P$ ).

So you are losing money if  $P < ATC$ , that is you lose money if on average you are paying more to produce/provide the item than you can get in price.

So the shut down point is not to shut down if  $P < ATC$ , but to shut down if  $P < AVC$  since capital cost is fixed in the short run and you bear that cost whether you shut down or not. By shutting down you only save  $AVC$ , so if you can get  $P \geq AVC$  continue to produce.

Say a coffee shop has variable costs of water, coffee and labor and fixed costs of rent. Then if you shut the doors, you get no revenue ( $TR=0$ ) and you bear no variable costs ( $TVC=0$ ), but you still have to pay rent or your mortgage on the property (at least until you can sell it and that is a definition of the long run.)

So if  $TR < TVC$  which is  $P < AVC$  then shut down.

That is just one example.

Extension:  $P = MR$  in a competitive market place and  $P > MR$  in a monopolistic world. In both the relationship between  $P$  and  $MR$  is  $MR = P(1 + (1/Ed))$  where  $Ed$  is the elasticity of demand facing the firm which is  $Ed = \text{infinity}$  for perfect competition and  $Ed < \text{infinity}$  for all other firms. See how this effects your decision to shut down...