

# Overshifting by a single-price monopolist

## TheoryGuru applications

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Load Economicreasoning package only if it is not already loaded

```
If[Length@Names["PLTools`*"] < 10,  
  Get["http://economicreasoning.com"]]
```

### Setup

```
profits[q, a] := q W[q] - g[q, a]
```

```
ProfitsAreMaximized = {  $\frac{\partial \text{profits}(q, a)}{\partial a} = 0$ ,  $\frac{\partial^2 \text{profits}(q, a)}{\partial q^2} < 0$ };
```

```
BasicAssumptions = { W'(q) < 0 (* Demand slopes down *),  
   $\frac{\partial^2 g(q, a)}{\partial q^2} \geq 0$  (* MC does not *),  
   $\frac{\partial^2 g(q, a)}{\partial q \partial a} > 0$  (* a increases MC (a definition) *),  
  q > 0};
```

```
ConcaveDemand = W''(q) ≤ 0;
```

```
PassThroughRate =  $\frac{\partial W(q)}{\partial a} / \frac{\partial^2 g(q, a)}{\partial q \partial a}$ ;
```

### Result

```
TheoryGuru[{ConcaveDemand, ProfitsAreMaximized, BasicAssumptions},  
  PassThroughRate < 1]
```

```
True
```

### Variable interpretations