

# Inntekter, Kostnader og Profitt

- Monopol vs. Fullkommen fri konkurranse
- Inntekter
- Kostnader
  - Variable og Faste
  - Direkte og Indirekte
- $\text{Profitt} = \text{Inntekter} - \text{Kostnader}$
- Samfunnsøkonomisk implikasjoner

# Selskapets mål

Maksimer verdien

$$Verdi = f\left(\frac{\text{Inntekter} - \text{Kostnader}}{\text{Kapital}}, \text{risiko}\right)$$

- Minimere negativ miljøpåverknad
- Ta sosialt ansvar

$$\text{Inntekter} = \text{Mengde} \cdot \text{Pris}(\text{Mengde})$$

Monopol (1)    Oligopol (få)

Fullkommen fri konkurranse (mange)

Fri att sette pris

Priset satt

# Kostnader = Ressursbruk

- **Material**
- **Manpower**
- **Machines**
- **Miscellaneous**
- **Money**



$$r \geq \frac{\text{Inntekter} - \text{Kostnader}}{\text{Kapital}} \Rightarrow \text{Inntekter} - \text{Kostnader} - r \cdot \text{Kapital} \geq 0$$

# Inntekter

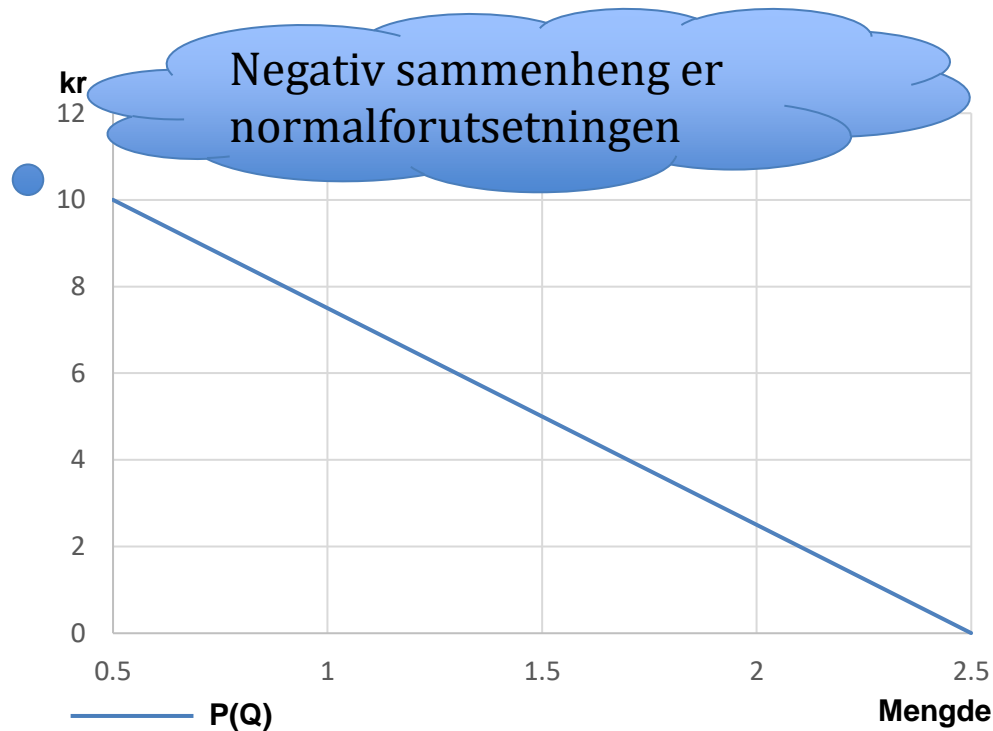
# Inntekter = Mengde · Pris(Mengde)

P(Q): Pris (Eng. Price)  
Indirekte etterspørsel  
(Eng. Indirect demand)

- $\frac{dP}{dQ} < 0$
- Fri konkurranse  $\Rightarrow$   
Pris konstant
- $P(Q) = 12.5 - 5Q$

Q(P): Mengde (Eng. Quantity)  
Direkte etterspørsel  
(Eng. Direct demand)

- $Q(P) = P^{-1}(Q)$
- $Q(P) = 2.5 - 0.2P$



# Inntekter = Mengde · Pris(Mengde)

$TR(Q)$  = Totale inntekter  
(Eng. Total Revenue)

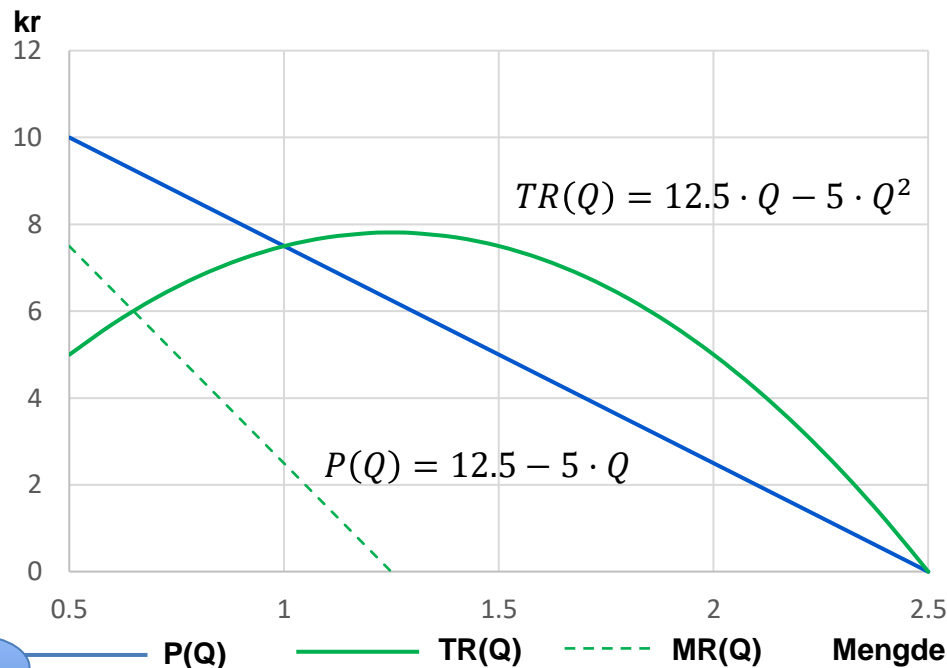
- $TR(Q) = Q \cdot P(Q) =$   
 $12.5 \cdot Q - 5 \cdot Q^2$

$MR(Q)$  = Marginalinntekt,  
grenseinntekt  
(Eng. Marginal Revenue)

- $MR(Q) = \frac{dTR}{dQ} =$   
 $12.5 - 10 \cdot Q =$   
 $P(Q) + Q \cdot \frac{dP}{dQ} =$   
 $(12.5 - 5 \cdot Q) - Q \cdot 5$

Økt inntekt  
pga én  
enhet mer

Tapt inntekt pga.  
prisreduksjon for  
alle enheter



# Elastisitet

$\varepsilon(Q)$ : Etterspørselselastisitet eller egenpriselastisitet  
(Eng. Price elasticity of demand)

$$\varepsilon = - \frac{dQ}{dP} \cdot \frac{P}{Q} = \frac{dQ/Q}{dP/P}$$

$\varepsilon < 1$  *etterspørselen er uelastisk* •

$\varepsilon > 1$  *etterspørselen er elastisk* • • •

$\varepsilon = 1$  *etterspørselen er enhetselastisk*

Relativt mindre endring i  
mengde enn pris

Relativt større  
endring i mengde  
enn pris



# Marginalinntekt og elastisitet

$$MR(Q) = \frac{dTR}{dQ} = P + Q \frac{dP}{dQ} = P \left[ 1 + \frac{Q}{P} \frac{dP}{dQ} \right] = P \left[ 1 - \frac{1}{\varepsilon} \right]$$
$$\underbrace{\left( \frac{Q}{P} \frac{dP}{dQ} \right)}_{\left( \frac{dQ}{dP} \frac{P}{Q} \right)^{-1} = (-\varepsilon)^{-1}}$$

$\varepsilon < 1$     *etterspørselen er uelastisk*     $\Rightarrow MR < 0$

$\varepsilon > 1$     *etterspørselen er elastisk*     $\Rightarrow MR > 0$

$\varepsilon = 1$     *etterspørselen er enhetselastisk*     $\Rightarrow MR = 0$

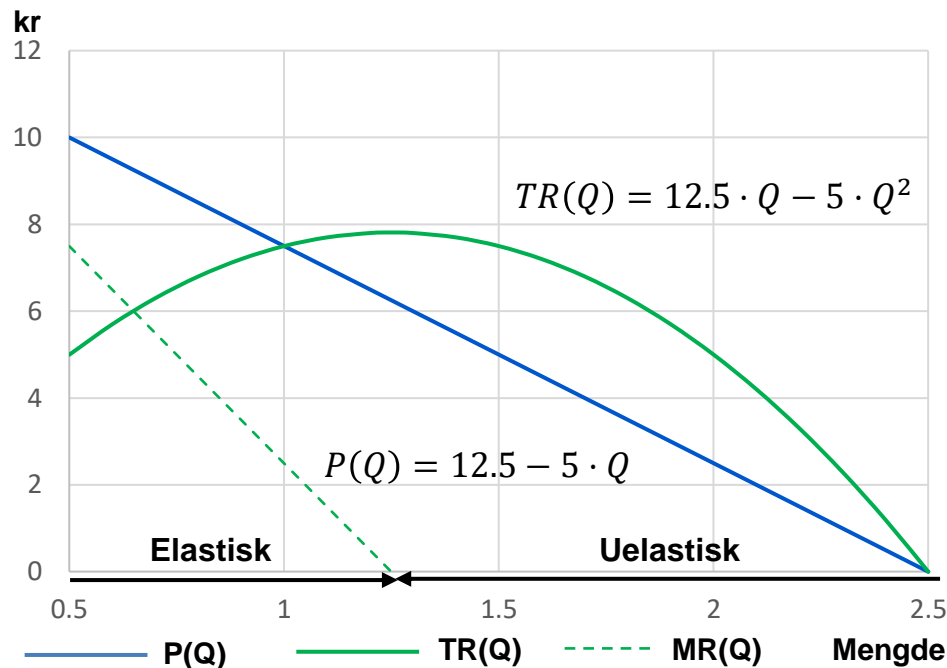
# Inntekter = Mengde · Pris(Mengde)

$TR(Q)$  = Totale inntekter  
(Eng. Total Revenue)

- $TR(Q) = Q \cdot P(Q) =$   
 $12.5 \cdot Q - 5 \cdot Q^2$

$MR(Q)$  = Marginalinntekt,  
grenseinntekt  
(Eng. Marginal Revenue)

- $MR(Q) = \frac{dTR}{dQ} =$   
 $12.5 - 10 \cdot Q =$   
 $P(Q) + Q \cdot \frac{dP}{dQ} =$   
 $(12.5 - 5 \cdot Q) - Q \cdot 5$



# Markedslikevekt

$Q_D(P)$ : Etterspurt mengde

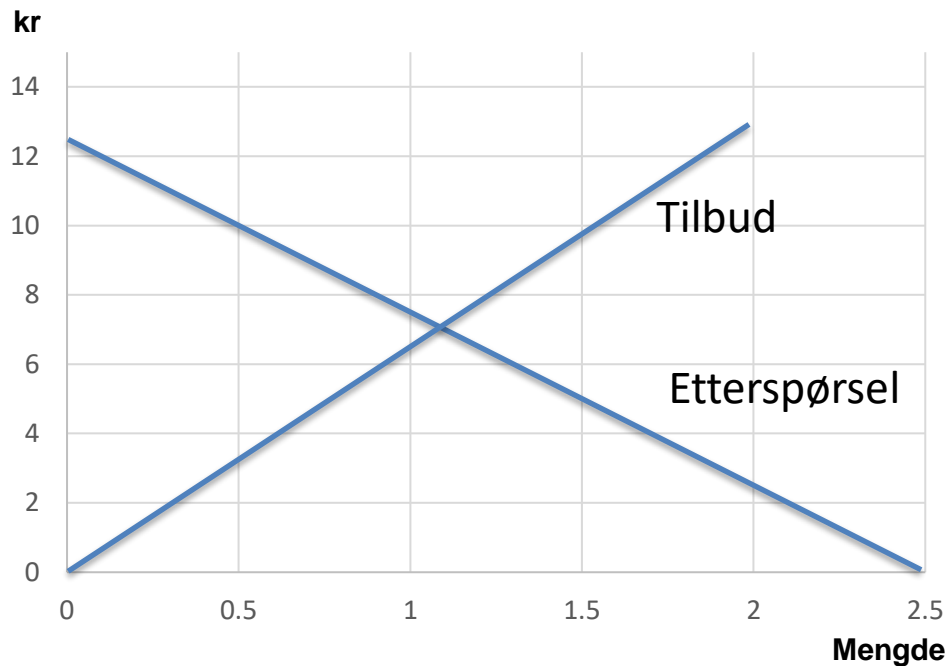
- $\frac{dQ_D}{dP} < 0$

$Q_P(P)$ : Tilbudt mengde

- $\frac{dQ_P}{dP} > 0$

Markedslikevekt,  $Q_M$

- Tilbud = Etterspørsel
- $MC(Q_M) = P(Q_M)$



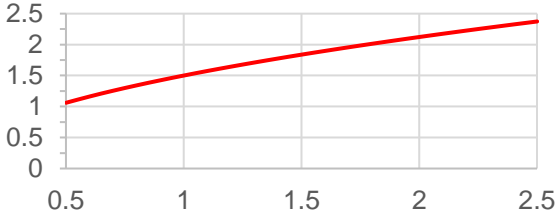
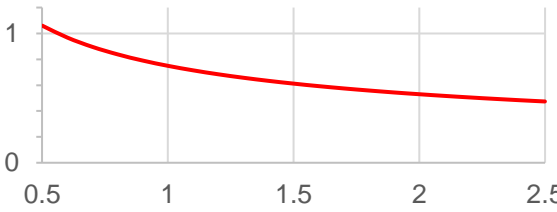
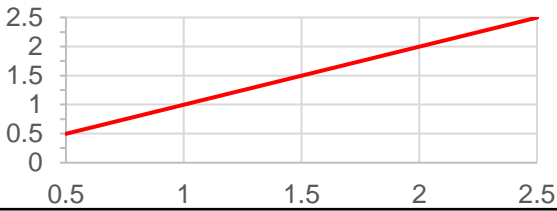
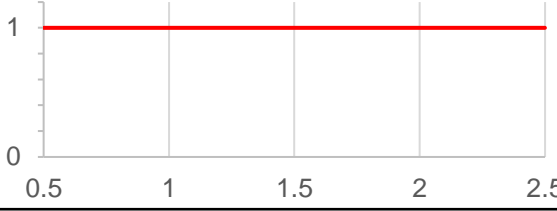
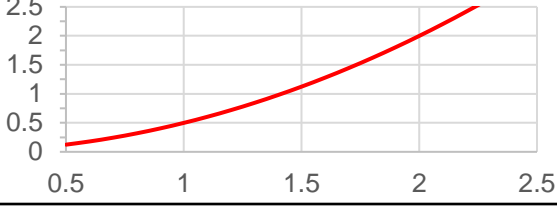
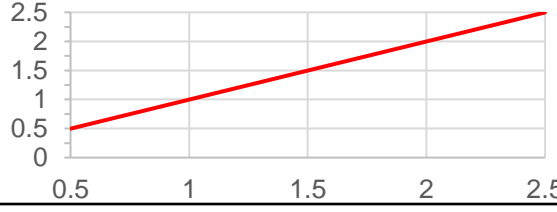
# **Variable og Faste Kostnader**

# Kostnader, klassifisering

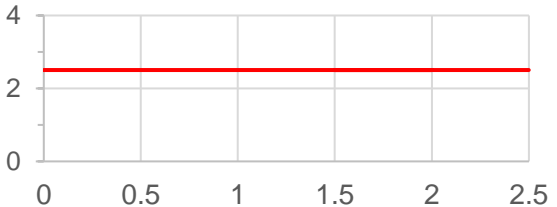
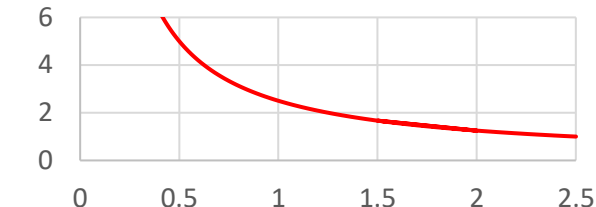
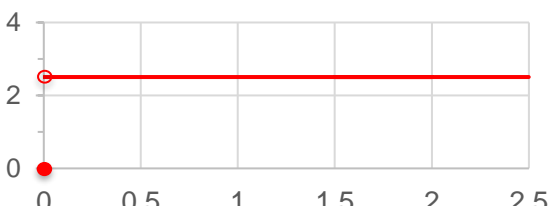
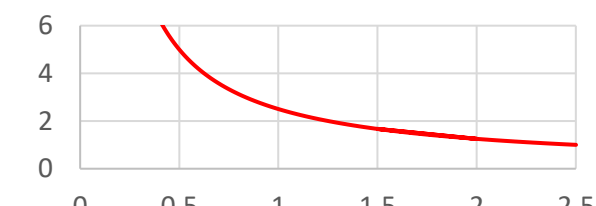
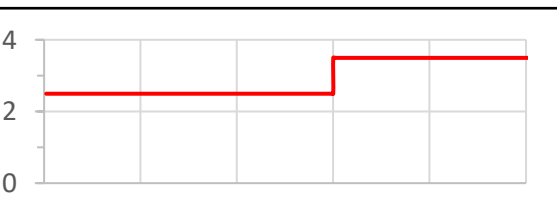
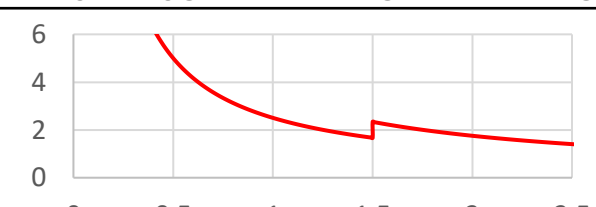
## Variable vs. Faste

- Variable kostnader varierer med mengden.
- Faste kostnader er den samme uavhengige av mengden.

# Variable kostnader, $VC(Q)$

Variant	Variable kostnad (total) – $VC(Q)$	Marginal kostnad – $MC(Q)$
Underproporsjonale Konkav	 <p>The graph shows a concave curve starting at (0.5, 1) and increasing at a decreasing rate. The x-axis ranges from 0.5 to 2.5, and the y-axis ranges from 0 to 2.5.</p>	 <p>The graph shows a downward-sloping curve starting at (0.5, 1) and decreasing as quantity increases. The x-axis ranges from 0.5 to 2.5, and the y-axis ranges from 0 to 1.</p>
Proporsjonale Lineær	 <p>The graph shows a straight line starting at (0.5, 0.5) and increasing linearly. The x-axis ranges from 0.5 to 2.5, and the y-axis ranges from 0 to 2.5.</p>	 <p>The graph shows a horizontal line at y = 1, indicating constant marginal cost. The x-axis ranges from 0.5 to 2.5, and the y-axis ranges from 0 to 1.</p>
Overproporsjonale Konveks	 <p>The graph shows a convex curve starting at (0.5, 0.1) and increasing at an increasing rate. The x-axis ranges from 0.5 to 2.5, and the y-axis ranges from 0 to 2.5.</p>	 <p>The graph shows a straight line starting at (0.5, 0.5) and increasing linearly. The x-axis ranges from 0.5 to 2.5, and the y-axis ranges from 0 to 2.5.</p>

# Faste kostnader

Variant	Faste kostnad – FC	Faste kostnad per styck
Faste		
Driftsavhengige		
Sprangvis Faste		

# Total- og marginalkostnader

TC(Q): Totale kostnader som funksjon av mengden Q  
(Eng. Total Cost as function of the Quantity)

$$TC(Q) = FC + VC(Q)$$

MC(Q): Marginalkostnader, grensekostnader

- (Eng. Marginal Cost)

- $MC(Q) = \frac{dTC}{dQ} \Rightarrow VC(Q) = \int_0^Q MC(q) dq$

Ekstra kostnad  
for én enhet mer



# Gjennomsnittskostnad

$AC(Q)$ : Gjennomsnitts-, enhetskostnad  
(Eng. Average Cost)

$$AC(Q) = TC(Q)/Q$$

$AC^*$ : Minimal gjennomsnittskostnad

$$\frac{dAC}{dQ} = 0 = \frac{dTC/dQ}{Q} - \frac{TC}{Q^2} = \frac{1}{Q} \left( \frac{dTC}{dQ} - \frac{TC}{Q} \right)$$



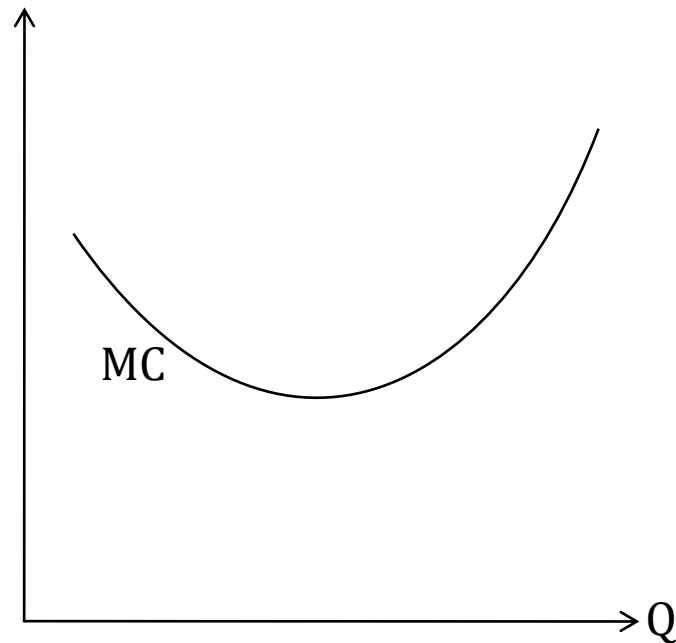
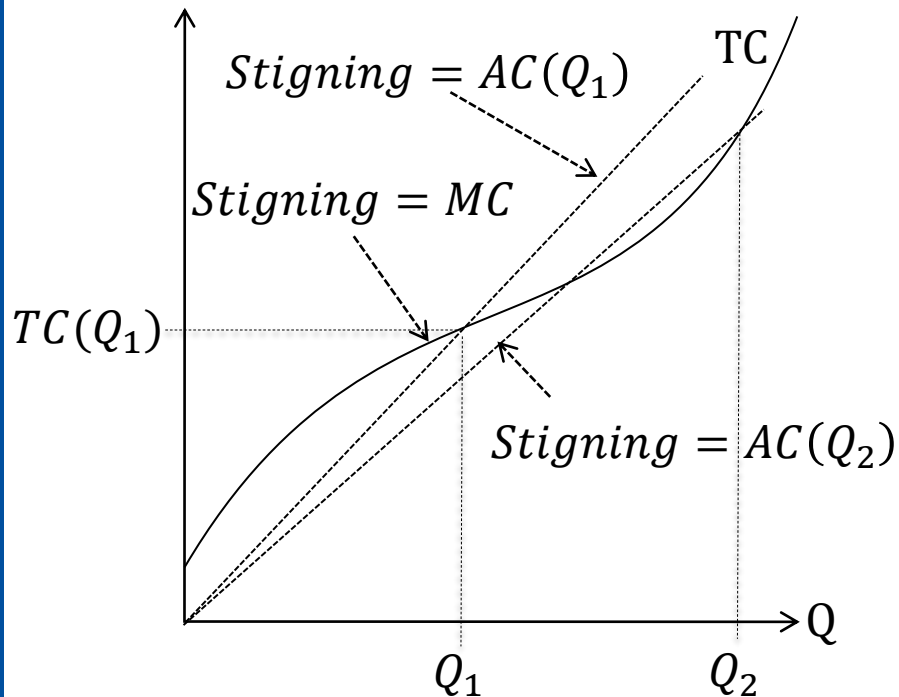
MC



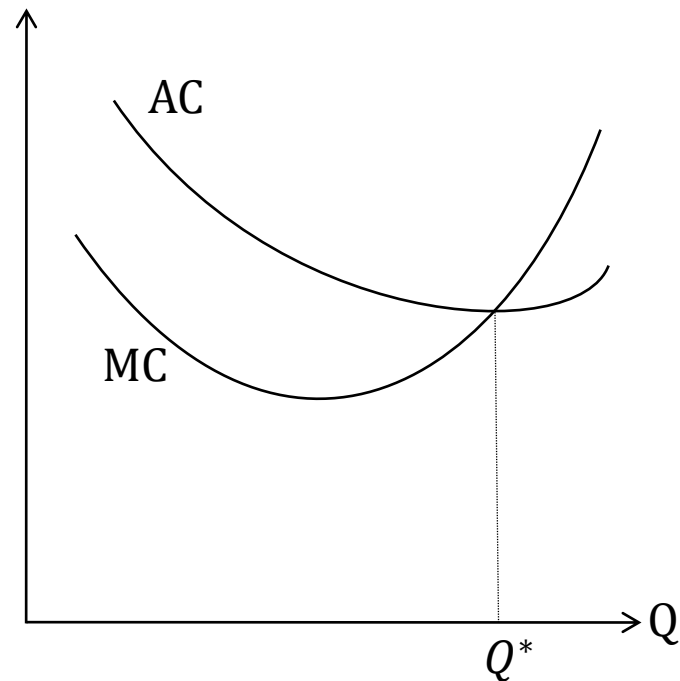
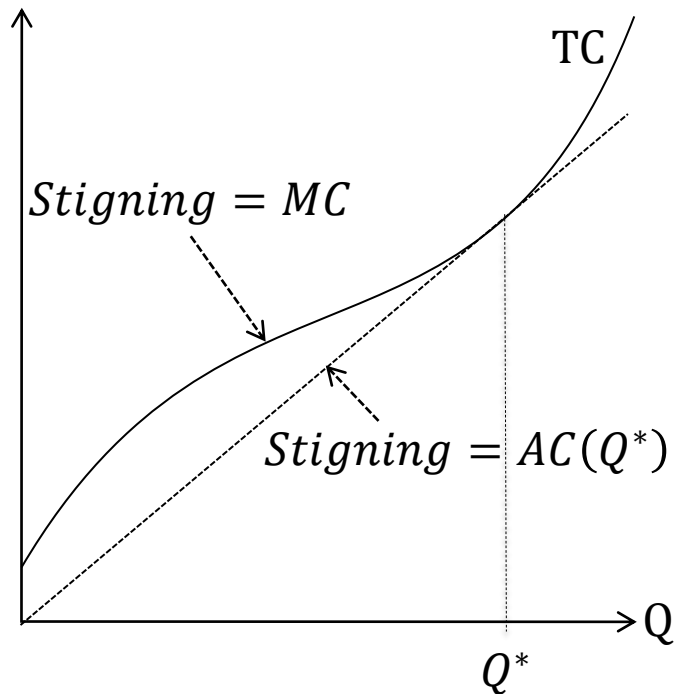
AC

# Minimal Gjennomsnittskostnad

$$AC(Q_1) = TC(Q_1)/Q_1$$



# Minimal Gjennomsnittskostnad



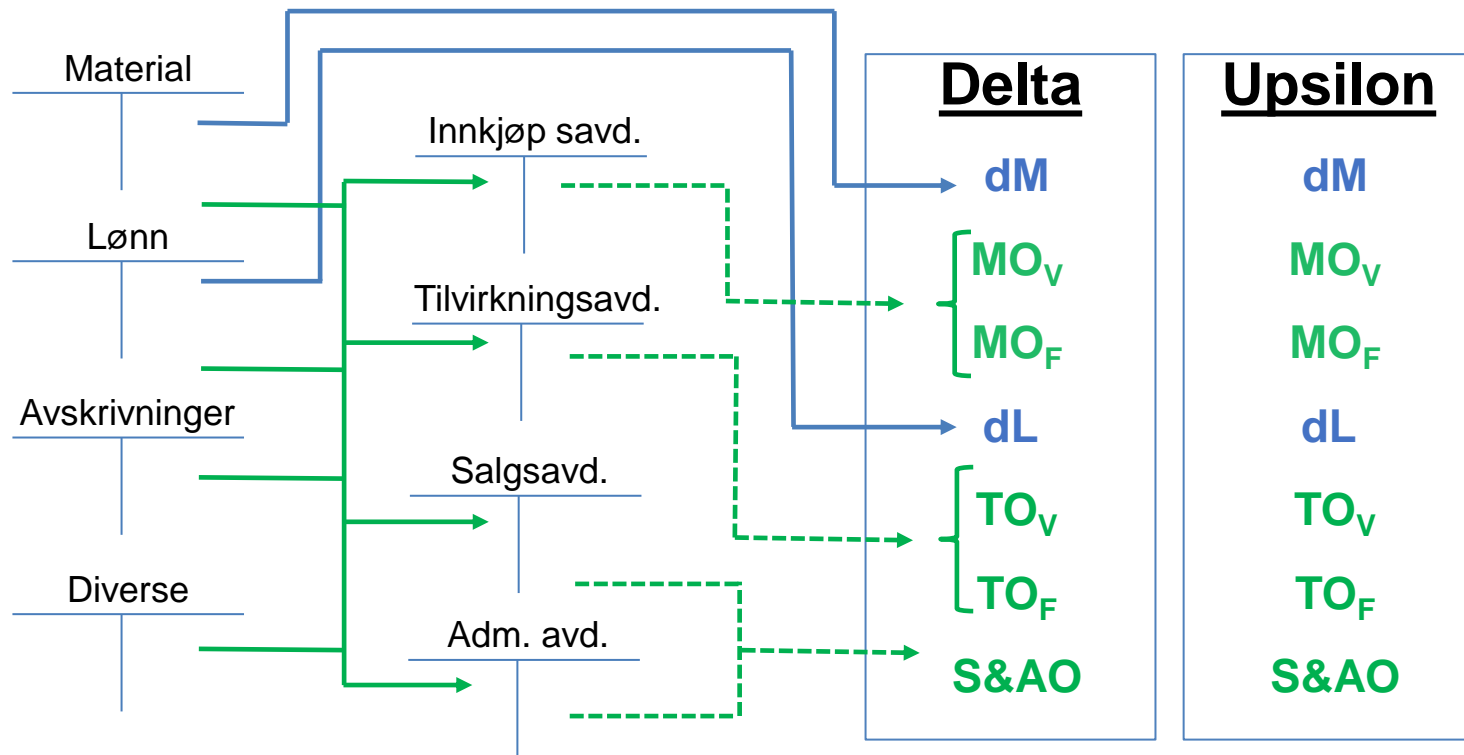
# Direkte og Indirekte kostnader

# Kostnader, klassifisering

## Direkte vs. Indirekte

- Direkte kostnader kan knytas direkte til en produkt.
- Indirekte kostnader kan ikke det.

# Kostnader, Direkte og Indirekte



# Indirekte Kostnader

Overhead	Funktion	Kostnadsdrivare
Innkjøpsavd.	Anførskafta material <ul style="list-style-type: none"><li>• Finn leverandør</li><li>• Forhandle kontrakter</li><li>• Bestill materialer</li><li>• ....</li></ul>	Direkte material (dM)
Tilvirkningsavd.	Skape gode forhold for produksjon <ul style="list-style-type: none"><li>• Planlegg produksjon</li><li>• Skaff og vedlikehold maskiner</li><li>• ....</li></ul>	Direkte Lønn alt. (dL) Maskintimmer (Mh)
Salgs- & adm.avd.	<ul style="list-style-type: none"><li>• Markedsfør og selg produkter</li><li>• Lønnsadministrasjon</li><li>• H/R</li><li>• F&amp;U</li><li>• ...</li><li>• Be the boss</li></ul>	Tilvirkningskostnad (TK = dM+MO+dL+TO)

# Kostnader, Direkte og Indirekte

## Delta

dM		6.44
MO <sub>V</sub>	$2.1\% \cdot 6.44 =$	0.14
MO <sub>F</sub>	$7.6\% \cdot 6.44 =$	0.49
dL		2.36
TO <sub>V</sub>	$117\% \cdot 2.36 =$	2.76
TO <sub>F</sub>	$88\% \cdot 2.36 =$	2.08
TK		14.26
S&AO	$4.3\% \cdot 14.26 =$	0.61
SK		14.88

## Selvkostkalkyle

- Tar med alle indirekte kostnader
- Gir den laveste prisen for langsiktig overlevelse

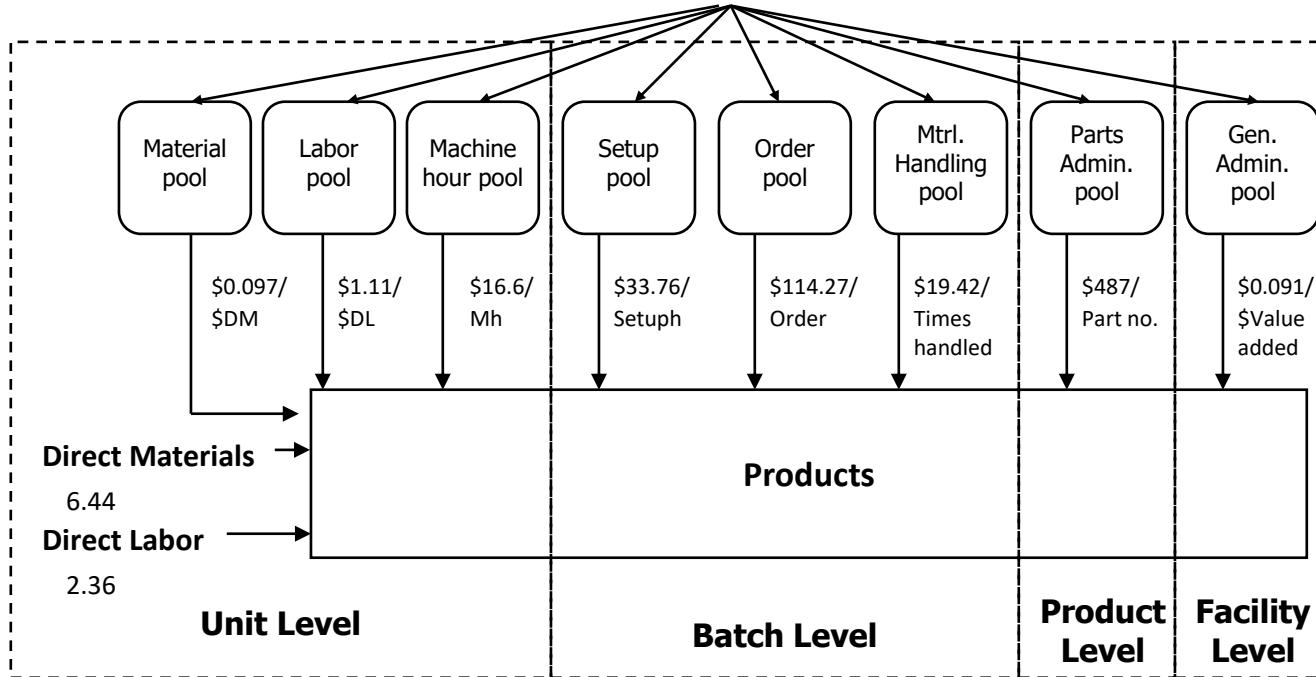
## Bidragkalkyle

- Tar med kun de variable kostnader
- $6.44 + 0.14 + 2.36 + 2.76 = 11.69$
- Gir den laveste prisen for ett positivt dekningsbidrag = Pris - Variable kostnader per st
- Gir den laveste prisen for en kortsiktig fordel



# Activity based cost

## Overhead / Indirect costs



# Profitt

# Profitt = Inntekter - Kostnader

$$\text{Profitt : } \Pi(Q) = TR(Q) - TC(Q)$$

$$\Pi^* \Rightarrow \frac{d\Pi}{dQ} = \frac{dTR}{dQ} - \frac{dTC}{dQ}$$

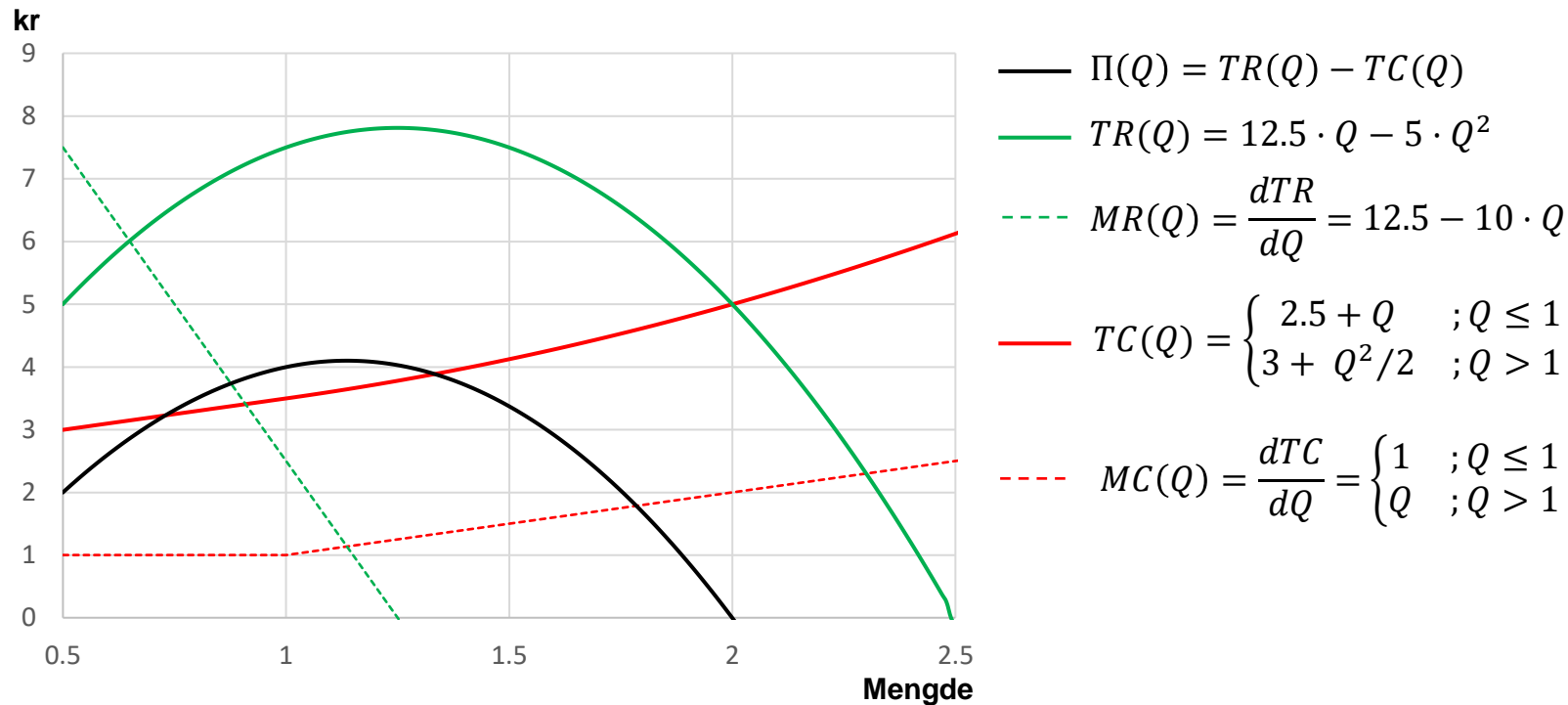
$$\text{Inntekter : } TR(Q) = Q \cdot P(Q)$$

$$TR^* \Rightarrow \frac{dTR}{dQ} = MR(Q) = 0$$

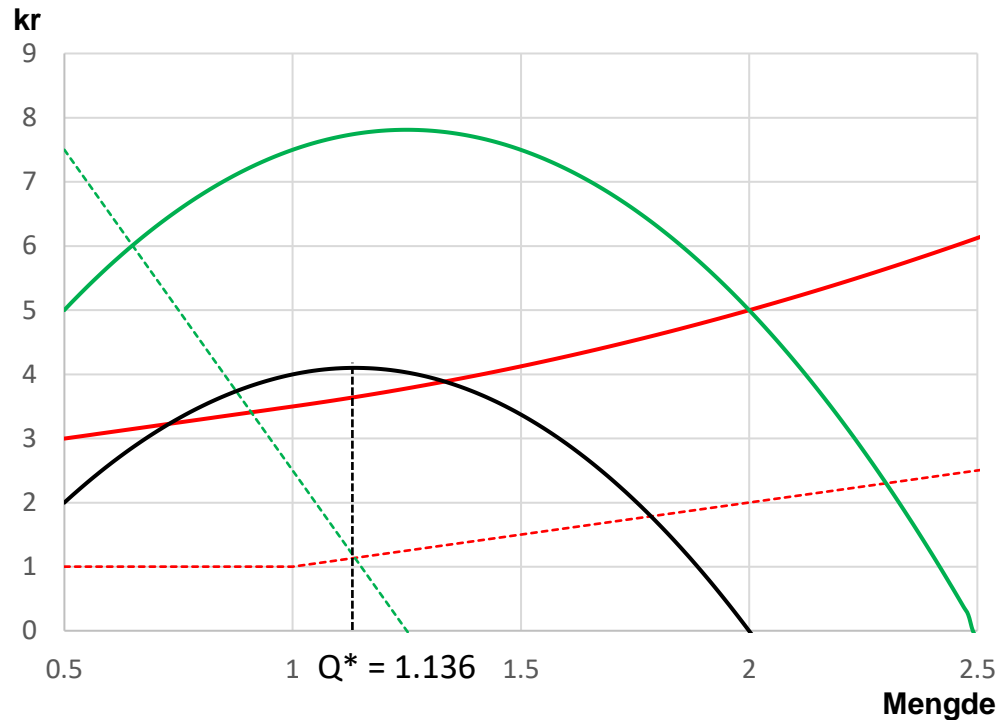
$$\text{Kostnader : } TC(Q) = FC + VC(Q)$$

$$AC^* \Rightarrow \frac{dTC}{dQ} = MC(Q) = AC(Q) = \frac{TC}{Q}$$

# Profitt = Inntekter - Kostnader



# Maksprofitt i perioden



$$\text{—} \quad \Pi(Q) = TR(Q) - TC(Q)$$

$$\text{---} \quad MR(Q) = \frac{dTR}{dQ} = 12.5 - 10 \cdot Q$$

=

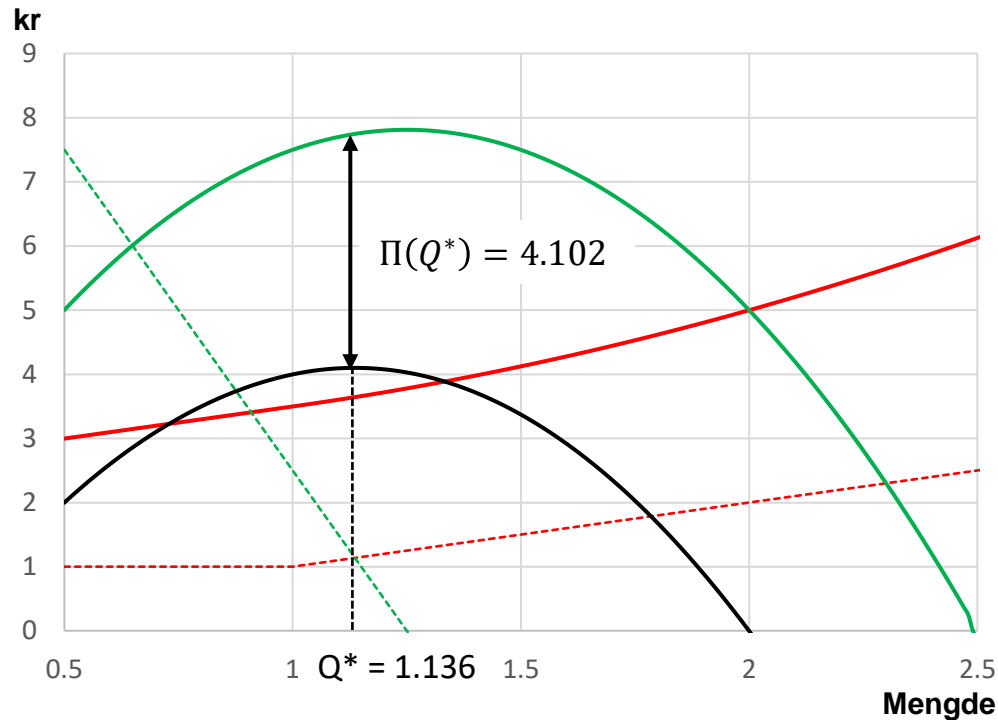
$$\text{---} \quad MC(Q) = \frac{dTC}{dQ} = \begin{cases} 1 & ; Q \leq 1 \\ Q & ; Q > 1 \end{cases}$$

$\Downarrow$

~~$$12.5 - 10 \cdot Q = 1 \Rightarrow Q^* = 1.15 > 1$$~~

$$12.5 - 10 \cdot Q = Q \Rightarrow Q^* = 1.14 > 1$$

# Maksprofitt i perioden



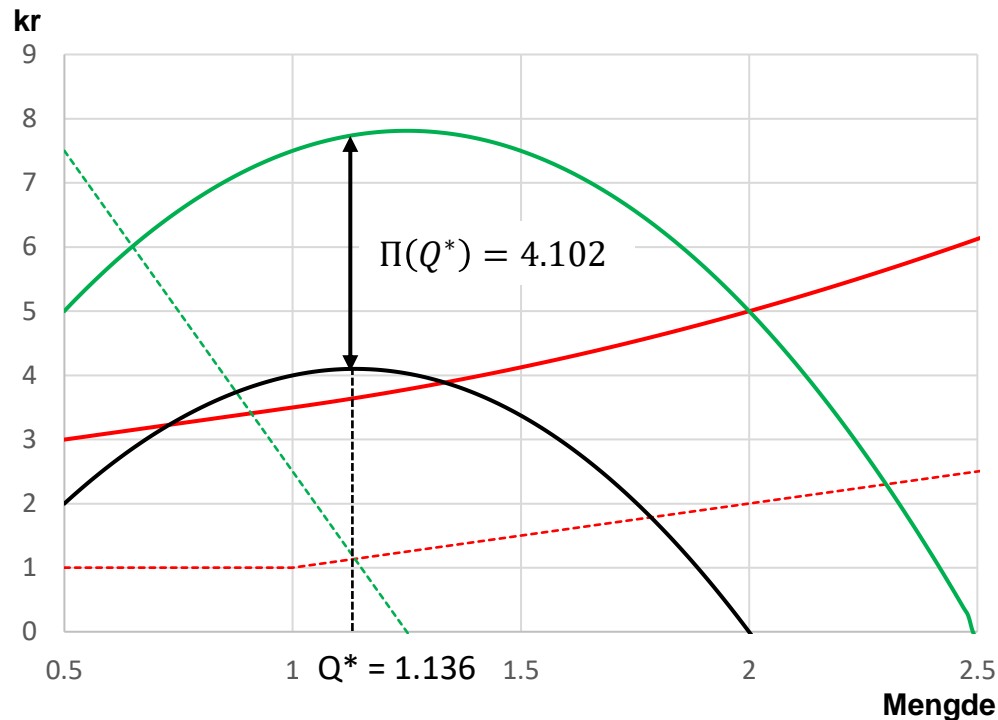
$$\text{—} \quad \Pi(Q) = TR(Q) - TC(Q)$$

$$\text{—} \quad TR(Q) = 12.5 \cdot Q - 5 \cdot Q^2$$

$$\text{—} \quad TC(Q) = \begin{cases} 2.5 + Q & ; Q \leq 1 \\ 3 + Q^2/2 & ; Q > 1 \end{cases}$$

$$\begin{aligned} \Pi(Q^*) &= 12.5 \cdot \frac{12.5}{11} - 5 \cdot \left(\frac{12.5}{11}\right)^2 - \\ &\quad \left(3 + 5 \cdot \left(\frac{12.5}{11}\right)^2 / 2\right) = 4.102 \end{aligned}$$

# Profitt = Inntekter - Kostnader



## Operative /Taktiske beslutt

- Pris/volum
- Produktmix
- Marked

## Taktiske/Strategiske beslutt

- Produktutvikling
- Markedsetablering
- Produksjonsutvikling
- Markedsføring

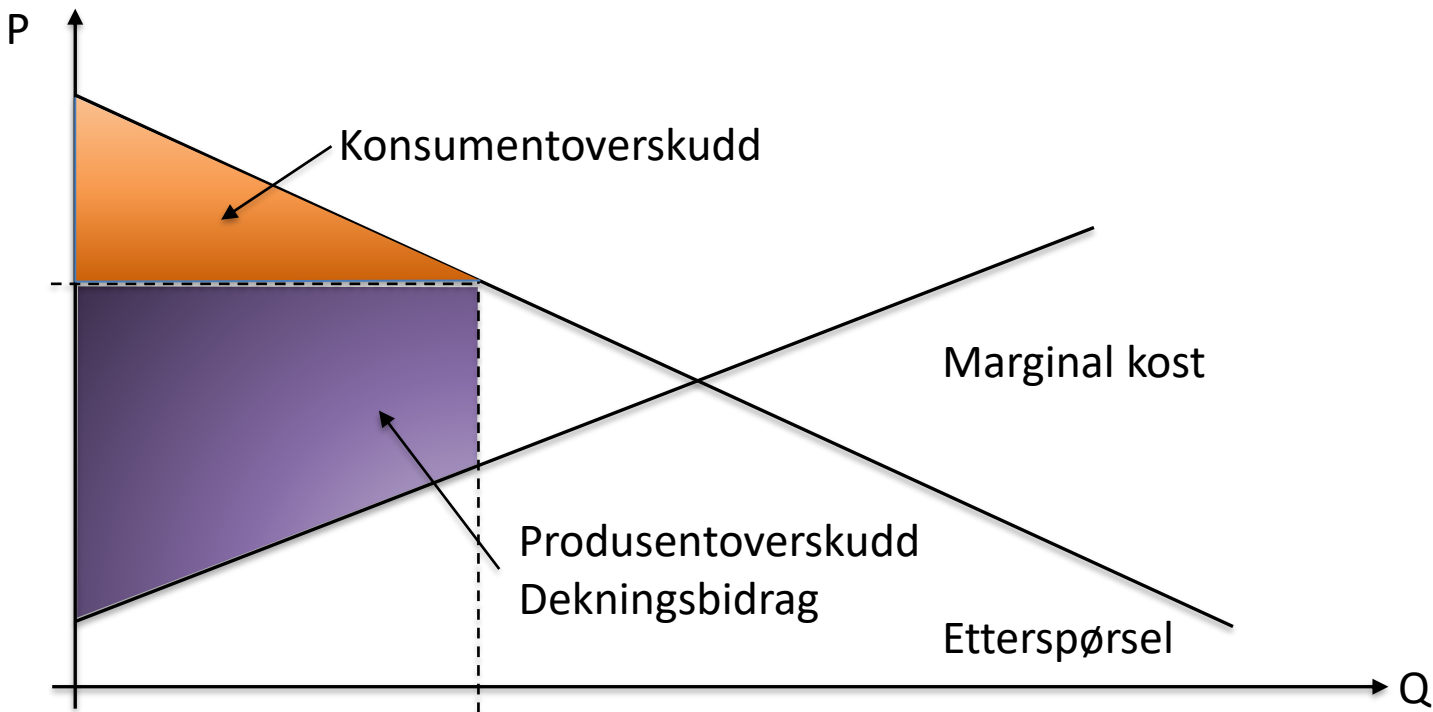


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# **Samfunnsøkonomisk implikasjoner**



# MC - Produsentoverskudd



# Samfunnsøkonomisk overskudd

