



DANISH COMPETITION AND CONSUMER AUTHORITY

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# **Economic Instruments for the Analysis of competitive Effects of Mergers**

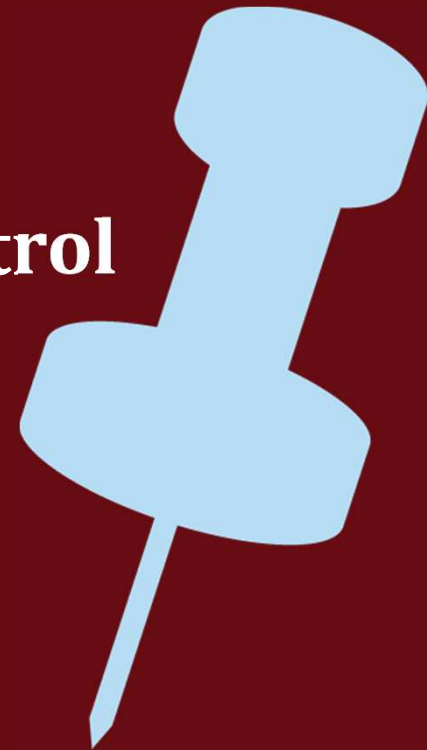
## Agenda

1. New economic tools in merger control
  1. Upward pricing pressure
  2. Illustrative price rises
2. The merger between Arcus/Pernod Ricard
3. The merger between JYSK and IDdesign



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# 1. Economic tools in merger control



# The Merger Review Process

- » Large mergers must be notified to DCCA:
- » Timeline:
  - » Phase I: 25 work days (most mergers cleared)
  - » Phase II: 90 work days (“difficult” cases)

# The Danish Competition Act

- » **12 c.-(1)** Council shall decide whether to approve or prohibit a merger.
- » A merger that will not significantly impede effective competition, in particular due to the creation or strengthening of a dominant position, shall be approved.
- » A merger that will significantly impede effective competition, in particular due to the creation or strengthening of a dominant position, shall be prohibited.

# The classical analysis (I)

1. Defining the relevant market

2. Assessment based on market shares and market concentration (HHI)

» “Safe harbour” HHI thresholds (the European Commission)

»  $HHI < 1.000$

»  $1.000 < HHI < 2.000$ ,  $\Delta < 250$

»  $HHI > 2.000$ ,  $\Delta < 150$

» Assumption: Market shares measure competitive pressure

» Change in market shares/HHI = “unilateral effects”:

» Large change in HHI = Indication of sign. weakening of competition



## How to calculate HHI

» Calculated by squaring the market share of each firm competing in the market

$$HHI = s_1^2 + s_2^2 + s_3^2 + s_4^2 + \dots + s_n^2$$

## The classical analysis (II): Imaginary Example

NB! Market shares do not tell the full story off closeness of competition when products are differentiated





## The new economic tools (I)

- » Focuses on how a merger changes the pricing incentives:
  - » Before merger: Profit maximizing on the basis of own products
  - » After merger: Profit max. on the basis of own and acquired products
  
- » Effects of the merger:
  1. Incentive to increase prices due to decreased competitive pressure
  2. Incentive to lower prices due to merger specific efficiencies

» **UPP** (Upward Pricing Pressure)  
- Direction of the price change

» **IPR** (Illustrative Price Rise)  
- Estimate of the exp. price change

Based on:

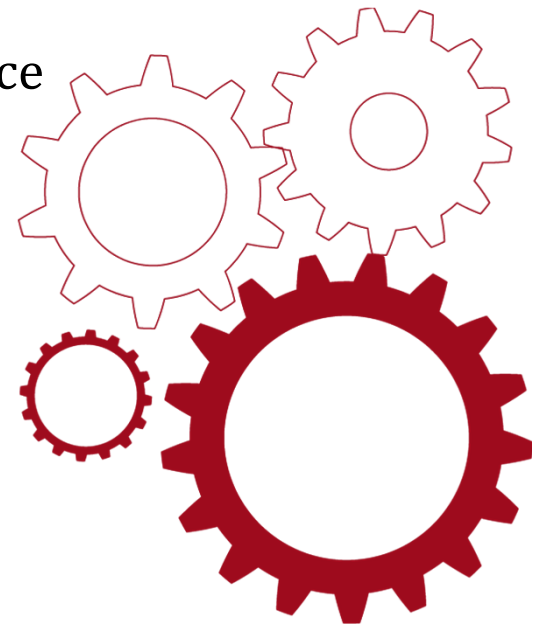
- » Diversion ratios
  - » Closeness of competition
- » Margins
- » Relative prices
- » Merger specific efficiencies

## The new economic tools (II)

- » Direct focus on the competitive pressure eliminated due to the merger
- » Simple and intuitive method compared to merger simulation models:
  - » Easy to communicate to non-economists
  - » Possible to do within the time limits of a merger review
- » Differs from the classical analysis based on market definition and a subsequent assessment based on market shares and the degree of market concentration
- » Supplement to the overall assessment:
  - » For instance, dynamic responses are not taken into account

## Diversion ratios

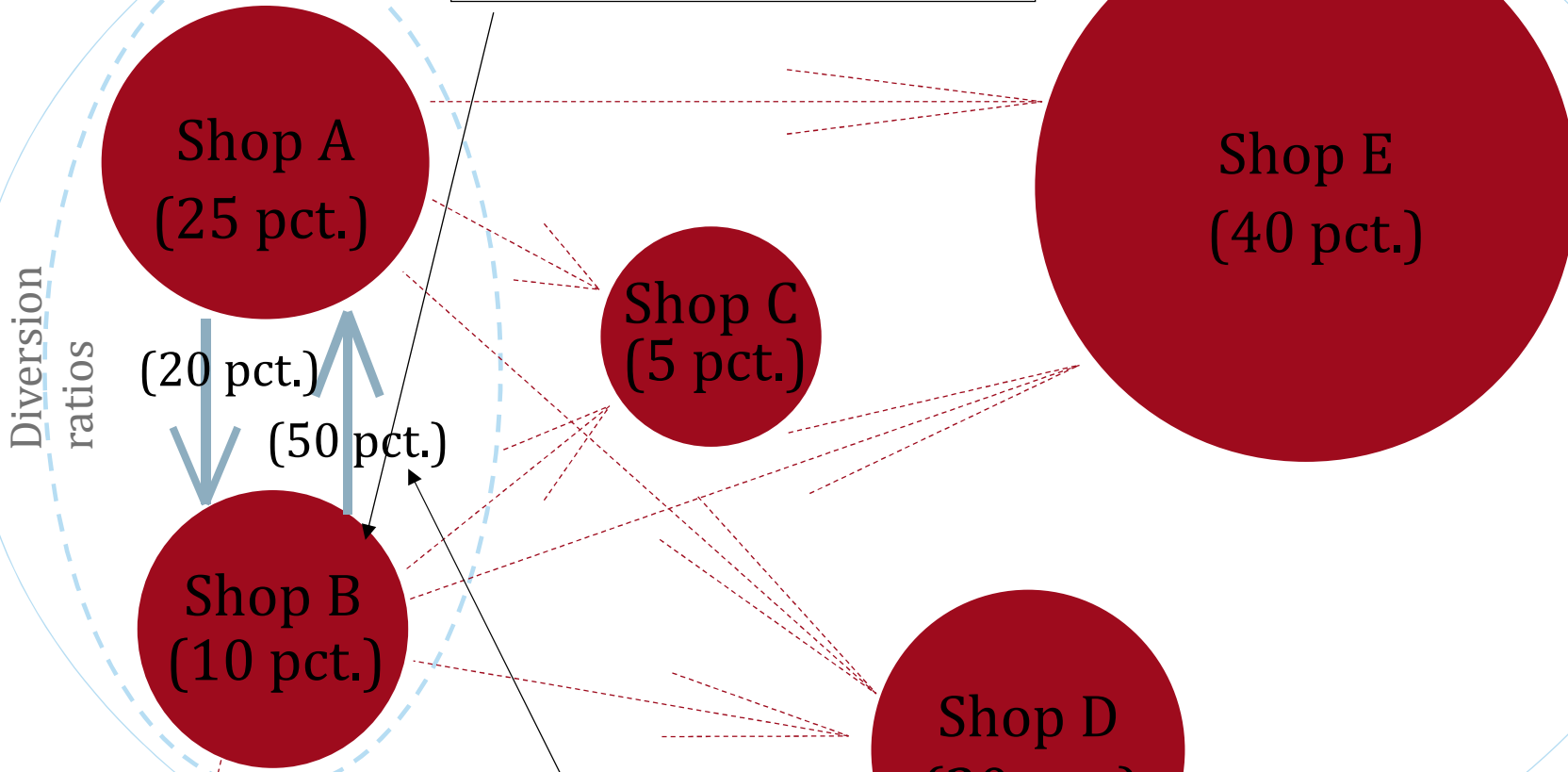
- » Closeness of competition between the merging parties
- » Indicates the degree of competition lost due to the merger
- » How large a share of the customers lost in case of a price increase are lost to the other merging party?
- » A number between 0 (not close competitors) and 1 (close competitors)





## Diversion ratios – a basic example

Q: Where would you go if Shop B were to close?



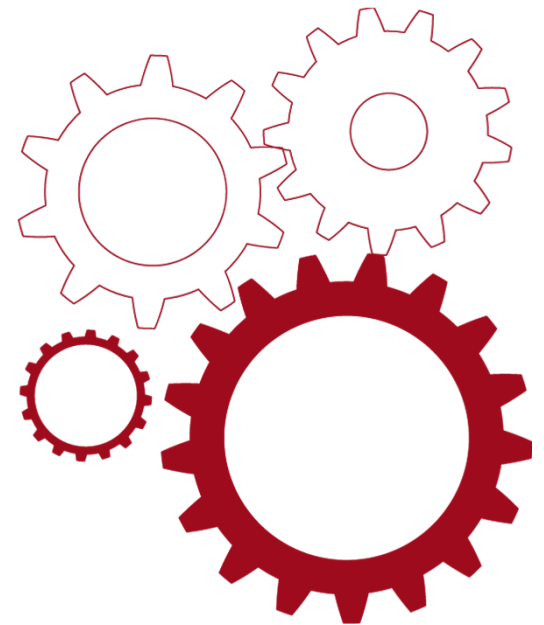
Half of the customers in Shop B would go to Shop A if Shop B were to close

## How to calculate diversion ratios using closing question

- » Often we use survey data
- » Internetpanel, standing in front of shops, phoneinterviews

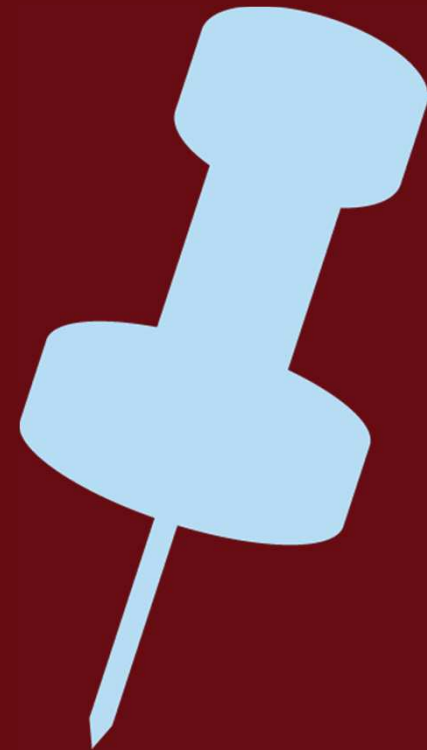
$$D_{AB} = \frac{\#customers\ going\ from\ shop\ A\ to\ B}{\#Customers\ buying\ in\ shop\ A}$$

- » Note no weights are used here. Often use customers actuals buying as weight





## 1.1. Upward pricing pressure



General idea:

- I. Use pre-merger information to calculate the efficiency gains necessary to ensure that the merger does not lead to price increases:
  - » Prices, costs (or, profit margins), diversion ratios
- II. Compare the required efficiency gains with the efficiency gains documented by the parties to see if prices can be expected to increase or not

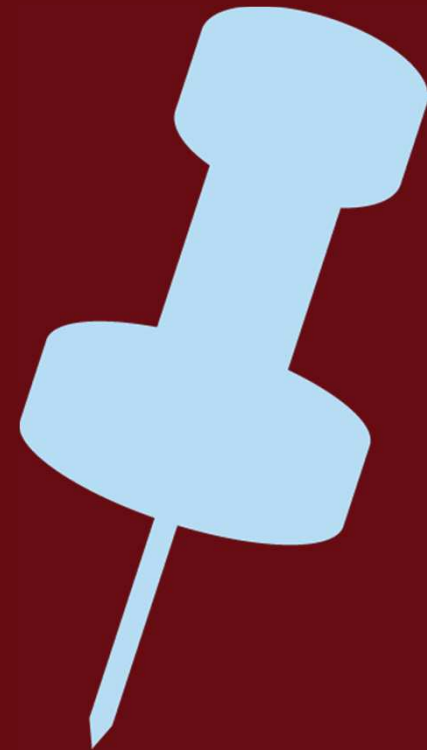
# Evaluation of Merger

- » Data used in a merger evaluation:
  - » Pre-merger prices  $(p_i, p_j)$  and profit margins  $(m_i, m_j)$  are typically provided by the merging parties
  - » Diversion ratios  $(d_{ij}, d_{ji})$  are collected in the market
  - » Exp. efficiency gains  $(e_i, e_j)$  are documented by parties





## 1.2. Illustrative price rise



# Illustrative Price Rise

- » UPP analysis only provides the direction of price changes due to the merger
- » Direction is only unambiguous if the efficiency gains are both above or below the critical levels:
  - » E.g., not the case in the JYSK/IDdesign merger
- » In merger cases, it is often important to be able to predict the absolute price changes:

## Illustrative Price Rise

» Calculating an illustrative price rise (IPR):

I. Assume a specific demand function:

» Linear demand or isoelastic demand

II. Use pre-merger information to calculate the price changes that the parties would make assuming *no reaction from the competitors*

» Notice that this is *not* an equilibrium analysis:

» Competitors react to price increases by increasing their prices as well

## Illustrative Price Rise

» Before the merger profit of firm 1 is:

$$\pi_1 = [p_1 - c_1](A_1 - p_1 + D_{21}p_2)$$

» After the merger the joint profit will be maximized:

$$\pi = [p_1 - c_1](A_1 - p_1 + D_{21}p_2) + [p_2 - c_2](A_2 - p_2 + D_{12}p_1)$$



» Using algebra this can be solved to:

$$IPR_1^{asym} = \frac{\hat{p}_1 - p_1}{p_1} = \frac{2D_{12}m_2 \frac{p_2}{p_1} + D_{21}(D_{21} + D_{12})m_1}{4 - (D_{21} + D_{12})^2}$$

» Assuming symmetry:

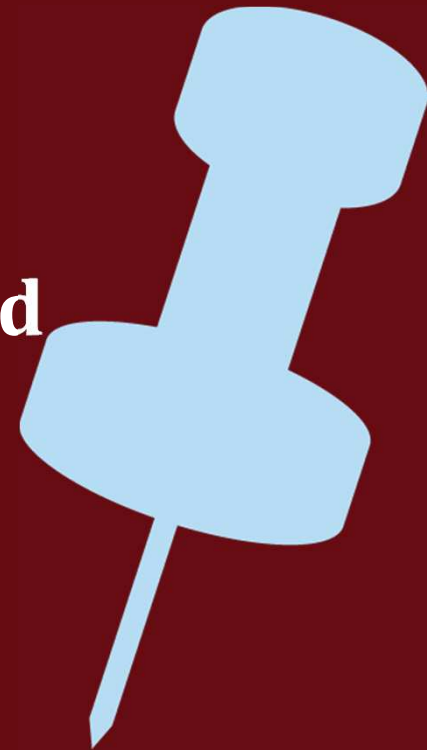
$$IPR^{sym} = \frac{\hat{p} - p}{p} = \frac{Dm}{2(1-D)}$$

» If efficiencies:

$$IRP^{sym,eff} = \frac{\hat{p} - p}{p} = \frac{Dm}{2(1-D)} - \frac{E(1-m)}{2}$$



## **4. The merger between Arcus and Pernod Ricard**



## The transaction

- » On 31 July 2012, Arcus notified the acquisition of:
  - Pernod Ricard's Danish aquavit brands
  - Gammel Dansk
- » **Arcus:** Norwegian alcohol producer. Sells Linie Aquavit in Denmark
- » **Pernod Ricard:** Second largest alcohol producer worldwide  
Leading producer in Denmark: Rød Aalborg, Brøndums, Gammel Dansk m.v. + Malteserkreuz in Germany

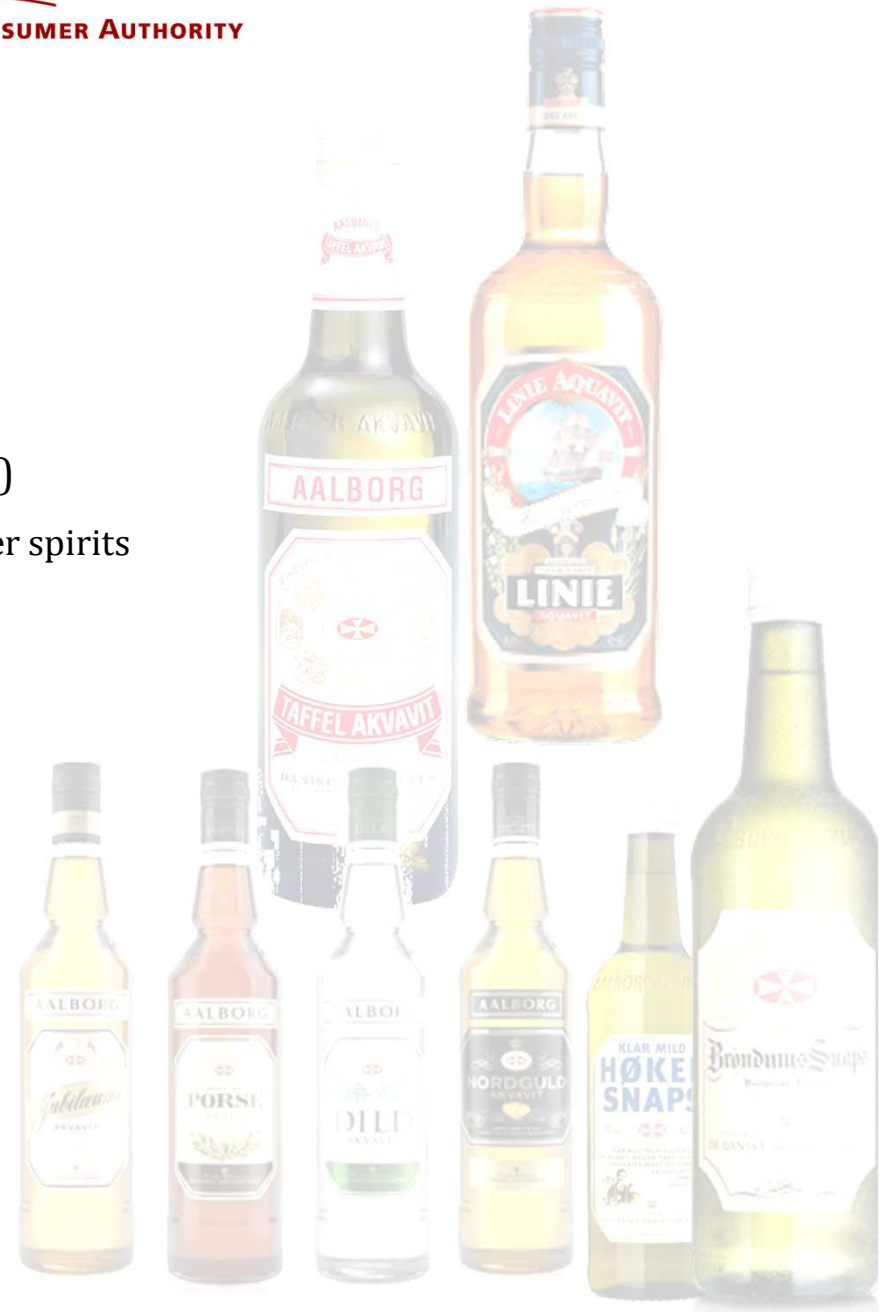
Economic appraisals in merger law



# Market definition

## » Other spirits?

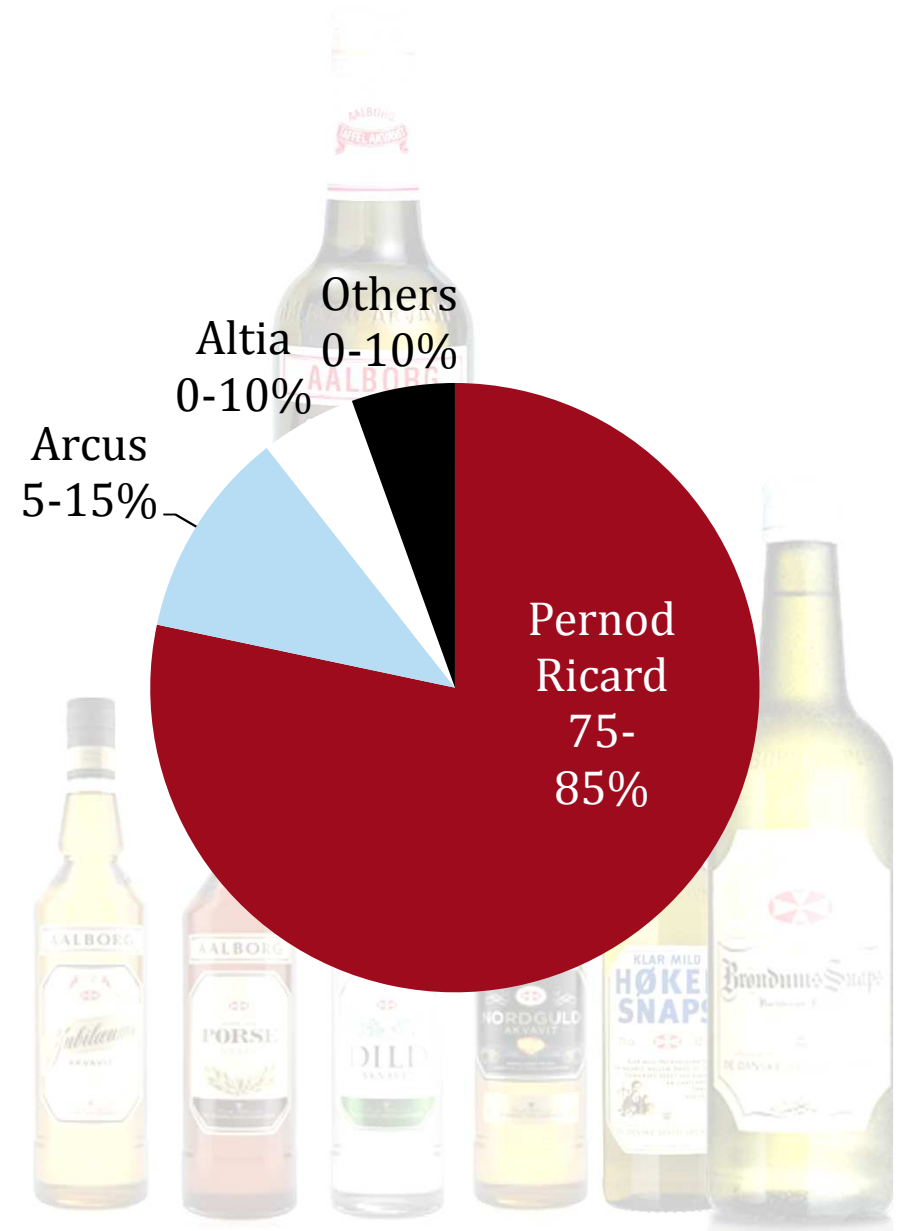
- » Demand- side substitution (diversion ratios etc.)
  - » Only 3,5 per cent of consumers would change to other spirits
  - » Aquavit is special in Denmark
- » Supply- side substitution
  - » Brand is important





## Market shares

- » Significant increase in the concentration level
- » The counterfactual was status quo
- » Relevant to further investigate the risk of unilateral effects

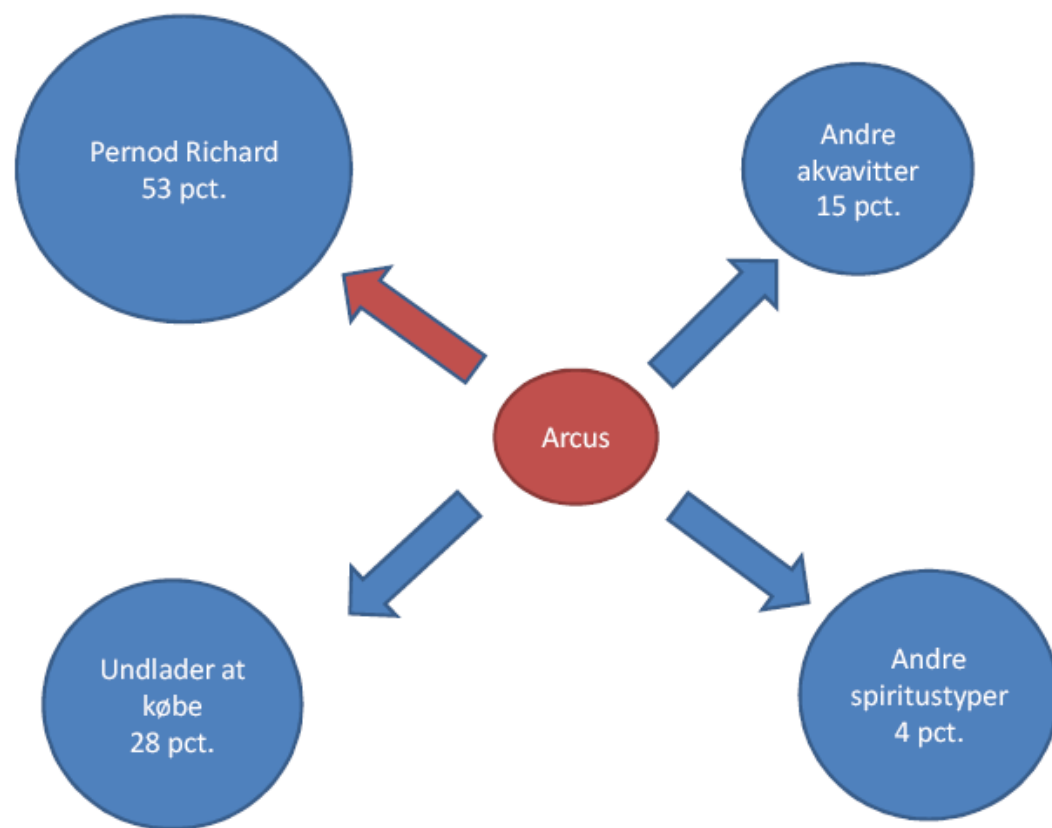


## **Diversions ratios – consumer survey**

- » 1.007 respondents that bought an aquavit within the last year
- » Asked what aquavit they bought last time – and what they would have bought if this aquavit had been sold out
- » Used in assessment of unilateral effects, in market definition and in the assessment of remedies

# Diversions Ratios

Figur 5: Diversion ratio fra Arcus til Pernod Ricard Denmark



## IPR: How will Arcus set prices after the merger?

**Diversion ratio**  
**D=53 pct.**

**Profit**  
**M=XX pct.**

**Efficiencies**

$$IPR = \frac{DM}{2(1-D)} - \frac{E(1-M)}{2}$$

IPR=3-5 pct. (8-12 % with isoelastic demand curve)

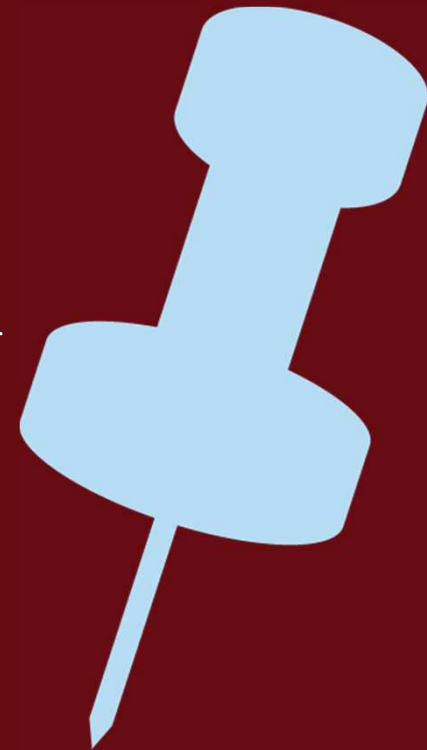
# Remedy

- » Divestment of Brøndums
- » HHI decreased
- » Diversion ratios:
  - » Brøndum is a strong brand





## **5. The merger between JYSK and IDdesign**



## The transaction

- » On 3 May 2013 JYSK notified the acquisition of sole control of IDdesign to the DCCA
- » **JYSK:** Controlled by Lars Larsen. Mainly known for the two retail chains JYSK and Bolia
- » **IDdesign:** Controlled by Axcel. Consists of the two retail chains IDEmøbler and ILVA
- » Both parties are active within the retail sale of furniture (several relevant markets)



Bolia.com



## Market shares and HHI

- » Increased market shares
- » Post-merger market shares of 20 – 30 pct. in certain markets (beds and garden furniture)
- » Higher concentration



- » Relevant to further investigate the risk of unilateral effects

Market shares and HHI		
<b>Retail market - furniture (excl. beds and garden furniture)</b>	<b>Market shares (pct.) and HHI - merger</b>	<b>Market shares (pct.) and HHI - liquidation</b>
JYSK/Bolia	[5-10]	[5-10]
IDEmøbler/ILVA	[10-20]	-
IKEA	[20-30]	[20-30]
Danbo Møbler	[0-5]	[5-10]
Møbelkæden	[0-5]	[5-10]
HHI after merger/liquidation	1.098	859
Delta HHI merger vs. liquidation	239	
<b>Retail market - beds and mattresses</b>	<b>Market shares (pct.) and HHI - merger</b>	<b>Market shares (pct.) and HHI - liquidation</b>
JYSK/Bolia	[20-30]	[20-30]
IDEmøbler/ILVA	[10-20]	-
IKEA	[10-20]	[10-20]
Drømmeland	[0-5]	[5-10]
Danbo Møbler	[0-5]	[5-10]
HHI after merger/liquidation	1.308	900
Delta HHI merger vs. liquidation	408	
<b>Retail market - garden furniture</b>	<b>Market shares (pct.) and HHI - merger</b>	<b>Market shares (pct.) and HHI - liquidation</b>
JYSK/Bolia	[20-30]	[20-30]
IDEmøbler/ILVA	[5-10]	-
Dansk Supermarked	[20-30]	[20-30]
XL Byg	[5-10]	[5-10]
Harald Nyborg	[0-5]	[0-5]
HHI after merger/liquidation	1.206	969
Delta HHI merger vs. liquidation	236	



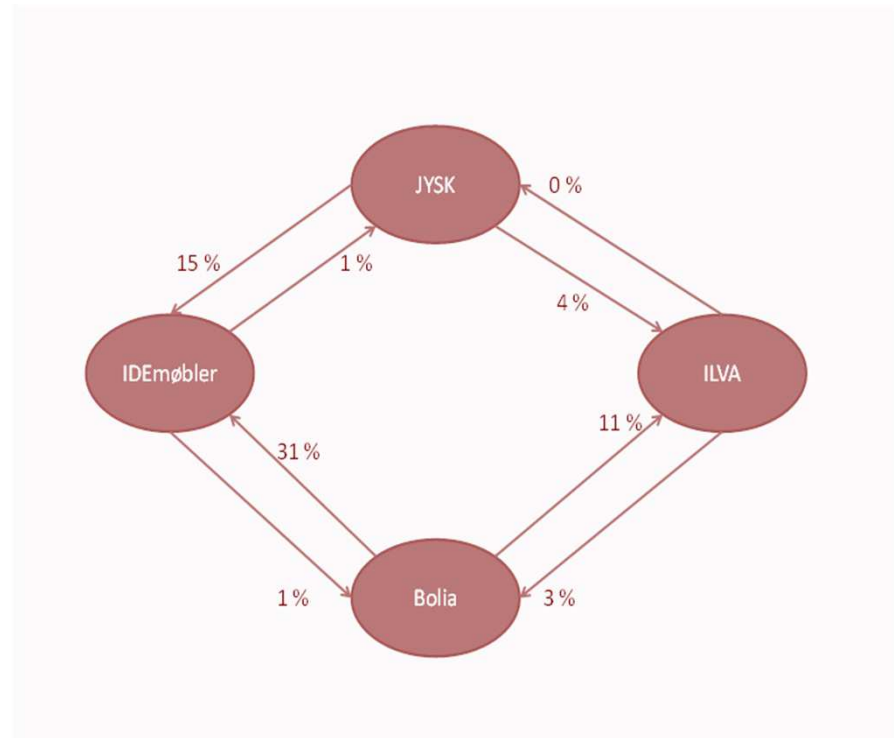
## Diversions Ratios – consumer survey

- » More than 2.000 respondents who had bought furniture within the last 12 months
- » Respondents (asked about their most recent purchase):
  - » Where did you buy your furniture?
  - » Where would you have bought your furniture if this shop was closed?
- » The survey was used in relation to:
  - » The market definition
  - » Assessment of unilateral effects (likely price effects post-merger and in the counterfactual)



## Diversion ratios between the parties

- » 15 pct. of JYSK's customers would choose IDEmøbler if they were to buy somewhere else than JYSK.
- » IDEmøbler and ILVA appeared to put significant competitive pressure on JYSK and Bolia



## Upward Pricing Pressure (UPP) – required efficiency gains to keep prices

- » Idea: Use pre-merger information to calculate the efficiency gains necessary to ensure that the merger does not lead to price increases
- » Input: Prices, costs (or, profit margins), diversion ratios between the merging parties

## UPP Analysis: Jysk/IDdesign Merger

- » Price increases due the merging parties increasing their prices (unilateral effects) could not be ruled out in the merger considered
- » Price increases for three of the firms and a price decrease for one of the firms

## Illustrative price rise - merger

Diversion ratios

» Profits before the merger:

$$\pi_1 = (p_1 - c_1)(A_1 - p_1 + d_{21}p_2)$$

$$\pi_2 = (p_2 - c_2)(A_2 - p_2 + d_{12}p_1)$$

» Profits after the merger:

$$\hat{\pi}_{1+2} = (\hat{p}_1 - c_1)(A_1 - \hat{p}_1 + d_{21}\hat{p}_2) + (\hat{p}_2 - c_2)(A_2 - \hat{p}_2 + d_{12}\hat{p}_1)$$

$$IPR_i = \frac{\hat{p}_i - p_i}{p_i}$$

» Predicted price rise:

» Overall [0-5] pct.

» Up to [10-20] pct. for JYSK

But:  
What about the  
counterfactual?



# IPR: Firm 1

$$\begin{aligned} & -((-(D23/2)-D32/2-1/2 (-(D24/2)-D42/2) (-D34-D43))^2+(1-(D24/2)-D42/2)^2) (1-1/4 (-D34- \\ & D43)^2)) (-(D13/2)-D31/2-1/2 (-(D14/2)-D41/2) (-D34-D43)) ((c3 E3)/2-(c4 D34 E4)/2-(D31 \\ & m1 p1)/2-(D32 m2 p2)/2-1/2 (-D34-D43) (-(1/2) c3 D43 E3+(c4 E4)/2-(D41 m1 p1)/2-(D42 m2 \\ & p2)/2))+ (1-1/4 (-D34-D43)^2) (-(1/2) c3 D13 E3-(c4 D14 E4)/2-(D14/2)-D41/2) (-(1/2) c3 D43 \\ & E3+(c4 E4)/2-(D41 m1 p1)/2-(D42 m2 p2)/2)-(D13 m3 p3)/2-(D14 m4 p4)/2))-(D13/2)- \\ & D31/2-1/2 (-(D14/2)-D41/2) (-D34-D43)) (-(D23/2)-D32/2-1/2 (-(D24/2)-D42/2) (-D34- \\ & D43))+ (1/2 (-D12-D21)-(-(D14/2)-D41/2) (-(D24/2)-D42/2)) (1-1/4 (-D34-D43)^2)) (-( \\ & (D23/2)-D32/2-1/2 (-(D24/2)-D42/2) (-D34-D43)) ((c3 E3)/2-(c4 D34 E4)/2-(D31 m1 p1)/2- \\ & (D32 m2 p2)/2-1/2 (-D34-D43) (-(1/2) c3 D43 E3+(c4 E4)/2-(D41 m1 p1)/2-(D42 m2 \\ & p2)/2))+ (1-1/4 (-D34-D43)^2) (-(1/2) c3 D23 E3-(c4 D24 E4)/2-(D24/2)-D42/2) (-(1/2) c3 D43 \\ & E3+(c4 E4)/2-(D41 m1 p1)/2-(D42 m2 p2)/2)-(D23 m3 p3)/2-(D24 m4 p4)/2)))/((-(D13/2)- \\ & D31/2-1/2 (-(D14/2)-D41/2) (-D34-D43)) (-(D23/2)-D32/2-1/2 (-(D24/2)-D42/2) (-D34- \\ & D43))+ (1/2 (-D12-D21)-(-(D14/2)-D41/2) (-(D24/2)-D42/2)) (1-1/4 (-D34-D43)^2))^2+(-( \\ & (D13/2)-D31/2-1/2 (-(D14/2)-D41/2) (-D34-D43))^2+(1-(D14/2)-D41/2)^2) (1-1/4 (-D34- \\ & D43)^2)) (-(D23/2)-D32/2-1/2 (-(D24/2)-D42/2) (-D34-D43))^2+(1-(D24/2)-D42/2)^2) (1-1/4 \\ & (-D34-D43)^2))) p1 \end{aligned}$$

## The counterfactual

- » Without a merger, ILVA and IDEmøbler would fail:
  - » No failing firm defence, assets not likely to leave the market
- » Market investigation: Would entry be likely in case of liquidation?
  - » Phone calls to many European players
  - » Could not ask the specific liquidation question (a self-fulfilling prophecy...)
  - » Entry plans were limited – sufficient entry in the short run was considered unlikely
- » Market shares in the counterfactual were distributed according to diversion ratios

## Illustrative price rise - liquidation

- » Two effects of liquidation on firm i's demand:
  - » Demand becomes more inelastic for remaining firms
    - » (some of the consumers who would have gone to ILVA and IDEmøbler will now remain)
  - » Higher demand at given prices
    - » (some of the former consumers in ILVA and IDEmøbler would go to firm i)

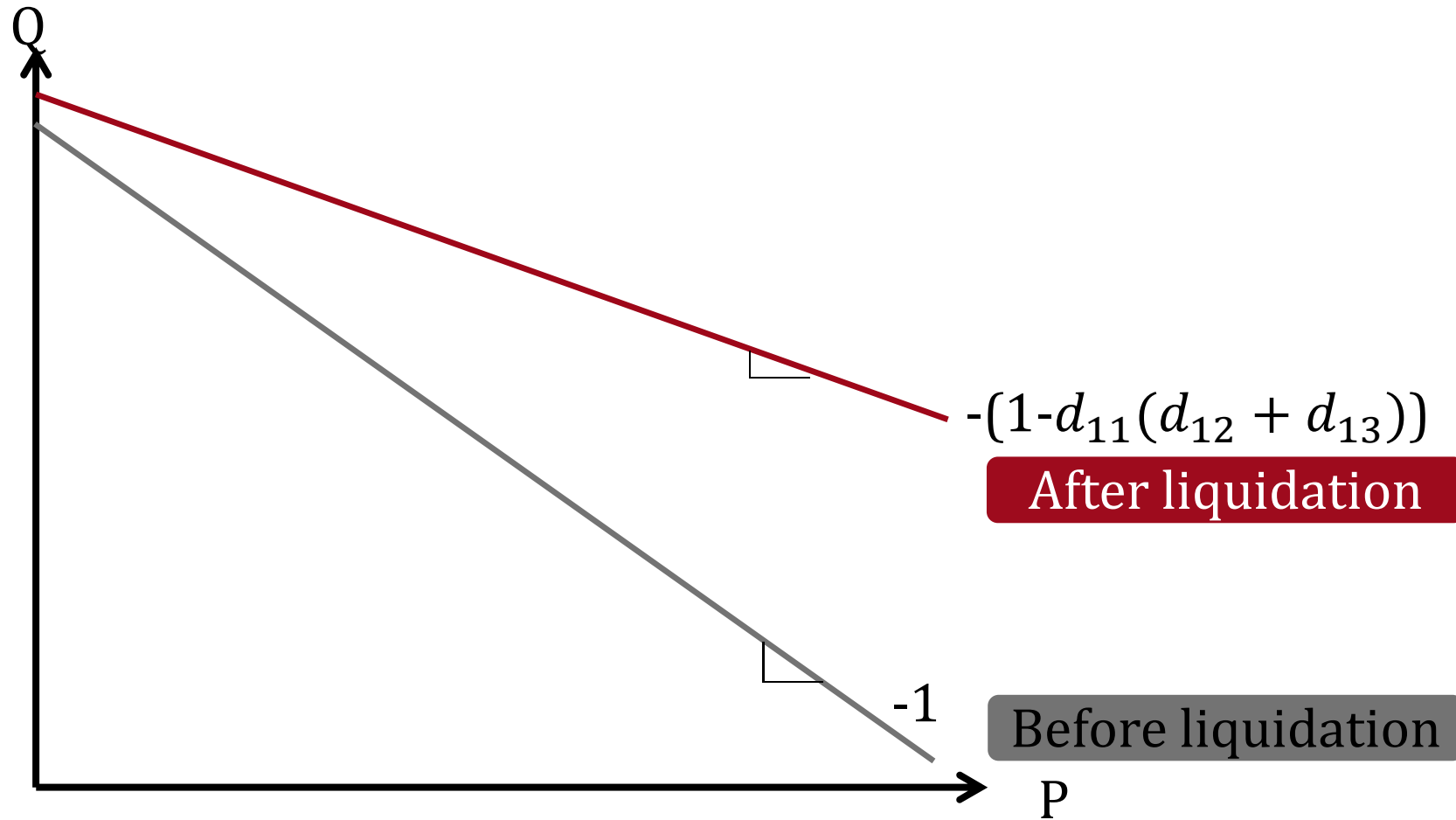


- » Change the slope and the intercept of the demand curve





# Shifting the demand curve



# Illustrative price rise - liquidation

- » Predicted price rise:
  - » Overall [15-20] pct.
  - » Up to [30-40] pct. for IKEA

## Market dynamics

- » Why would liquidation lead to such high price increases?
- » IDEmøbler and ILVA are the main competitors to many of the other players on the market
- » A liquidation would therefore remove a significant competitive pressure from the market

Closeness of competition between IDEmøbler, ILVA and the other main players on the market			
Company	ILVA + IDEmøbler	IDE-møbler	ILVA
IKEA	1	1	2
Sengespecialisten	1	1	-
JYSK	2	2	-
Bolia	1	2	-
Møbelkæden	1	1	2
BoConcept	-	2	3
Danbo	1	1	-
Smag & Behag	2	2	-
Byggemarkeder	1	-	2
Dagligvarebutikker	3	-	-
Coop.dk	1	2	1
Others	1	1	3

## Conclusion

- » Not possible to rule out competition concerns on the basis of market shares and HHI alone (in particular w.r.t. beds and garden furniture)
- » IRPs showed price increases as a result of the merger – but even larger price increases in case of liquidation!
- » Dynamic effects in the form of sufficient short term entry was not to be expected
- » **Conclusion: Approving the merger would be less detrimental to effective competition than liquidation**



# IPR: Merger vs. liquidation

$$\begin{aligned}
& -((-(D23/2)-D32/2-1/2 (-(D24/2)-D42/2) (-D34-D43))^2+(1-(-(D24/2)-D42/2)^2) (1-1/4 (-D34-D43)^2)) (-(D13/2)-D31/2-1/2 (-(D14/2)-D41/2) (-D34-D43)) ((c3 E3)/2-(c4 D34 E4)/2-(D31 m1 p1)/2-(D32 m2 p2)/2-1/2 (-D34-D43) (-(1/2) c3 D43 E3+(c4 E4)/2-(D41 m1 p1)/2-(D42 m2 p2)/2))+ (1-1/4 (-D34-D43)^2) (-(1/2) c3 D13 E3-(c4 D14 E4)/2-(D14 m4 p4)/2)-(-(D13/2)-D31/2-1/2 (-(D14/2)-D41/2) (-D34-D43)) (-(D23/2)-D32/2-1/2 (-(D24/2)-D42/2) (-D34-D43))+ (1/2 (-D12-D21)-(-(D14/2)-D41/2) (-(D24/2)-D42/2)) (1-1/4 (-D34-D43)^2)) (-(D23/2)-D32/2-1/2 (-(D24/2)-D42/2) (-D34-D43)) ((c3 E3)/2-(c4 D34 E4)/2-(D31 m1 p1)/2-(D32 m2 p2)/2-1/2 (-D34-D43) (-(1/2) c3 D43 E3+(c4 E4)/2-(D41 m1 p1)/2-(D42 m2 p2)/2))+ (1-1/4 (-D34-D43)^2) (-(1/2) c3 D23 E3-(c4 D24 E4)/2-(D24 m4 p4)/2)-(-(D24/2)-D42/2) (-(1/2) c3 D43 E3+(c4 E4)/2-(D41 m1 p1)/2-(D42 m2 p2)/2)-(D23 m3 p3)/2-(D24 m4 p4)/2)))/((-(D13/2)-D31/2-1/2 (-(D14/2)-D41/2) (-D34-D43)) (-(D23/2)-D32/2-1/2 (-(D24/2)-D42/2) (-D34-D43))+ (1/2 (-D12-D21)-(-(D14/2)-D41/2) (-(D24/2)-D42/2)) (1-1/4 (-D34-D43)^2))^2+(-(D13/2)-D31/2-1/2 (-(D14/2)-D41/2) (-D34-D43))^2+(1-(-(D14/2)-D41/2)^2) (1-1/4 (-D34-D43)^2)) (-(D23/2)-D32/2-1/2 (-(D24/2)-D42/2) (-D34-D43))^2+(1-(-(D24/2)-D42/2)^2) (1-1/4 (-D34-D43)^2))) p1)
\end{aligned}$$

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$$-(((a D12+b D13) m)/(-1+a D12+b D13+m))$$

## ⇒ Approval!

## Further thoughts

- » National vs local pricing
- » Average vs marginal consumers
- » Dynamic effects vs static effects
- » Empirical ways to calculate diversion ratios



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**Thank you for your attention**