

MARKET DEFINITION

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Regulatory Framework

- A dominant position in the relevant market is a prerequisite for regulation in Germany

- Given a dominant position the regulated firm
 - has to grant access to its letter mail network
 - is subject to price regulation
 - can be obliged in case of market failure to provide the Universal Service

Market Definition in Regulatory Procedures

- “Bedarfsmarktkonzept” (demand market concept)
- descriptive approach based on intuition rather than empirical evidence
- typical criteria
 - business vs. private senders
 - business vs. private recipients
 - speed of delivery
 - standard letter mail vs. bulk mail
 - part of the value chain
- no need for refined concepts before digitization

Advertising Mail vs. Electronic Media

■ advertising mail compared to electronic media

- expensive
- takes time to prepare advertising campaign
- expresses higher esteem for recipient
- is more noticeable

■ with both media it is possible to

- address costumers by name
- target special groups of customer
- measure response
- interact with the costumer

Market Definition

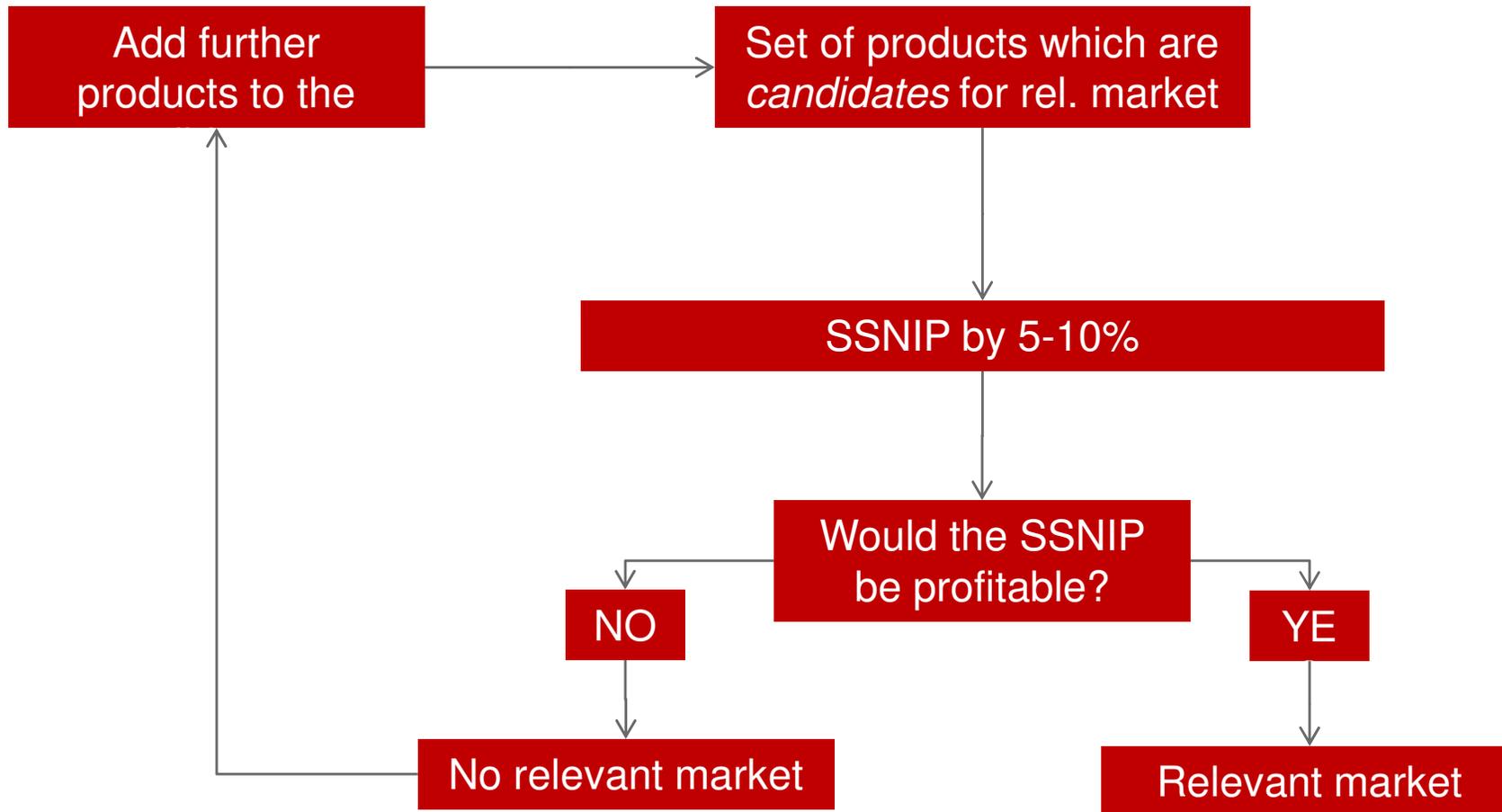
- Market Definition will be based on SSNIP-Test
 - SSNIP - small but significant non-transitory increase in price (e.g. 5-10 %-test)

- Idea: „A relevant market is a market worth monopolizing.“

- So this test asks the question:
„Would a hypothetical monopolist be able to profitably increase prices by 5 or 10%?“
 - If so: There would be no good alternatives for customers to turn to, price increase would be profitable.
 - If not: Customers would switch away from the hyp. monopolist's products to other alternatives, making the price increase unprofitable.

The SSNIP test

Relevant market is smallest set of products which may be profitably monopolized.



From SSNIP to Critical Elasticities

- Profitability hinges on the price elasticity of demand for candidate set of products
 - Volume loss vs. margin increase
 - If customers behave highly elastic volume loss will be large -> likely unprofitable
 - If customers behave not very elastic volume loss will be small -> likely profitable
- The Critical Loss Analysis allows the use of the test without assuming a precise determination of the price elasticities.

$$\%CL = 100 * \frac{\%\Delta\text{price}}{\%\Delta\text{price} + \%\text{margin}}$$

- The critical volume loss can also be expressed as a critical elasticity. This corresponds to the formula:

$$e^{crit} = \frac{-\%CL}{\%\Delta\text{price}}$$

Empirical approach

- 2-prong approach

- Survey of mailing customers „**stated choices**“
 - Asks for advertising budget reallocation in response to hypothetical price increases of 5 to 10 %

- Econometric demand analysis „**revealed choices**“
 - Measures demand reactions to past price increases

Survey results

- We asked for budget adjustments in response to price 5 and 10 % price increases.

- $elasticity = \frac{\% \Delta quantity}{\% \Delta price}$, with $\% \Delta quantity = \frac{1 + \% \Delta budget}{1 + \% \Delta price} - 1$

- We differentiated by customer sizes (clusters 1 (small) through 5 (very large))

	price increase of 5%					price increase of 10%				
	all respondents	Cluster 12	Cluster 3	Cluster 4	Cluster 5	all respondents	Cluster 12	Cluster 3	Cluster 4	Cluster 5
Ø Elasticity	-1,63	-2,27	-1,41	-0,98	-1,81	-1,91	-2,41	-1,89	-1,19	-1,81
Ø Elasticity (nur Elast. <=0)	-1,94	-2,75	-1,61	-1,25	-1,97	-2,00	-2,53	-1,93	-1,30	-1,81
lower bound 95%-Interval*	-2,42	-3,81	-2,27	-1,84	-4,41	-2,31	-3,16	-2,41	-1,69	-3,04
upper bound 95%-Interval*	-1,46	-1,69	-0,95	-0,67	0,46	-1,69	-1,90	-1,44	-0,91	-0,58
observations	316	108	122	69	17	328	117	124	71	16

* for Ø Elasticity (nur Elast. <=0).

Survey results

- We also asked for next best alternatives to switch to (or rather reallocate budget shares)

reinforcement in other media	most important		2. most important		3. most important		4. most important	
telemarketing	6,5%	4	10,0%	6	22,8%	13	36,6%	15
email marketing	48,4%	30	38,3%	23	5,3%	3	4,9%	2
online advertising	35,5%	22	38,3%	23	21,1%	12	2,4%	1
partially or unaddressed advertising	0,0%	0	0,0%	0	0,0%	0	0,0%	0
other	6,5%	4	8,3%	5	22,8%	13	46,3%	19
indifference*	0,0%	0	5,0%	3	12,3%	7	0,0%	0
not specified	3,2%	2	0,0%	0	15,8%	9	9,8%	4
Summe	100,0%	62	100,0%	60	100,0%	57	100,0%	41

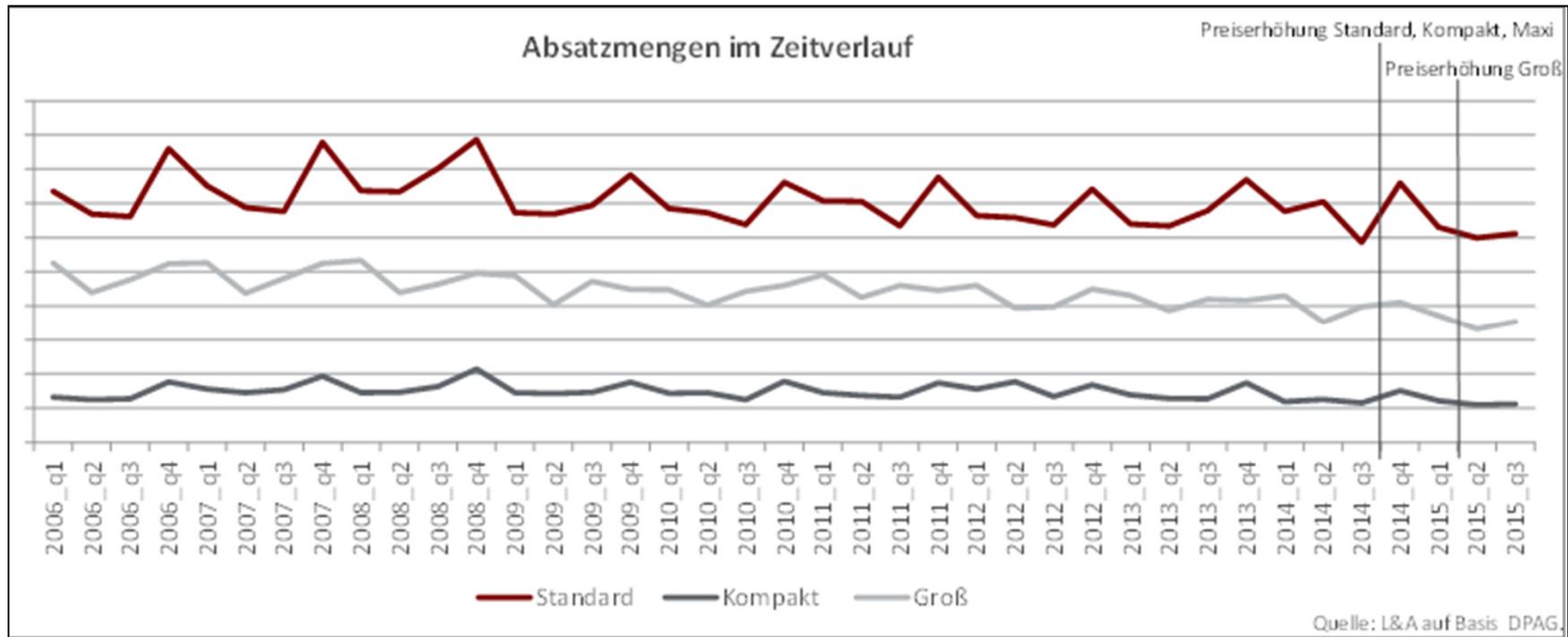
* cancel as soon as this is called

source: L&A on basis of TNS.

- Closest substitutes for mailings and catalogues:
 - E-Mail marketing
 - Online advertising

Econometric analysis

- Advantages: we observe actual choices
- But: only two price increases



- Again, we differentiated by customer sizes (the same clusters 1 (small) through 5 (very large))

Econometric analysis

- We estimate the following model:
 - For i customers ($>3,700$), over time t (39 quarters)
 - Fixed effects model
 - separate estimations for 4 products from Deutsche Post AG (Standard, Kompakt, Groß, Maxi)
 - Variable „internet“ is a price index for „online advertising“

$$\ln(\text{quantity Standard})_{it} = \text{constant} + \beta_1 \ln(\text{gross price Standard})_{it} + \beta_2 \ln(\text{gross price Kompakt})_{it} + \beta_3 \ln(\text{gross price Groß})_{it} + \beta_4 \ln(\text{gross price Maxi})_{it} + \beta_5 \ln(\text{GDP})_t + \beta_6 \ln(\text{Internet})_t + \beta_7 \text{Quarter}_1 + \beta_8 \text{Quarter}_2 + \beta_9 \text{Quarter}_3 + \alpha_i + \varepsilon_{it}$$

- Usually, one would suspect an endogeneity problem between prices and quantities.
 - Typically an instrumental variables approach would be required.
 - Here however, prices are regulated and fixed in advance. Prices are exogenous.

Econometric analysis

erklärende Variablen	IP Standard: alle Kunden	IP Standard: Umsatz-Cluster 12	IP Standard: Umsatz-Cluster 3	IP Standard: Umsatz-Cluster 4	IP Standard: Umsatz-Cluster 5
ln(Standard Preis brutto)	-2,013 ***	-3,199 ***	-1,625 ***	-1,933 ***	-3,377 ***
ln(Kompakt Preis brutto)	0,050	0,900 **	0,101	-0,016	0,043
ln(Groß Preis brutto)	0,093	0,485	0,163	-0,009	0,201 *
ln(Maxi Preis brutto)	0,227 ***	0,265 *	0,308 **	0,219	0,299 ***
ln(BIP)	0,752 **	-0,590 **	1,131 ***	1,733 ***	4,518 ***
ln(Internet)	-0,003	0,013	-0,020	0,001	-0,018
Quartal1	-0,158 ***	-0,208 ***	-0,153 ***	-0,110 ***	-0,084
Quartal2	-0,160 ***	-0,191 ***	-0,132 ***	-0,149 ***	-0,133 **
Quartal3	-0,215 ***	-0,267 ***	-0,222 ***	-0,159 ***	-0,162 ***
Konstante	3,558 *	7,863 ***	2,345	0,141	-12,174 ***
N	133723	50736	42269	29353	11326
R ²	0,031	0,043	0,027	0,035	0,040
F-Wert	56,35 ***	61,44 ***	20,64 ***	9,13 ***	16,45 ***
Modellierung	fixed effects	fixed effects	fixed effects	fixed effects	fixed effects

* p<0,05; ** p< 0,01; *** p<0,001. Standardfehler wurden Heteroskedastie robust geschätzt über Kunden- bzw. Konzern-Cluster.

Quelle: eigene Berechnung L&A.

R² is „R²-within“

Comparison stated choice vs. revealed choice elasticity estimates

- The stated choice and revealed choice analysis produce remarkably consistent results

	-----econometric model-----				survey	
	Standard	Kompakt	Groß	Maxi	all adressed advertising mail	
estimated elasticities	-2,01	-2,05	-2,06	-1,32	-1,94	-2,00
estimated elasticity < critical elasticity @ 5% price increase?*	yes	yes	yes	no	yes	
estimated elasticity < critical elasticity @ 10% price increase?*	yes	yes	yes	no		yes

* significant at 5% probability level.

Conclusion

- advertising mail and electronic media are close substitutes
 - results of survey and econometric study are consistent
 - estimated demand elasticities are high
 - according to survey electronic media are the preferred substitutes

- availability of close substitutes has an impact on price setting
- market definition including only advertising mail is too narrow
- electronic media should be included in the market