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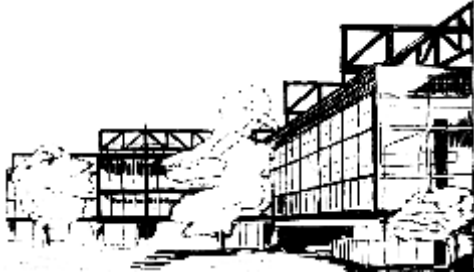
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# **The Economics of Media Markets**

Ralf Dewenter

# The Economics of Media Markets

## - A Literature Review -

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### Abstract

Media and especially mass media like newspapers or magazines are characterised by a number of peculiarities which are interesting from both a theoretical and empirical point of view. The interrelationship of reader and advertising markets, high sunk costs and large economies of scale are typical features. This paper reviews the existent literature on media markets and their peculiarities and lines out areas for further research.

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# 1 Introduction

The media and especially the mass media provides interesting phenomena for scientific research from various points of view. Apart from economics the media can also be analysed from a political, psychological or from a journalistic perspective. Fields of interest are the diversity of opinion, political influence of the mass media or the freedom of the press, to mention only a few. From an economic position, the interrelationship of the sub-markets is a salient characteristic of mass media. Even though this interrelationship is not an exclusive characteristic of media markets, they are surely an important example for this phenomenon.

The deciding feature of interrelated markets is the interdependency of the respective demands. An increment of the demand for, say, newspapers also results in an increasing demand for advertising. In contrast to standard complementary products, the reverse relation is not unconditionally symmetric. For example, if the readers' valuation for advertising is negative (see Blair and Romano 1993) there are asymmetric relations. Thus, products offered by a media firm are neither pure substitutes nor complements. Moreover, and at least as important as the asymmetries, the consumers of the two products are not identical. Therefore, interrelated markets can be described as a peculiar phenomenon, which is not comparable with typical product market relations.

As mentioned above, media firms that publish newspapers or magazines have to consider two markets, the markets for the medium itself (primary market) and the market for advertising (secondary market). Since supplements in print media also generate additional costs and require additional prices, a differentiated consideration of advertisements and supplements would probably be appropriate. Therefore, at least two or three different prices have to be considered by the

publisher, neglecting price and product differentiation. Moreover, a number of additional parameters are subject of the optimisation process as, for example, the quality of editorial contents and advertising.

Similar market relations as for print media can be found with Internet portals. The Internet provider has to optimise access fees on the one hand and advertising rates for banners on the other hand. Also television and radio stations have to consider primary and secondary markets, the broadcasting and advertising market. However, in contrast to other media and apart from Pay TV, free-to-air broadcasters only have to optimise the advertising rate. Despite the absence of prices for viewer, the TV and radio stations compete in program quality in primary markets. A further example of interrelated media markets are cinemas. The cinema operator is faced with the demand for three different products, therefore she has to optimise the respective prices. Apart from ticket prices and advertising rates, also a vector of concession rates has to be set.

Interrelated markets, also exist in other sectors (even though they are frequently associated with media markets). Sports events, for example, combine several markets, where the demand for advertising, concession, broadcasting and, last but not least, the event itself, are characterised by interdependency. And also other events like music concerts or theatre performances and, additionally, institutions like amusement parks are all different types of interrelated markets, if advertising plays any role for these events.<sup>1</sup>

### **Further features of media markets**

While the interrelationship of primary and secondary markets is the main feature of the mass media there are also some additional important characteristics to be discussed in the following. These features distinguish media markets from other

interrelated markets.

Especially the print media exhibits large economies of scale, as a number of empirical studies on newspapers and magazines have shown. Moreover, the existence of these scale economies is frequently asserted as a main reason for the persistent concentration in media markets and, therefore, for market power. Furthermore, intra-industry concentration and also cross-ownership of media products is a characteristic worth mentioning. Not only in Germany, but also in Europe, the United States and Australia, there are several firms which operate in different media branches such as print media, radio broadcasting and television. Some few examples of the largest worldwide acting cross-ownership firms are *AOL Time Warner*, *Bertelsmann*, *Viacom*, or Rupert Murdoch's *News Corporation*.

An important requirement for analyses on interrelated demand is the definition of the relevant markets. This is not always a trivial task. Even if the primary markets, as for example copy markets, are concentrated, it is not necessarily the case that the secondary markets are also highly concentrated as well. Because of possible substitutional relationships, especially to advertising space in various different media products, market delineation is not identical for primary and secondary markets. The consequence are asymmetries with respect to markets structures.

A further characteristic of media products is an effect that can be described in terms of habit formation or addictive behaviour. Newspaper habit and particularly Internet addiction (see for example Stein 1997, Griffith 1999 or Beard 2002) are phenomena subject to psychological and psychiatric research. Not only subscriptions, but also newsstand sales seem to be path depending. Moreover, some mass media have public good properties because both, radio and TV broadcasting are neither not rival and to some extend not excludable. Note, that this

only holds for the primary market, as of course, advertisements are excludable and rival products. Other mass media can be described as network goods. In this connection, the Internet should be beyond dispute, because of its physical network properties, but also newspapers, magazines or television programmes can be considered as some kind of network products, namely in the sense of social networks. Of course, media products are also frequently characterised by price discrimination. Newsstand prices (i.e. of newspapers or magazines) and subscription rates are typically differentiated. The same is true for Internet portals or for Pay TV programmes.

Finally, also regulation of mass media is an important feature. Because of the existence of economic factors like scale economies, barriers to entry and relatively high fixed costs, but also for political reasons the media sector is usually (still) heavily regulated. Some other features and aspects of mass media will not be considered in the following, even if they are interesting fields of economic studies. Therefore, topics such as the convergence of the media (see e.g., Nilsson, Nuldén and Olsson 2001) or the essential facilities characteristics of mass media will not be discussed.<sup>2</sup>

However, the focus of this paper is basically on the pricing behaviour in interrelated markets and related topics.

The paper is organised as follows: In the next section theoretical considerations of media markets are reviewed and in the fourth section some empirical work on interrelated markets and the peculiarities of mass media is discussed. The last section concludes.

## 2 Theoretical considerations

The literature on the interrelationship of markets is strongly connected with media markets of several kinds. Most theoretical and empirical studies deal with the newspaper sector and focus on United States, Great Britain, and Australia. While some others concern media like television or radio, but only few of them investigate the interdependency of the markets. For this reason most of the literature surveyed in this paper is related to newspaper advertising and reader markets.

Theoretical considerations of interrelated markets are rare. Only few studies deal with the interdependency of reader and advertising markets or the influence of different cost structures. Moreover, none of these articles analyse features like quality provision or habit effects. Only few analyse separate (for example oligopolistic) market structures on advertising and reader markets. Actually, most studies consider monopolistic media firms, which is surely an appropriate and realistic assumption for most reader markets but (also due to the possibility of inter media competition) not necessarily for advertising markets.

As stated above, studies on (inter)related markets are mostly concerned with traditional media like newspapers or magazines. Correspondingly, the first article of this kind by Corden (1952) dealing with demand dependency, analyses the relationship between newspapers' advertising and reader markets. Corden considers the optimisation problem of a newspaper firm using geometric techniques within a static framework. However, Corden does not consider interrelated, but only related markets.<sup>3</sup> On the one hand, he asserts that circulation is an important variable for both markets, but on the other hand he neglects to consider the influence of advertising on the demand for copies, even though he is aware of this



connection:

*“It will be noted that the circulation is the link between the two products sold by the newspaper—printed matter for readers and space for advertisers. The circulation is the quantity sold of one of the products and determines the quality of the other. A link in the reverse direction is also possible.” [...] “We shall assume the absence of this reverse link, as it is generally not sufficiently important to justify the complexities with its introduction into the analysis would involve.”*

W.M. CORDEN (1952), p. 182

Furthermore, Corden distinguishes four different types of costs: fixed costs of the plant, buildings and equipment, costs concerning the editorial, costs that vary with circulation, and the costs of advertising. The copy price is assumed to be fixed, and editorial quality increases both, the demand for copies and costs. Total average costs are assumed to fall with increasing circulation. Corden, therefore, considers economies of scale in the newspaper production.

The results from his analysis are as follows: At first two products are identified, advertising and copies. Introducing a third product, classified advertising, an interrelationship of these markets is conceded. Moreover, as circulation can only be raised by increasing the editorial quality and increasing quality will lead to an increase in average costs. Increasing the circulation could, therefore, lead to losses from the reader market, if the effects of a variation in quality raises costs respectively stronger than revenues.

On the other side, revenues from the advertising market are directly linked to circulation. And the higher the circulation the higher the revenues from advertising markets. Nevertheless, the advertising space and, therefore, revenues from advertising markets are assumed to increase less than proportionally with increasing circulation.<sup>4</sup> Furthermore, costs for advertising vary proportionally with

advertising space and circulation. Thus, there is a maximum of advertising space optimising profits from the advertising market.

Overall, taking both markets into account, Corden concludes that a ‘normal’ situation is reached, if reader markets are characterised by losses and advertising markets are highly profitable.<sup>5</sup> This situation is due to of the high circulation generated in the reader market which is, of course, higher than the optimal circulation considering only the reader market, since a higher number of copies raises the demand for advertising space. Due to a less than proportional effect from circulation on advertising, circulation and editorial quality is naturally restricted.

A full model of a newspaper monopolist’s pricing decision is offered by Blair and Romano (1992). Starting from two interrelated demands for copies and advertising, profit maximising pricing rules for each market are derived. In contrast to a standard monopoly price, the (feedback) effect from the respectively opposite market has to be taken into account. Assuming a positive influence of both, the demand for advertising on the demand for copies and vice versa, price decreases on both markets lead to a stronger response in respective quantities in comparison to usual monopolistic situations. Decreasing the copy price, for example, leads to an increase in the demand for copies and, therefore, to a rise in the demand for advertising space. The increased advertising volume, in turn, leads to a further increase in copy demand. These direct and indirect effects can be summarised as the phenomenon of the circulation-advertising spiral. Furthermore, because of this spiral the equilibrium copy price is lower than a usual monopoly price and possibly even below marginal cost. Finally, Blair and Romano conclude that vertical integration of newspaper publishers and distributors are a typical consequence of this interrelationship because costs can be decreased and copy prices be set optimally.

In contrast to Blair and Romano, Chaudhri (1998) models reader and advertising markets in a different manner. Instead of interrelated markets, he first assumes related markets where the demand for advertising depends on the demand for copies (simply by multiplying the revenues for advertising with the circulation) but not vice versa. At first a ‘naive’ approach is analysed, where the newspaper firm is a monopolist on the reader market but the advertising market is of polypolistic structure. Marginal costs are assumed to be constant. Not surprisingly, Chaudhri finds that the price cost margin is smaller than for a usual monopoly. In a second model, the author analyses competitive situations in both markets, which results in a larger equilibrium circulation. Introducing a new cost function, where costs are the product of circulation and the square of advertising, Chaudhri calculates a zero copy price. Furthermore, he concludes that even a monopolist in both markets would set copy prices below marginal costs. And, under the assumption that price elasticities in both markets are larger than one in absolute values, the newspaper monopolist would set the copy price equal to zero, as in the competitive case.

Finally, the model is augmented by the interrelationship of the markets. Chaudhri concludes that, first, in a competitive situation in both markets, the newspaper firm sells the usual quantities according to the price equals marginal cost rule. Secondly, in a situation where newspaper markets are monopolistic but advertising markets are competitive, the copy price is not only above marginal costs but also corresponds to the standard monopolist pricing rule. Unfortunately, the author neglects to analyse more realistic market structures for advertising markets like duopolies or oligopolies.

An interesting and methodically different study on interrelated markets is provided by Baye and Morgan (2000). The authors consider a media firm, i.e.

a newspaper, which sets subscription and advertising fees to maximise profits, under the assumption of a continuum of risk-neutral consumers and two identical firms, which are able to transmit price information using newspaper advertising. Thus, advertising is informative and the only source firms can use to publish their prices. Consumers are able to subscribe to the newspaper and, therefore, to receive price information. The equilibrium probabilities to advertise prices are identical for both firms. Given this information, optimal fees are calculated. Interestingly, Baye and Morgan derive optimal advertising and subscription revenues and the share of advertising revenues to total revenues, which is almost the same share as one can observe for the 300 top magazines in the United States.

### **3 Empirical studies**

This section reviews empirical of media markets. As with most theoretical studies, the main focus is on print media, i.e. newspapers or magazines. Starting from general considerations of print media, special characteristics of media markets like interrelationship, economies of scale and concentration are examined. Finally, an overview of articles using data on different media products is presented.

Reddaway (1963) analyses different kinds of newspapers in the United Kingdom using descriptive statistics by the Royal Commission on the Press. His main focus is on the sorts of newspapers that can coexist and the number of papers that are able to survive in a distinct class of newspapers. Reddaway finds that despite of the differences in circulation, ‘quality’ newspapers (with low circulation) can coexist with ‘popular’ (and high circulation) newspaper. Moreover, even though the first copy cost and the variable costs per copy are higher for ‘quality’ newspapers, they are able to survive. One reason lies in the nature of the readers that allows to set higher advertising rates. Reddaway concludes further-

more that product differentiation in the newspaper industry leads to monopolistic competition. In connection with high economies of scale he finds that monopolistic competition leads to concentration within a certain class of newspapers. However, the number of separated classes is not affected by the concentration process.

#### *Concentration and price relationship*

A number of empirical studies on media markets analyse the influence of concentration and market structure on the newspaper firms' price setting behaviour. All of these studies consider the advertising market because of its importance and because of the comparability of the single products. A high degree of concentration is a typical characteristic of media markets in most industrialised countries.

In his paper on oligopoly theory Stigler (1964) analysed advertising rates in 53 cities in the United States. Using data on evening newspapers from one- and two-newspaper cities in 1939 he regressed the advertising rates on circulation and circulation to the square within a simple log-linear framework. Stigler found that rates were 5% higher than average in one-newspaper cities and 5% lower than average in two-newspaper cities. Unfortunately, Stigler does not consider the reader market and the interrelationship between the markets.

Landon (1971) analyses the advertising rates in 68 cities, extending Stigler's examination by using additional control variables like the regional average income, product market concentration and retail sales. As Stigler he concludes that advertising rates in monopolies are higher than in oligopolies. However, interrelated markets are again not considered.

A cross-section reduced form analysis is carried out by Ferguson (1983) taking account of the connection to the reader market. To evaluate the influence of media cross-ownership and competition on advertising rates he uses information on 815

local daily U.S. newspapers. Ferguson finds that both cross-media ownership (like newspaper-television or newspaper-radio station ownerships) and chain ownership lead to higher advertising rates.

The impact of concentration and different markets structures on the advertising rates of Irish provincial newspapers is analysed by Thompson (1984). Using information on 50 regional Irish newspapers for 1982, two endogenous variables, the price per standard column inch and the price per page of advertisement, are regressed on a number of exogenous variables and different concentration measures. The main outcome is that prices are positively connected with concentration. Moreover, splitting the Herfindahl index into several critical concentration classes, leads to further insights: Not only a positive, but also an increasing influence of concentration regarding the different classes is observable.

An investigation into advertising rates and market structure (but also neglecting interdependency of reader and advertising markets) is carried out by Reimer (1992). In contrast to the former analyses, Reimer finds a negative relation between concentration and advertising rates. He explains this results with the existence of scale economies due to high fixed costs in the production process of newspapers. Regressing the price of a standardised advertisement on circulation, average income and a dummy variable determining the competitive situation, Reimer finds only weak evidence for his hypothesis. More evidence appears tabulating the means and standard deviations of advertising rates per thousand readers for both, monopolistic and duopolistic markets. The rates in monopolistic markets lie slightly under those from duopolistic ones. As in the case of the other two studies, the sample (45 cities) is relatively small.

A further and comparable study of advertising rates in relation to market concentration and market structure is Dewenter and Kraft (2001). Using data

on 709 German regional daily newspapers, the authors find strong evidence for a positive relation between advertising rates and concentration on the one hand and advertising rates and market structure on the other hand. Moreover, prices in duopolistic markets do not significantly differ from those in monopolies. However, the rates are higher than those in oligopolistic markets with three or four competitors. This may point towards collusive behaviour in German newspaper advertising markets results. In contrast to the other studies mentioned above Dewenter and Kraft use a standardised advertising rate per reader as endogenous variable and various specifications with varying number of controls.<sup>6</sup>

Besides newspapers, a number of studies deal with concentration in (local) radio broadcasting markets. For example, Ekelund, Ford and Koutsky 2000 analyse increasing levels of concentration in local radio markets and the effects on profitability. The results do not support the hypothesis that increasing circulation leads to higher profitability of radio stations. Brown and Williams 2002, provide an analysis on the influence of concentration on advertising rates in local radio markets. While local concentration is found to rise advertising rates only moderately, an increase in national concentration even seems to lower the respective prices.

### *Economies of scale*

Rosse (1967) analyses print media with a different focus. In his seminal paper, Rosse investigates economies of scales in the newspaper industry. Starting from a demand equation for subscriber-inches advertising, which is column inches of published advertising space multiplied with circulation and assuming that long-run costs can be separated into a variable and constant part with respect to subscriber-inch output, he develops a full market model. Due to the absence of important exogenous variables to identify the model, it is not testable in the

original form. Therefore, Rosse uses the first-order condition with respect to subscriber-inch prices to obtain a testable equation and to estimate the strength of economies of scale.

Rosse uses two different samples to analyse the cost structure of print media markets. The first includes average data of small firms over 24 years, and the second includes information of individual firms of different sizes over four years. Overall, he finds that a 10% increase in subscriber-inch output leads to a approximate 3% decrease in average costs. Moreover, this relationship is stable over time and does not change for a sample period of 24 years. Interestingly, an important feature of his analysis is that Rosse is able to identify the cost structure of the U.S. newspaper industry without using cost variables (see also Rosse 1970). However, an important assumption of his model is that the markets are related but not interrelated. Thus, consumers are assumed to be indifferent with respect to the advertising volumes of a newspaper. Nevertheless, the evidence for the existence of scale economies offers an explanation for the concentration which seems to be a typical characteristic of print media products.

The market behaviour of newspaper firms with economies of scale in interrelated markets is considered by Bucklin et al. (1989). The aim of that study is to determine the behaviour of firms when the survival of only one newspaper is predictable. Apart from economies other characteristics of newspaper markets are also identified, such as high fixed costs, the interrelationship of circulation and advertising, randomness in newspapers' success<sup>7</sup>, low re-entry threat, high sunk costs and rising product differentiation. Bucklin et al. conclude that strong incentives for ruinous competition exist.

Using cross-section data on 50 major newspapers located in 30 cities in the United States in 1980, price, quantity and quality setting is analysed under dif-



ferent market structures. Overall, the results confirm the hypothesis of ruinous competition in the newspaper industry to be present or having occurred in some markets. Furthermore, Bucklin et al. find no evidence for higher advertising rates in monopolies. The authors do find strong evidence for a higher editorial quality in monopolistic markets though. However, smaller firms titled as followers also offer a higher quality than oligopolists which seem to be Stackelberg-leaders.

Furthermore, Bucklin et al. estimate elasticities of advertising space with respect to advertising rates and circulation. These lie between -0.71 to 1.509 and 1.05 to 1.54. The price elasticity of demand for copies is insignificant.<sup>8</sup> The elasticity of circulation with respect to advertising is statistically significant and positive (0.27). Regarding advertising rates, Bucklin et al. measure elasticities with respect to circulation of about 0.85 to 0.99, which is not surprising, since doubling the circulation results in a halved price per readers.

#### *Market relations*

A full model of newspaper markets is provided by Dertouzos and Trautman (1990). Starting from a profit function, where revenues from advertising and reader markets are confronted with the respective costs, the authors derive several testable equations. The endogenous variables in their system are the demand for advertising, the demand for copies (or circulation), the costs of advertising, the costs of circulation and the costs of the editorial (or news). Dertouzos and Trautman use cross-section data on 129 newspaper firms from the United States. The exogenous variables include information on the average income of the readership, the number of households within a city, the advertising rate and copy price, the fact whether a newspaper belongs to a group of papers, the location, the quality, the number of local television stations, and the degree of competition in local markets.

The most important outcomes of the study are as follows: First, as Rosse (1967), Dertouzos and Trautman (1990) find strong evidence for the existence of economies of scale in the newspaper industry. They conclude that the monopolistic structure of most markets is a consequence of those scale economies. Furthermore, the existence of local broadcast does not seem to influence either the demand for copies nor the demand for advertising. Chain ownership of newspapers has seemingly no effect on the cost structure of newspapers. Chain ownership, therefore, seems to be affected rather by tax advantages than scale economies. Nevertheless, economies occur on a single plant level with respect to both, advertising and circulation.

Interestingly, Dertouzos and Trautman estimate both, the partial price elasticity of demand for advertising space (-0.87) and the elasticity including the feedback effects from reader markets, taking into account the circulation advertising spiral (-1.08). Not surprisingly, the elasticity considering feedback effects is statistically significant different from the other. Rising the advertising rate leads to a decrease in the demand for advertising space and (assuming positive relations between advertising and demand for copies) a decline in circulation. This in turn leads to a reduced demand for advertising space. However, the magnitude of the respective coefficient does support the hypothesis that a circulation-advertising spiral exists. Moreover, the elasticity of demand for advertising space with respect to circulation is not significantly different from the elasticity of demand with respect to advertising rates. Furthermore, Dertouzos and Trautman provide some evidence on the importance of overlapping newspaper markets.

#### *Various issues*

A number of studies do not use print media data to analyse unconditionally the interrelationship of the markets, but to examine special features, as for example,

entry decisions, price rigidities or the influence that socio-demographic factors of the readership have on advertising markets. Some others use time series data to investigate the competitive behaviour of newspapers over time. To give an insight into further interesting literature some of these studies are summarised in the following.

Thompson (1988) analyses the marginal willingness to pay for advertisements in the newspaper industry. Using data on British newspaper, hedonic prices of advertisements with respect to the characteristics of the readership are calculated. Thompson finds strong evidence for the importance of these factors for advertising customers' marginal willingness to pay. Hence, it is not only the number of readers, but primarily their characteristics and whether readers consist of advertisers' target group, that is responsible for advertising demand.

The determination of circulation, cover price and advertising rates with respect to income as a reader characteristic is analysed by Thompson (1989). Classifying the readers into three different categories a simultaneous three-equation system is analysed where circulation, copy price and advertising rate are assumed to be endogenous. Thompson finds that a negative relation between circulation and the portion of readers with high income exists. Moreover, display advertising rates react more sensitive to reader's characteristics than prices for classified advertisements.

Abbring and van Ours (1994) consider the Dutch newspaper market with respect to advertising, circulation and prices using time series of aggregated data. Furthermore, macroeconomic variables like household consumption, gross investment in capital goods, unemployment and production costs are included to evaluate the influence of these factors. Reader markets are found to be inelastic with respect to variations in copy prices and strongly connected with the advertising

space. Advertising markets and also reader markets are found to be influenced by macroeconomic development.

Fisher and Konieczny (1995) analyse the rigidity of newspaper copy prices. Using data data on Canadian newspapers, for the period 1965-1990, they find strong evidence that monopolies change prices more frequently than oligopolies, but that the price changes of oligopolies are larger.

A number of further studies deal with media products, such as newspapers, magazines, television, or radio stations. Therefore, Table 1 summarises all of the above mentioned and additional studies of media markets.

## 4 Conclusion

This paper considers some theoretical and empirical work on media markets and their peculiarities. Especially the interrelationship of primary and secondary markets, but also other features like sunk costs, economies of scale, highly concentrated markets or market entry has been the topic of various studies. Some of the topics have been sufficiently analysed in both respects, theoretically and empirically. Some others are relatively new.

As mentioned above, the most important feature of mass media is the interrelationship of primary and secondary markets. Depending on market relations, the market structure and the elasticities in both markets, advertising rates and copy prices may significantly differ from their respective marginal costs. Typically, strong price competition in reader markets coincides with relatively high advertising rates. Because of the market interdependency media firms may be able to realise high profits from advertising markets but charge copy prices below marginal costs. Hence, even monopolistic profits in advertising markets may be competed away in reader markets.

On the other hand, a narrow market definition in advertising markets and the resulting oligopolistic market structure may probably facilitate collusive behaviour. Moreover, other factors may also be responsible for a tendency for collusive behaviour. For example, high barriers to entry are typically found in media markets, such as sunk costs or large economies of scale. Indeed, also the high concentration of most media markets give reason for anti-competitive market structures. Some of the empirical studies find evidence for collusive prices or at least for higher prices in concentrated markets. Other studies argue that a high concentration is necessary to exploit of the large economies of scale and that, therefore, prices are lower in monopolistic markets.

Interestingly, none of the studies deal with addiction or habit formation in a theoretical way. And only few analyse habit effects in interrelated or media markets empirically. Thus, in contrast to the psychological literature, economic analyses of habituated media markets are still missing. Especially the pricing behaviour of a media firm which is faced with habituated demand in the reader market could be of interest. However, also the empirical analysis of their existence and strength is interesting.<sup>9</sup>

Moreover, theoretical and empirical work on quality provision in media markets is also rare. One example for a theoretical and empirical analysis of this kind is Dewenter (2003b). The paper analyses the quality setting of German regional newspapers on regional advertising markets. Both theoretical considerations and empirical evidence support the hypothesis that monopolistic firms provide higher printing qualities than duopolies.

Even if interrelated media markets have been analysed in various directions, it is obvious that some further research for example with respect to habit formation or quality provision may be an interesting task. However, also the consideration of

other issues may possibly provide interesting results. Modelling the advertising market under the assumption of Bertrand competition is probably a bit more realistic than assuming quantity competition. Moreover, also the analysis of horizontal mergers or vertical integration has not been yet.

### **Acknowledgements:**

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### **Notes:**

**1** The absence of advertising market leads to the standard multi-product firm problem (see Tirole, 1997, pp. 69-70) and can not be described by the term “interrelated markets”, because the relations between the single products are substitutional or complementary but not interrelated in the sense of media markets. The most important difference is the possible asymmetric relation of the demand for advertising and the demand for copies. Moreover, customers in readers and advertising markets are typically not identical.

**2** Typically, mass media are distributed over physical networks. Most of these networks are characterised by large economies of scales and sunk costs, therefore, the essential facilities problem is frequently present.

**3** Markets are said to be interrelated if the demand for advertising and the demand for the media are interdependent (e.g., readers are interested in advertising and the advertising customers are interested in number of readers). In related markets there is only a one-way relationship (e.g., readers are not interested in advertising, but advertising customers are still interested in circulation).

**4** Corden argues that this is due to psychological preferences and imperfect markets.

**5** The author denotes this situation as normal for newspaper markets in Australia, the United States and Great Britain.

**6** Again this study does not analyse the interdependency of the markets, but because of the usage of the standardised advertising rate per reader, there is no identification problem. Furthermore, usage of lagged circulation as a control variable accounts for scale economies which are typical for this industry.

**7** The term ‘randomness’ captures the uncertainty of a newspaper firm about the success of rising its editorial quality, because of random disturbances in advertisers preferences.

**8** Two facts lead to this insignificant effect in our opinion: First, a high ratio of daily newspaper circulation are subscriptions. Therefore, short-term switching costs are high and varying prices cannot lead to large effects in quantities. Additionally, newspapers are commonly characterised by habit effects. Thus, price elasticities should be low.

**9** The only empirical papers dealing with habit effects and addiction in media markets are Cameron (1999) and Dewenter (2002b). A theoretical consideration of habit formation in interrelated markets can be found in Dewenter (2003a).

Table 1: Some Literature on (interrelated) media markets

Author	Issue
Corden (1952)	Relationship of reader and advertising markets and profit optimisation
Reddaway (1963)	Co-existence of 'quality' and 'popular' newspapers with different cost structures
Stigler (1964)	Advertising rates in different market structures
Rosse (1967)	Monopolistic competition and economies of scale in newspaper markets
Landon (1970)	Advertising rates in different market structures
Reekie (1976)	Price elasticities on reader markets for evening newspapers in the United Kingdom
Wagner (1981)	General consideration of different newspaper industries in different countries
Dertouzos (1982)	Growth in newspaper chains with respect to scale economies, capital markets and tax laws
Ferguson (1983)	Concentration, media cross-ownership and advertising rates
Merrilees (1983)	Different copy price strategies of Australian newspapers in the period 1941-1982
Thompson (1984)	Advertising rates and concentration
Cecchetti (1986)	Price adjustment of copy prices for magazines
Thompson (1986)	Market entry in the newspaper industry
Thompson (1988)	Hedonic advertising prices in the newspaper industry
Bucklin et al. (1989)	Media firm behaviour under the existence of economies of scale
Thompson (1989)	Advertising rates, circulation, copy prices and readership income
Dertouzos and Trautman (1990)	Interrelated markets, competition and cost structure
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