Free commuter newspapers and the market for paid-for daily newspapers

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Abstract

We use a new dataset on the Swiss newspaper industry from 1999 to 2008 to estimate the substitution patterns between free newspapers and traditional media. Our identification strategy exploits the timing of free newspaper entry and allows for confounding trends. We find that the entry of free newspapers has no effect on the circulation of high quality newspapers, but a negative effect on the circulation of the incumbent yellow press. Moreover, free papers appear to be a complement to traditional news media for highly educated readers. Therefore, we conclude that the effect of free newspapers on consumer surplus is positive.

Keywords: media, newspapers, free, commuter, variety, targeting
JEL: L82, L15, L11

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1 Introduction

Ideally, the free daily tabloids that are popping up.....like mushrooms after a rain would complement rather than substitute for relatively high-quality paid newspapers. Commuters and shoppers would pick up the free daily tabs to learn what the city council was up to, and still subscribe to a broadsheet for regional and world news. Young people would enjoy the brevity of the free papers, then "graduate" to more substantive broadsheets. People who won't pay to read would still be informed. Michael Stoll, Grade the News[1]

The welfare assessment of new goods depends on whether they are substitute, complements or independent to existing products. They are clearly welfare enhancing, if the new good complements existing goods or is independent of them, i.e. create a new market. If new goods are substitutes they may replace existing products with positive externalities and therefore potentially reduce welfare. For example, there is an ongoing discussion in media markets, if new media outlets provide less, social valuable, "hard" political news than the social planer would. Instead of informing the public about matters of public interest, they rely on "soft news" about car chases and celebrity scandals to satisfy consumers' demands. Through the increased competition, traditional media outlets which provide quality information about political information are deprived of readers and revenues. Eventually they might be even forced to exit the market. Then without political information citizens are unable to cast informed votes and large social gains from participatory democracy might not be internalized (Downs (1957), Coase (1974) and Posner (1986)). This argument gives a rational, why policymaker limit competition in media markets all over the world (Djankov, McLiesh, Nenova, and Shleifer (2003))

Although compelling, this reasoning rests on the implicit and untested assumption that "hard" and "soft" news outlets are substitutes. Many consumers might not be at the margin between watching hard news or soft news but be-

[1] http://www.gradethenews.org/2005/freepapers3.htm

tween watching some news or no news at all. (Gentzkow and Shapiro (2008)). Furthermore, readers could buy a boulevard newspaper as well as a traditional newspaper and thus be better informed about current affairs. Consequently, new boulevard style media outlets might even increase the share of political informed citizens.

To help assess the impact of entry in the media market on consumer surplus, this article investigates the substitution pattern between yellow press and traditional newspapers.[2] To do this, we quantify the impact of penetration of free commuter newspapers in the Swiss newspaper market, controlling for market and time fixed effects. We find that the boulevard style free newspapers do not take away readers from high quality broad sheet newspapers. They only capture market share from the incumbent yellow press. This suggests that "hard" and "soft" news media outlets are active in different markets. Among the older and highly educated readers, free newspapers appear to be even complements for traditional newspapers: Highly educated readers bought more high quality newspaper after the market entry of the free papers in the regional market. This may indicate that traditional daily newspapers go through a repositioning process to satisfy more tastes of older and highly educated individuals.

The penetration of free commuter newspapers is especially well suited to test the substitution pattern between traditional and yellow press: First, the entry of free newspaper in Swiss was massive. Since 1995 free daily newspapers increased their circulation from 346,000 to almost 800,000. In that same time paid-for newspaper sales dropped by almost 12%. This provides us with ample variation to test my hypothesis.[3] Second, free commuter papers entered sequentially in different markets. They first entered in Zurich and then gradually spread to more than 130 out of 155 "counties", regional markets. This gives me the potential to control for market and time fixed effects. Third, the

[2]Besides the reasons described above, determining degree of substitutability is important for many competition policy debates including those surrounding merger control. This measure is pivotal in defining of relevant market as well as in merger simulation (Motta (2004), FCC (2001)).

[3]Such massive expansion can be observed worldwide. Between 1995 and 2008, the circulation of free daily press increased from 200,000 to 40 million exemplars.

commuter papers were distributed free of charge in the transportation system. Therefore consumer only buy traditional broad sheet media, if the information is not provided by the commuter papers.

The empirical analyses relies on two different data sets. The first data set contains a municipal-level panel of paid-for newspaper circulation along with free newspaper readership in 155 regional markets from 1999 to 2008. Moreover, this data also includes population characteristics for every of these single markets as well as information about the newspaper readership structure. This data set is based on an annual survey conducted by the Swiss Research Media Institute (WEMF). The newspaper data are matched with Census data from the year 2000 that provides information about population characteristics at the municipal level. To our knowledge, this is the first work using this data set to conduct an economic study as detailed as ours.

Our empirical strategy is based on George (2008) and consists of two different steps: In the first step, we explore whether free dailies take readers away from traditional daily press.[4] In order to mitigate potential endogeneity concerns, we employ panel structure of the data and a special feature in the free newspaper distribution.

In the second step, we consider the question whether free newspaper penetration changes the structure of the audience of traditional newspapers. Unlike in George (2008), the richness of our data makes it possible to estimate the change in readership separately for each "reader group". Examining this mechanism is important because in differentiated product markets, the product options available to consumers can be limited by the number of individuals in a market with similar preferences.[5] In other words, if free newspapers reduce or change the composition of the readership for paid-for newspapers, the incumbent may reduce the size of its product or cease to operate. Alternately,

[4]There exist two different theories considering free paper as a direct competitor (substitute) as well as a promoter for traditional press (a complement). See for example Mahoney and Collins (2005).

[5]The tendency for consumers to affect each other through product markets has been documented especially in media markets. See George and Waldfogel (2003) for evidence on daily newspapers, Waldfogel (2003) and Waldfogel (2004) for evidence on radio and television markets, respectively.

the incumbent may change its product in order to gain new readers who are not attracted by commuter newspapers.

To the best of our knowledge only little work has been done on the substitution patterns of boulevard style and broadsheet media. Prat and Strömberg (2005) provide evidence that the introduction of private television in Sweden increased political information and political participation relative to a public television monopoly. The effects of commuter newspapers have been so far only examined by communication scientists. Bakker (2007) and Mahoney and Collins (2005) descriptively show that there is only a weak substitution.

In the economic literature, studies examining product substitutability on the market for news have so far focused on the relationship between on line and print media. Kaiser (2006) has analyzed the effect of website provision on the demand for German women's magazines. The results from a logit and a nested logit model on market level data suggest that website provision significantly cannibalized magazines. Significant and negative effects of on-line presence on the demand for print media is also found by Filistrucchi (2005). He examines the demand for Italian national daily newspapers by using logit-type demand model.

However, as pointed out in Gentzkow (2007) the use of discrete choice model in studies examining newspaper markets might be more than doubtful. The reason is that the starting point of these demand models is that the consumers choose exactly one product from the available set. Since multi-homing plays an important role in the relationship between free and paid-for newspapers we do not use discrete choice demand models.[6]

Despite the evidence that new media draws readers from print media, only little work has examined how new product alter the consumer structure of old product. While George and Waldfogel (2006) examines the effect of New York Times expansion on audience for local newspapers, the internet's impact on traditional newspaper readership is a subject of George (2008). George (2008)

[6]Gentzkow (2007) developed a model dealing with this problem. Unfortunately, we can't use it as we have no data on readers' micro level.

finds that the readership of daily newspapers change because younger, highly educated urban whites are more proportionate attracted by internet.

The remainder of this article is organized as follows. In Section 2 We set up the model. To keep things simple, We spell out the model for quantity competition and two firms. Sections 3 and 4 present the results and robustness checks. Section 5 concludes.

2 Trends in Traditional and Free Paper Circulation

1. Free Daily Penetration

We are interested in identifying the effect of free daily newspapers penetration on circulation and readership of traditional media. Since 1995 free newspaper has been a new player in the market for the daily press. The differentiating features are the price, distribution and format. The pricing strategy of free newspapers reflects the two-sided character of newspaper market. Free newspapers generate their revenues only from advertiser side of the market.[7] Examining free newspapers is important for several reasons.

First, free commuter daily newspapers constitute a new product in the market for news which experienced a considerable increase in circulation and readership in the last decade. Therefore this paper also contributes to the literature examining welfare consequences of new products.[8] Table 6 shows increase in free daily circulation by continent, along with a measure of the supply

[7]In order to properly examine welfare consequences one should consider both sides of the market Evans (2003). Since we are primarily interested in impact on the side of readers, we do not consider competition in advertising markets. Moreover, the available data do not allow us to make such a comprehensive study. Actually, this is in line with most of the literature examining media markets. To best our knowledge there are a few empirical papers considering both sides of the market (Kaiser and Wright (2006) and Argentesi and Filistrucchi (2006)).

[8]Methods of estimating welfare effects of a new product are very well developed. Economists paid a large attention to welfare consequences of a range of new goods, including computers (Bresnahan (1986); Greenstein (1997)), automobiles (Feenstra (1988); Petrin (2002)), media (Gentzkow (2007); Goolsbee and Petrin (2004)) and cellular phones (Hausman (1999)).

expansion, the number of countries where free newspapers entered in between 1995 and 2009. This table generally reflects the increasing importance of free commuter newspapers worldwide. Free commuter dailies were introduced in 1995 in Sweden. Since that time publishers in many countries have launched free dailies in many countries worldwide, and today we can find them almost in 60 countries. Free newspaper circulation increased from 231 thousand in 1995 to almost 37 million in 2009.

Second, table 6 indicates a successive increase of commuter newspaper readership worldwide. We think that Swiss newspaper landscape fits very well such an increase. Figure 1 shows the development of free newspaper readership in Switzerland from 1999 until 2008. The fraction of individuals reading or paging through the free commuter papers rose from 9% in 2000 to 43% in 2008. Moreover, there is considerable variation in free newspaper readership across different markets. While there are markets without free papers, especially in the Italian part of Switzerland, in some markets more than 60% of people older 14 read free dailies. Table 2 in the data section illustrates this considerable variation.

Third, it is helpful to examine a product that addresses a distinct audience. Targeting help us identify the effect of free dailies on paid-for newspaper consumption. The impact may be identified from the differences between the target and non-target group. Free newspapers target readers with tastes for boulevard, short and simple written articles, a set of preferences for which age (i.e. younger readers) or education (i.e. low education) seems a reasonable proxy. The support for this targeting can be found in many communication science studies and press releases of free newspaper publishers. Table 1 shows free daily papers coverage for different user types in 1999, 2002, 2005 and 2008. The left columns describe the fraction of each sociodemographic group in the population older than 14, while the right columns show the fraction of each group among all free newspaper readers. All figures are taken from WEMF's survey MACH Basic.

The biggest difference in the both fractions can be seen for young people

(ages 14-39). Young people comprise about 47% of the respondents in 2002, but 56% of those who read free newspaper. Even with rapid expansion of free dailies, young people make up larger fraction of free paper audience than the general population in 2008. The corresponding numbers are 44% and 70%, respectively. Commuter individuals are also more likely than others to read or page through free newspapers, making up 43-45% of the population and 51-71% of free paper readers. The reason may be that they have direct access to this new product. The free newspaper readership is also less educated than the population as a whole. This holds until 2006. Since 2006 the fraction of highly educated individuals among commuter newspaper audience has dramatically increased. It seems that highly educated people have begun to trust more to this new product.

Table 1: Free Newspaper Coverage by Group, 1999, 2002, 2005 & 2008

	All individuals				Free paper readers			
	1999	2002	2005	2008	1999	2002	2005	2008
All individuals	100%	100%	100%	100%	0%	14%	21%	42%
High education	25%	27%	31%	34%	0%	23%	24%	42%
Low education	73%	71%	68%	65%	0%	76%	75%	57%
Age 14-39	47%	47%	43%	44%	0%	56%	52%	70%
Age 63+	18%	18%	19%	20%	0%	8%	9%	14%
Commuter	43%	44%	44%	45%	0%	51%	53%	71%

Source: WEMF MACH Basic 00-09/2 - Own Computation

Finally, the commuter newspapers have successively expanded during the examined period. At the end of 2008, they were in more than 130 Swiss counties. The first free commuter paper in Switzerland was 20 Minuten. It was launched in Zurich on 13 December 1999. The paper was launched by the Norwegian publisher Schibsted, UK investor Apax and Ernst Müller-Möhl (from 2000 on: the Müller-Möhl Gruppe). After the enter of the market Zurich, it moved to Berne and Basle in October 2000, after obtaining exclusive rights on distribution through public transport Verkehrsbetriebe Zürich (VBZ). Swiss publisher Tamedia took 20 Minuten over from the former owners after threat-

ening to launch the competing free daily Express in 2003. In 2004 it started a edition in Luzern, in 2005 in St. Gallen. Up to 2005 there was no free paper in the French part of Switzerland.

First, a year later, in March 2006, the 6th and 7th editions launched as 20 Minutes (in French) in Geneva and Lausanne while a third French edition was launched in January 2007 in the Neuenburg and Jura cantons. This edition closed after Tamedia merged 20 Minutes with competitor Le Matin Bleu Ű meaning the last was integrated into the first. Coverage increased to 2.2 million readers in 2008, meaning almost 3 readers per copy. 20 Minuten is already profitable for years, and fended off most of the competition. Only Ringier's Blick-am-Abend (a free evening paper with a circulation of 260,000 and a readership of 350,000) remained. Metro, called Metropol in Switzerland, started soon after 20 Minuten in January 2000, but closed down in 2002. Free daily .ch started in 2007 and lasted for less than two years, Tamedia's own NEWS was closed down in December 2009. In the French part of Switzerland Le Matin Bleu vanished.[9]

Table 7 illustrates this successive expansion. It shows increases in free newspaper readership by region, along with the number of counties, where the free papers entered in, between 1999 and 2004 and 2005-2008. The table generally reflects that regions where the free newspapers were more active experienced a greater readership growth. Table 7 also indicates that although free papers were physically distributed only in seven markets during the examined period, they have affected market structure in more than 130 markets until 2008. This point plays an important role in identifying the impact of free newspapers on paid-for newspapers. We explain it later on.

2. Paid-for Daily Newspapers

The circulation of daily paid-for newspaper has been declining in Switzerland since the middle 1980's. Figure 2 illustrates traditional paper circulation from 1986 to 2005. There was a very steep decline between 1986 and 1994. This

[9]Closing downs of many free papers in 2008 and 2009 were caused by bad situation on advertising side of media market.

decline was put back and till 2000 the circulation was stable. Since 2000 (entry of commuter newspapers in the market) we can again observe weak decline. This trend suggests a potential role for the commuter papers in circulation declines. With clear differences in free newspaper readership across demographic groups, it is therefore reasonable to expect differential trends in newspaper circulation across different types of individuals. Figures 3- 5 show traditional newspaper readership over time by age, education, and commuter status.

Figure 3 shows daily newspaper readership for three age categories. Readership among younger individuals declines throughout the whole period, though the trend steepens from 2002 into the present and is clearly larger by the youngest group (14-39 age). Readership among individuals aged 63 and over is more or less stable. The resulting differential is, however, substantial: the gap in readership between older and younger readers is in 1999 at 5 percentage points and expands to almost 20 percentage points in 2008. Figure 4 plots differential trends for individuals with high and low education.[10] Readership for high educated individuals is higher throughout the whole period and surprisingly does not decline slower than readership for less educated individuals that we would expect. This might be caused by the fact that there are no other controls in the figure, for example, access to internet news may operate in the other direction. Figure 5 plots readership trends by commuter status. We can observe successive decline in both groups since 2002-2003, however the decline in a fraction of commuters is a little bit steeper. Differences in free paper reading across demographic groups combined with changing traditional newspaper readership patterns suggest that the free dailies might have contributed to changes in the audience for paid-for daily newspapers. The following sections develop formal tests for these effects.

[10]This division is made according to Swiss Statistical Office. People with higher schooling than A-level (i.e. Maturitätsschule, Lehrkräfte-Seminar, Höhere Fach/Berufsausbildung, Höhere Fachschule & Universität) belong to the highly educated group.

3 Data

The empirical work relies on three panel datasets constructed from longitudinal information on: (i) daily newspaper circulation, (ii) daily newspaper readership and (iii) sociodemographic factors. The data spans the period 1999 to 2008. Both circulation and readership data are collected by an impartial nonprofit public utility institution the Swiss research media institute ("AG für Medienforschung WEMF") - the Swiss equivalent to the US Audit Bureau of Circulation. WEMF ascertains, monitors and publishes circulation, newspaper and magazine dissemination and coverage information with, according to WEMF's statutes, the aim to facilitate open competition between the suppliers of advertising space. The data on sociodemographic factors are taken from the 2000 Census as well as from Survey MACH Basic 2000 provided by WEMF.

The newspaper circulation is measured as the residual between the number of newspaper copies produced and the number of newspapers returned to the publisher. This data is a municipal-level panel of per-capita newspaper circulation at different geographical levels (counties & municipals). Unfortunately, the data for the year 2005 is not available due to measurement change. The readership variable is based on the answers of respondents from the Survey MACH Basic. Each respondent is asked if she read or scanned through a particular newspaper in its last occurrence interval. [11] If the answer is positive, the respondent is counted as a reader of this particular newspaper. Summing up all readers provides the readership data by particular newspaper. The newspaper readership data is a county-level panel of per-capita readership in 150 markets.

The sociodemographic factors are collected in two different geographical levels. The county demographics are provided by survey MACH Basic. MACH Basic supplements record newspaper coverage along with demographic characteristics for approximately 23,000 individuals each year. The municipal demographics are drawn from the 2000 Census. Demographic characteristics follow

[11] The last occurrence interval for dailies is yesterday.

Census definitions, with "highly educated" corresponding to the fraction of individuals in a municipal with at least an A level, and "rich" to the fraction with income greater than 10,000 SFR per month. The category for youth covers ages 18-39 and older ages 63 and higher. "Commuter" corresponds to the fraction of commuters in the municipal.

We analyze the impact of free commuter newspaper penetration on per capita circulation and per capita readership of about 60 paid-for daily newspapers in 2320 municipalities covering 150 counties. The number of newspapers corresponds with almost 80% of the Swiss daily newspaper population. We aggregate newspaper circulation data as well as readership data to create municipality and county totals each year, respectively. We link the paid-for newspaper circulation and readership data to county-level data on free newspaper readership data in these years, as well as municipal demographics drawn either from 2000 Census or MACH Basic.

Tables 2 and 8 report summary statistics for circulation, readership and demographic data. There is considerable variation in free paper penetration across markets, with per capita readership ranging from 0 at the fifth percentile to 0.79 at the ninety-fifth percentile. Moreover, there is variation across counties in the change in free commuter readership between 2002 and 2008: in changes, the difference between twenty-fifth and seventy-fifth percentile markets experience growth of 0.421 (252 percent). There is also considerable variation in local newspaper circulation across counties, with per capita readership ranging from about 0.36 at the fifth percentile to 1.367 at the ninety-fifth percentile.

Large variation across municipals as well as over time can be also seen by per capita paid-for papers sales. This ranges from 9 percent at fifth percentile to 54 percent at ninety-fifth percentile. The bottom of table 2 reports descriptive statistics of sociodemographic factors at municipal level. The fraction of individuals in each municipal with a high education also ranges from about 10 percent to 37 percent in the fifth and ninety-fifth percentiles. There is also considerable variation by fractions of commuters. Table 8 in appendix sum-

Table 2: Descriptive Statistics

Per capita paid readership	Year	N	Mean	SD	p5	p25	p50	p75	p95
Aggregate county	2002	155	0.97	0.274	0.357	0.862	1	1.125	1.367
Aggregate county	2005	155	0.928	0.245	0.4	0.8	0.963	1.083	1.273
Aggregate county	2008	155	0.84	0.237	0.4	0.74	0.846	0.975	1.184
Source: WEMF MACH Basic 00-09/2									
Per capita free readership	Year	N	Mean	SD	p5	p25	p50	p75	p95
Aggregate county	2002	155	0.087	0.112	0	0	0	0.167	0.31
Aggregate county	2005	155	0.151	0.14	0	0	0.167	0.267	0.375
Aggregate county	2008	155	0.421	0.24	0	0.276	0.458	0.588	0.793
Source: WEMF MACH Basic 00-09/2									
Per capita paid sales	Year	N	Mean	SD	p5	p25	p50	p75	p95
Aggregate municipal	2002	2320	0.319	0.136	0.086	0.246	0.311	0.384	0.544
Aggregate municipal	2006	2320	0.318	0.153	0.041	0.249	0.307	0.379	0.574
Aggregate municipal	2008	2320	0.093	0.132	0.003	0.01	0.03	0.135	0.371
Source: WEMF MA Performance 00-09 (Publicitas)									
Municipal demographics	Year	N	Mean	SD	p5	p25	p50	p75	p95
Fraction at least A-level	all	2320	0.208	0.081	0.104	0.151	0.192	0.25	0.366
Fraction age 63+	all	2320	0.202	0.051	0.128	0.166	0.198	0.229	0.29
Fraction age 14-39	all	2320	0.421	0.05	0.339	0.392	0.424	0.453	0.499
Fraction commuter	all	2320	0.648	0.196	0.422	0.537	0.616	0.707	1
Source: 2000 Census									

marizes sociodemographic factors at county level. However, this data stems from the survey MACH Basic and therefore it slightly varies over time. We can observe similar trends like in Census data.

4 Empirical Strategy and Results

We employ two different approaches to examine the effect of free commuter newspaper penetration on paid-for newspaper readership/sales. First of all

we estimate the overall relationship between commuter newspaper penetration and traditional newspaper circulation in a county. If free papers operate as we hypothesize, inducing paid-for newspapers to target more educated and older readers as well as non commuters, then we have no clear prediction for this relationship. It is namely possible, that free papers reduce traditional paper reading among less educated persons while it promotes local paper reading among the highly educated. we then move toward attempts to test our hypotheses more specifically.

Our second empirical approach asks therefore whether free penetration reduces paid-for newspaper circulation among its target audience, while possibly increasing traditional newspaper circulation among non-targeted consumers. To do that, we estimate the relationship between free newspaper readership and paid newspaper readership for each group separately and then compare the coefficients of interest.

1.General relationship between free and paid-for newspaper

As a first step, we estimate the overall effect of free papers on traditional newspaper sales and readership, respectively. To this end we estimate the following cross-sectional relationship:

$$\frac{PP_c}{Pop_c} = \beta_0 + \beta_1 \frac{FP_c}{Pop_c} + \epsilon_c \tag{1}$$

where PP_c/Pop_c is per capita readership of paid-for papers and FP_c/Pop_c is per capita free paper readership in the market c.[12] To construct the readership variable, we aggregate readers (i.e. people who read or page through a particular newspaper) to county level. In this simple model, β_1 shows the relationship between free newspaper penetration and traditional newspaper circulation and readership, respectively.

Table 3 presents the results. The first three columns show the cross-sectional relationship between free paper readership and paid-for newspaper readership

[12]The per capita readership variables may be interpreted as the number of newspapers (free or paid-for) read by an average reader in the market.

in a county for 2003, 2006, and 2008. The coefficient estimates for free newspaper readership are not significant in all three years, indicating that the occurrence of commuter newspapers has no impact on the readership of paid-for newspapers. These purely cross-sectional estimates are however vulnerable to the concern that free newspaper penetration is correlated with some unobservable determinants of traditional newspaper circulation. For example, the coefficient might be positive because consumers in a market have high "tastes for newspapers", due to poor other media alternatives.

Longitudinal data allows us to add a market fixed effects and time effects to equation (1), producing estimates that circumvent the problem of fixed unobservable market characteristics:

$$\frac{PP_{ct}}{Pop_{ct}} = \beta_0 + \beta_1 \frac{FP_{ct}}{Pop_{ct}} + \phi_t + \mu_c + \epsilon_{ct} \tag{2}$$

where μ_c is a county fixed effect and ϕ_t are time dummies. Time dummies control for factors that are equal in all markets but vary over time. So the time dummies capture effect of subscription prices as well as prices paid at newsstand, business cycle or of outside media on the demand for traditional daily newspapers. Market fixed effects control then for time invariant factors. As the examined period is quite short sociodemographic factors are included in market fixed effects.[13] In column 4 of the table 3, the coefficient is estimated to be -0.114 and significant, indicating that one more free newspaper read in average reduces paid-for paper readership by 0.11. That is, overall traditional newspaper readership is declining less in markets with a smaller increase in free papers readership. In order to economically interpret this result suppose that there are 100,000 people in the market. If free newspaper publisher enter this market 11,000 of traditional newspaper reader will substitute to commuter press. The rest of free newspaper readers may consist of multihomers and new readers.

This result therefore indicates that free and paid-for papers are substitutes.

[13]We also included sociodemographic variables as additional controls into equation 2. The results did not quantitatively differ from that presented here.

Table 3: The Effect of Free Newspaper Penetration on Aggregate Paid-for Newspaper Readership

	Aggregate county paid-for newspaper readership			
	2003	2006	2008	all years
Per capita free paper	0.17	0.161	0.007	-0.114
readership(county)	(0.88)	(1.28)	(0.09)	(-3.46)***
2000 year dummy	—	—	—	-0.008
				(-0.53)
2001 year dummy	—	—	—	-0.025
				(-1.61)
2002 year dummy	—	—	—	0.002
				(0.19)
2003 year dummy	—	—	—	0.032
				(2.04)**
2004 year dummy	—	—	—	0.002
				(0.13)
2005 year dummy	—	—	—	-0.032
				(-2)**
2006 year dummy	—	—	—	-0.058
				(-3.36)***
2007 year dummy	—	—	—	-0.071
				(-3.75)***
2008 year dummy	—	—	—	-0.089
				(-4.33)***
Constant	0.98	0.848	0.836	0..977
	(32.69)***	(22.44)***	(21.64)***	(90.85)***
Fixed effects	—	—	—	County
Counties	155	155	155	155

Notes: Dependent variable is aggregate per capita traditional newspaper readership. T-statistics in parentheses: * significant at 10-percent level; ** significant at 5-percent level; *** significant at 1-percent level.

Constants in fixed effects regression represents the average value of fixed effects

This result is valid as long as the entry and penetration of free papers is exogenous. The recent literature argues that equation 2 is still vulnerable to endogeneity concerns. To mitigate these concerns we use to deal with endogeneity a special feature of distribution of commuter newspapers. In order to better understand the argument note that free newspapers are physically active in only a few markets (i.e. six largest cities in Switzerland). However,

they affect the market structure in other markets via transportation system. So if we consider N markets, one with free papers (e.g. A) and $N-1$ without these papers. If people living in other markets (not A) and working or studying in market A read commuter newspapers, the commuter newspapers also affect the situation in these markets. Therefore, the free papers are considered to enter all N markets, although they are physically only in market A.

In other words: If the publisher setting its racks with free papers in the transportation system (i.e. railway station, trams, buses ...) of market A does not care about, where all the people coming to A are from, the entry of free dailies in the other markets might be exogenous.[14] While this is a really strong assumption, we investigate the impact of the free commuter papers using many empirical strategies robust to a variety of endogeneity concerns. As robustness check we exclude the counties, where free commuter papers were physically distributed, from the estimation. By estimating equation 2, we get quantitatively similar results to those described in table 3.

Moreover, as noted above there are some concerns that free papers crowd out high-quality papers and thereby the aggregate quality of articles will decrease (Ahrens (1999); Haas (2005); Price (2003)). To examine this, we first divide the traditional newspapers into two groups: high-quality papers and low-quality papers (local tabloids). We define a high-quality paper as a newspaper which is supra-regional (i.e. distributed in many cantons) and is supposed to have more in-depth content.[15] We again estimate equation 2 for these two groups. Table 4 reports the results of this estimation. As we would expect (e.g. Gabszewicz and Thisse (1980)), free newspaper penetration has no significant effect on high-quality papers and strong negative effect on local tabloids. In other words the overall effect is largely driven by the reduction of readership of local tabloids. For our example above (i.e. market with 100,000 people) these

[14]This assumption holds as long as people from other markets read free papers first in the market A or on the way back to home. Blick am Abend, free paper appearing first at 2 p.m in the racks, may serve as weak evidence.

[15]Newspapers NZZ, Tages Anzeiger, Le Temps and LaRegione Ticino belong to the high-quality papers. From the low-quality papers we exclude Blick and 24Heures as they are not local tabloids.

Table 4: The Effect of Free Newspaper on High and Low Quality Newspapers

	High-quality	Low-quality
	All years	All years
Per capita free	0.007	-0.121
paper readership(county)	(0.54)	(-4.00)***
2000 year dummy	-0.012	0.004
	(-1.99)**	(0.26)
2001 year dummy	-0.009	-0.016
	(-1.44)	(-1.15)
2002 year dummy	-0.006	0.009
	(-1.00)	(0.63)
2003 year dummy	-0.004	0.035
	(-0.59)	(2.47)***
2004 year dummy	-0.005	0.007
	(-0.83)	(0.49)
2005 year dummy	-0.013	-0.019
	(-2.16)**	(-1.27)
2006 year dummy	-0.022	-0.037
	(-3.22)***	(-2.30)**
2007 year dummy	-0.027	-0.043
	(-3.76)***	(-2.50)**
2008 year dummy	-0.033	-0.056
	(-4.16)***	(-2.97)**
Constant	0.146	0..831
	(35.10)***	(84.11)***
Fixed effects	County	County
Counties	155	155

Notes: Dependent variable is aggregate per capita traditional high-quality and low-quality newspaper readership in the first and the second column, respectively. T-statistics in parentheses:

* significant at 10-percent level; ** significant at 5-percent level; *** significant at 1-percent level.

Constants in fixed effects regression represents the average value of fixed effects

results suggest that while the number of readers of high quality newspapers does not change, many readers of local tabloids substitute to the new product.

Two comments are in order. First, as we noted above, if the publishers by launching decision do not care about, where the commuters come from (i.e. penetration is to some extent exogenous), our results should be valid. If this assumption does not hold, the free newspaper growth may be correlated with

factors affecting the overall change in paid-for newspaper readership. [16] In this case We am not able to identify the overall impact without use of instruments.

Second, even though there might be an endogeneity problem by estimating overall impact, we can identify the effect of free newspapers on high and low quality traditional newspapers, respectively. Such division of datasets leads to consistent results as long as the endogenous change in traditional paper readership correlated with free dailies coverage is the same for both newspaper types. Moreover, we can identify the effect of free paper expansion from the changing gap between the tendency for targeted and non-targeted readers to purchase traditional daily press. This strategy is valid under the condition that the endogenous change in paid press correlated with free papers growth is the same for both groups (George and Waldfogel (2006)). We apply this approach next.

2. The change in audience of paid-for daily newspapers

The actual results indicate that the free newspapers take some readers away from paid-for dailies. However, it is possible that free penetration reduces paid-for readership among its target audience (e.g. young readers, less educated ...), while possibly increasing paid-for readership among non-targeted consumers. In order to examine the question whether free newspapers differentially attract targeted readers, we use following two approaches.

First, the MACH Basic data includes information about county-level readership among different sociodemographic groups, and thus, the effect of free newspapers on each group can be determined, estimating following equations

$$\frac{PP_{ct}^{ta}}{Pop_{ct}^{ta}} = \beta_0^{ta} + \beta_1^{ta}\frac{FP_{ct}}{Pop_{ct}} + \phi_{ta}^{t} + \mu_c^{ta} + \epsilon_{ct}^{ta} \tag{3}$$

$$\frac{PP_{ct}^{nt}}{Pop_{ct}^{nt}} = \beta_0^{nt} + \beta_1^{nt}\frac{FP_{ct}}{Pop_{ct}} + \phi_{t}^{nt} + \mu_c^{nt} + \epsilon_{ct}^{nt} \tag{4}$$

[16] One of the possible factors which may make the results not consistent are the unobservable trends correlated with the demand for information. In this case, however, the results would be biased upwards indicating that both products are even larger substitutes to each other.

where the dependent variables are per-capita paid-for newspaper readership in the market c among target ta and non-target nta readers at time t, respectively. The constants show baseline traditional newspaper coverage for each group and the coefficients β_1^{ta} and β_1^{nt} reflect the effect of free paper penetration on traditional paper readership by group. Direct comparison of these coefficients reveals any difference in the examined effect. To this end, we could use simple Chow test.

Table 5 presents estimates of equations for the six categories of readers. The top row of the table identifies the examined group. The coefficients of our interest in the first four columns are in line with our hypothesis that per capita traditional newspaper coverage is falling more slowly in groups with lower free paper penetration relative to groups with higher free newspaper penetration. The coefficients in the first two columns and the second two columns, respectively, are significantly different from each other. Specifically, the coefficient estimates for groups more likely to read free commuter newspapers (young, less educated and commuters) are virtually all negative (although by commuters not significant), suggesting that increases in free paper penetration in a market reduce newspaper readership among these groups relative to the general population. Similarly, the coefficient estimates for the groups less likely to read (or to substitute to) free papers (highly educated, older and non-commuters) tend to be positive, suggesting that increases in the penetration of commuter papers in a market increase newspaper coverage among these groups, although again the coefficient for the non-commuter is not significant.

The results above suggest that free daily newspapers draws targeted readers (especially young and less educated) away from traditional papers. There is also evidence that free papers penetration increases the coverage of traditional papers among readers not targeted by free papers. This change in composition of the market for traditional dailies suggests that paid-for newspapers reposition products in response to competition from the free newspapers. Moreover, the results suggest that the quality of the traditional papers does not decline as the readership among highly educated individuals does not shrink. If the

Table 5: The Effect of Free Paper Penetration on Audience of Paid-for Newspaper, County Estimates

	Young Readers	Old Readers	High Educated Readers	Low Educated Readers	Commuters	No Commuters
Per capita free paper readership(county)	-0.063	0.139	0.176	-0.074	-0.061	0.008
	(-1.78)*	(1.67)*	(2.89)***	(-2.03)**	(-1.20)	(0.13)
2000 year dummy	-0.028	-0.015	-0.056	-0.011	0.003	0.012
	(-1.15)	(-0.38)	(-1.32)	(-0.56)	(0.13)	(0.33)
2001 year dummy	-0.069	0.008	-0.082	-0.006	-0.035	-0.102
	(-2.85)***	(0.021)	(1.96)**	(-0.33)	(-1.49)	(-2.88)***
2002 year dummy	0.019	-0.024	-0.042	0.017	0.015	-0.011
	(0.76)	(-0.6)	(-1.00)	(0.89)	(0.65)	(-0.30)
2003 year dummy	0.006	0.013	-0.031	0.028	0.009	0.007
	(0.23)	(0.33)	(-0.74)	(1.49)**	(0.39)	(0.19)
2004 year dummy	-0.047	-0.008	-0.08	0.004	-0.024	-0.052
	(-1.89)*	(-0.21)	(-1.90)*	(0.22)	(-0.98)	(-1.45)
2005 year dummy	-0.086	-0.01	-0.145	-0.036	-0.089	-0.041
	(-3.42)***	(-0.26)	(-3.44)***	(-1.84)**	(-3.61)***	(-1.14)
2006 year dummy	-0.087	-0.04	-0.218	-0.043	-0.086	-0.109
	(-3.24)***	(-0.9)	(-4.90)***	(-2.07)**	(-3.22)***	(-2.96)***
2007 year dummy	-0.141	-0.063	-0.238	-0.079	-0.133	-0.156
	(-4.86)***	(-1.31)	(-5.05)***	(-3.52)***	(-4.57)***	(-3.96)***
2008 year dummy	-0.184	-0.024	-0.256	-0.1	-0.163	-0.187
	(-5.99)***	(-0.47)	(5.25)***	(-4.08)***	(-5.16)***	(-4.55)***
Constant	0.895	0.864	13124	0.934	1.004	0.951
	(52.69)***	(31.57)***	(37.92)***	(70.31)***	(60.67)***	(38.27)***
Fixed effects	County	County	County	County	County	County
Counties	155	155	155	155	155	155

Notes: Dependent variable is aggregate per capita traditional newspaper readership by group in county. T-statistics in parentheses:

* significant at 10-percent level; ** significant at 5-percent level; *** significant at 1-percent level. Constants in fixed effects regression represents the average value of fixed effects

quality decreased, we would probably observe a reduction of the high educated readership. Conclusion that traditional newspaper use a larger differentiation to commuter newspaper is in line with communication science literature (Haas (2005))

5 Conclusion

The results above indicate that the free daily newspapers are substitutes to the traditional daily press although one has to differentiate among newspapers. The results suggest that commuter newspapers take readership away only from local tabloids (newspaper with less quality). Moreover, it was shown that free commuter newspapers differentially attract younger and less educated individuals away from daily newspapers. As a result, the audience for traditional newspapers has changed. Older individuals, and individuals with higher education form even larger fraction of the traditional newspaper market. The results also suggest that the quality of traditional newspapers did not decline as a result of free newspaper penetration.

What are the welfare implications from these results? From the readers' standpoint, revealed preference indicates that those who switch to free newspapers are better off. On the other hand, consumers who do not switch might have benefited from product repositioning. The results here suggest that some repositioning was going on as a response to free newspapers, although accurate evidence was not provided. To properly examine the repositioning issue the data about newspapers' contents would be needed. One could then use simple regression models to look at content change as a response to free paper penetration.

This paper does not examine competition between free sheets and paid- for newspapers on the advertising markets, which along with the effects on publishers should be considered to fully examine the welfare implications of free newspaper penetration. This should be analyzed in further research. Competition in the ad market between free and paid for newspapers may be assumed

to be heavy and has many aspects which are not part of this study. This also concerns the categories of ads: Do free sheets attract the same categories of ads and the same advertisers or different ones as those in regional or national newspapers? How strong is the competition with paid for newspapers compared to the competition on the internet? These questions should be answered in further research.

References

Ahrens, H.-J. (1999): "Kostenloser Vertrieb meinungsbildender Tagespresse. Zum prognosedilemma des Wettbewerbsrichters," *Wettbewerb in Recht und Praxis*, 45(2), 123–129.

Argentesi, E., and L. Filistrucchi (2006): "Estimating market power in two-sided market: the case of newspapers," Unpublished Manuscript.

Bakker, P. (2007): "The impact of free daily newspapers on the circulation of paid newspapers," Paper presented to the ICA Conference, San Francisco, May 24-28.

Bresnahan, T. F. (1986): "Measuring the Spillovers from Technical Advance: Mainframe Computers in Financial Services," *The American Economic Review*, 76(4), 742–755.

Coase, R. H. (1974): "The Market for Goods and the Market for Ideas," *The American Economic Review*, 64(2), 384–391.

Djankov, S., C. McLiesh, T. Nenova, and A. Shleifer (2003): "Who Owns the Media?," *The Journal of Law and Economics*, 46(2), 341–382.

Downs, A. (1957): *An Economic Theory of Democracy*. Boston, MA: Addison-Wesley.

Evans, D. S. (2003): "The Antitrust Economics of Multi-Sided Platform Markets," *Yale Journal of Regulation*, 20, 325–381.

FCC (2001): *FCC initiates proceeding to review newspaperbroadcast cross-ownership rule, Press Release*Federal Communications Commission, Press release: September 13.

Feenstra, R. C. (1988): "Gains from Trade in Differentiated Products: Japanese Compact Tructs," in *Empirical Methods for International Trade*, ed. by R. C. Feenstra, pp. 119–137. Cambridge, Mass.: MIT Press.

Filistrucchi, L. (2005): "The Impact of Internet on the Market for Daily Newspapers in Italy," European University Institute Working Paper No. ECO2005/12.

Gabszewicz, J. J., and J. F. Thisse (1980): "Entry (and exit) in a differentiated industry," *Journal of Economic Theory*, 22(2), 327 – 338.

Gentzkow, M. (2007): "Valuing new goods in a model with complementarity: Online newspapers," *The American Economic Review*, 97(4), 713–744.

Gentzkow, M., and J. M. Shapiro (2008): "Competition and Truth in the Market for News," *Journal of Economic Perspectives*, 22(2), 133–154.

George, L., and J. Waldfogel (2003): "Who Affects Whom in Daily Newspaper Markets?," *The Journal of Political Economy*, 111(4), 765–784.

George, L. M. (2008): "The Internet and the Market for Daily Newspapers," *The B.E. Journal of Economic Analysis & Policy*, 8(1), Article 26.

George, L. M., and J. Waldfogel (2006): "The "New York Times" and the Market for Local Newspapers," *The American Economic Review*, 96(1), 435–447.

Goolsbee, A., and A. Petrin (2004): "The Consumer Gains from Direct Broadcast Satellites and the Competition with Cable TV," *Econometrica*, 72(2), 351–381.

Greenstein, S. M. (1997): "From Superminis to Supercomputers: Estimating Surplus in the Computing Market," in *The economics of New Goods*, ed. by T. F. Bresnahan, and R. J. Gordon, pp. 329–372. Chicago: Univ. Chicago Press (for NBER).

Haas, M. (2005): *"Die geschenkte Zeitung" Bestandsaufnahme und Studien zu einem neuen Pressetyp in Europa*. Münster, LIT Verlag.

Hausman, J. (1999): "Cellular Telephone, New Products, and the CPI," *Journal of Business & Economic Statistics*, 17(2), 188–194.

Kaiser, U. (2006): "Magazines and their Companion Websites: Competing Outlet Channels?," *Review of Marketing Science*, 4, Article 3.

Kaiser, U., and J. Wright (2006): "Price structure in two-sided markets: Evidence from the magazine industry," *International Journal of Industrial Organization*, 24(1), 1 – 28.

Mahoney, K. P., and J. H. Collins (2005): "Consumer Newspaper Choice in Markets with Free Print Options: Are Free Daily Newspapers Competition or Opportunity for Traditional Paid Products?," Readership research by New York Times and Scarborough Research.

Motta, M. (2004): *Competition Policy: Theory and Practice*. Cambridge: University Press.

Petrin, A. (2002): "Quantifying the Benefits of New Products: The Case of the Minivan," *Journal of Political Economy*, 110(4), 705–729.

Posner, R. A. (1986): "Free Speech in an Economic Perspective," *Suffolk University Law Review*, 20(1), 1–54.

Prat, A., and D. Strömberg (2005): "Commercial Television and Voter Information," CEPR Discussion Paper No. 4989.

Price, C. L. (2003): "Threats and Opportunities of Free Newspapers," INMA Report 2(3), 2-66.

Waldfogel, J. (2003): "Preference Externalities: An Empirical Study of Who Benefits Whom in Differentiated-Product Markets," *The RAND Journal of Economics*, 34(3), 557–568.

——— (2004): "Who Benefits Whom in Local Television Markets?," *Brookings-Wharton Papers on Urban Affairs*, pp. 257–284.

6 Appendix: Tables and Figures

Table 6: Free Paper Circulation, 1995 - 2008

	World free daily circulation (x1000)				World free dailies, countries			
Year	Europe	Americas	Rest	**Total**	Europe	Americas	Rest	**Total**
1995	231			231	2			2
1996	249			249	2			2
1997	558			558	4			4
1998	918			918	6			6
1999	2711	180		2891	10	3		13
2000	5292	1779	495	7566	14	6	4	24
2001	7371	1907	765	10043	17	7	5	29
2002	8345	2212	2008	12565	16	8	8	32
2003	8778	3097	2922	14797	16	8	8	32
2004	11010	3384	3770	18164	19	8	10	43
2005	15375	5028	4407	24810	24	9	10	43
2006	24267	6204	5853	36324	29	10	12	51
2007	26890	6832	8097	41819	31	10	15	56
2008	25272	7128	9270	41670	33	10	17	60
2009	21354	6712	8915	36981	33	10	17	60

*Source:*Newspaper Innovation 2009 - Own Construction

Table 7: Expansion and Free Paper Readership Growth, 1999-2008

Regions	Readership growth (x1000) 99-04	Readership growth (x1000) 05-08	Counties added entry 99-04	Counties added entry 05-08
Ostmittelland	453	493	36	0
Westmittelland	368	377	34	7
Alpen und Voralpen	126	309	15	13
Suisse romande	3	1071	3	25
Liechtenstein	0	2	0	1
Svizzera italiana	0	0	0	0

Source: WEMF MACH Basic 00-09/2 - Own Computation

Table 8: Descriptive Statistics - Sociodemographics: municipal-level

County demographics	**year**	**N**	**Mean**	**SD**	**p5**	**p25**	**p50**	**p75**	**p95**
fraction A-level	2002	155	0.237	0.105	0.111	0.176	0.231	0.273	0.375
fraction A-level	2005	155	0.266	0.095	0.143	0.210	0.250	0.325	0.417
fraction A-level	2008	155	0.306	0.098	0.143	0.250	0.303	0.362	0.462
fraction A-level	all	1550	0.255	0.100	0.111	0.200	0.250	0.313	0.417
fraction income >10000 SFR	2002	155	0.151	0.088	0.000	0.100	0.152	0.208	0.268
fraction income >10000 SFR	2005	155	0.143	0.077	0.000	0.100	0.152	0.189	0.242
fraction income >10000 SFR	2008	155	0.182	0.089	0.000	0.125	0.182	0.227	0.320
fraction income >10000 SFR	all	1550	0.151	0.085	0.000	0.105	0.154	0.200	0.273
fraction age 63+	2002	155	0.185	0.096	0.089	0.143	0.172	0.214	0.333
fraction age 63+	2005	155	0.192	0.070	0.100	0.161	0.192	0.222	0.313
fraction age 63+	2008	155	0.192	0.071	0.083	0.155	0.188	0.231	0.333
fraction age 63+	all	1550	0.184	0.073	0.083	0.143	0.182	0.222	0.294
fraction age 14-39	2002	155	0.466	0.094	0.333	0.429	0.468	0.520	0.600
fraction age 14-39	2005	155	0.427	0.094	0.286	0.400	0.440	0.474	0.556
fraction age 14-39	2008	155	0.430	0.087	0.250	0.391	0.436	0.476	0.556
fraction age 14-39	all	1550	0.447	0.097	0.286	0.405	0.450	0.500	0.577
fraction female	2002	155	0.507	0.052	0.455	0.492	0.500	0.515	0.556
fraction female	2005	155	0.506	0.029	0.462	0.500	0.500	0.519	0.545
fraction female	2008	155	0.505	0.032	0.455	0.500	0.500	0.517	0.538
fraction female	all	1550	0.508	0.048	0.458	0.500	0.500	0.519	0.556
fraction commuter	2002	155	0.450	0.137	0.200	0.375	0.462	0.529	0.636
fraction commuter	2005	155	0.447	0.126	0.207	0.387	0.462	0.529	0.618
fraction commuter	2008	155	0.466	0.120	0.250	0.412	0.474	0.536	0.632
fraction commuter	all	1550	0.450	0.129	0.220	0.381	0.462	0.528	0.625

*Source:*WEMF MACH Basic 00-09/2

Figure 1: Free Newspaper Readership in Switzerland, 1999-2008

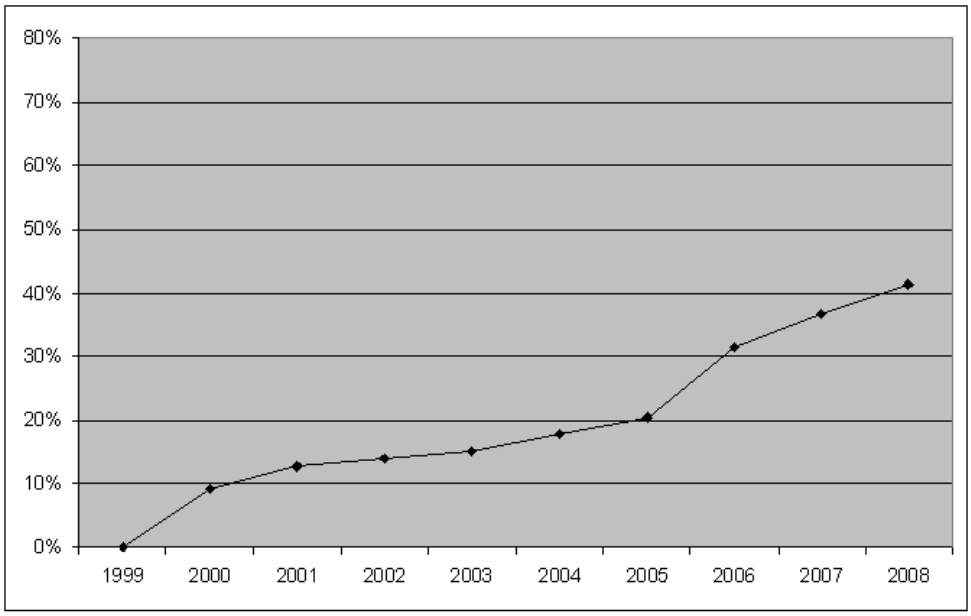

Figure 2: Paid-for Newspaper Circulation in Switzerland (x1000), 1999-2008

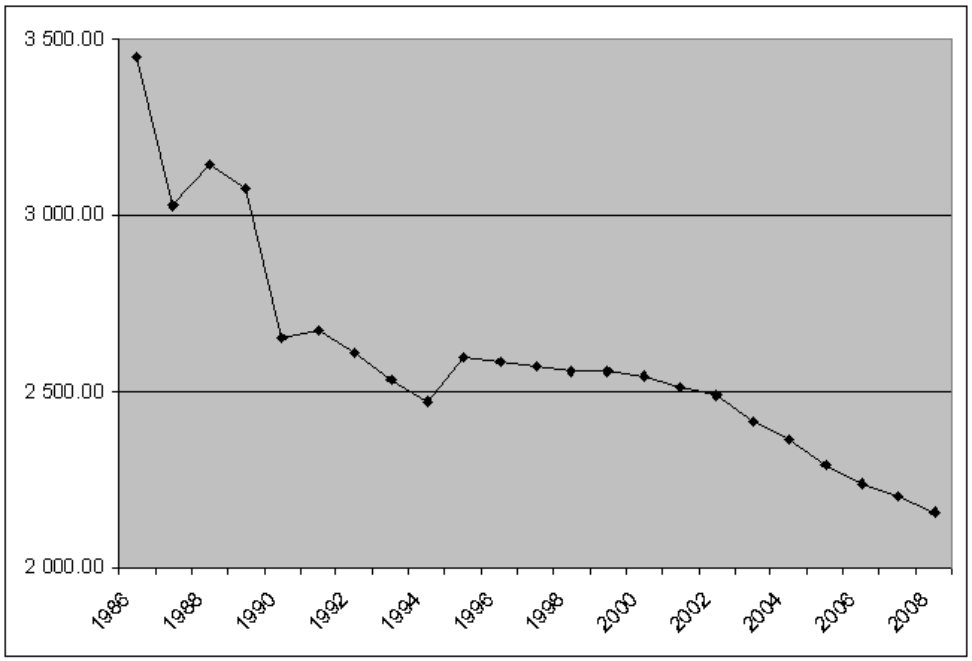

Figure 3: Traditional Newspaper Readership by Age, 1999-2008

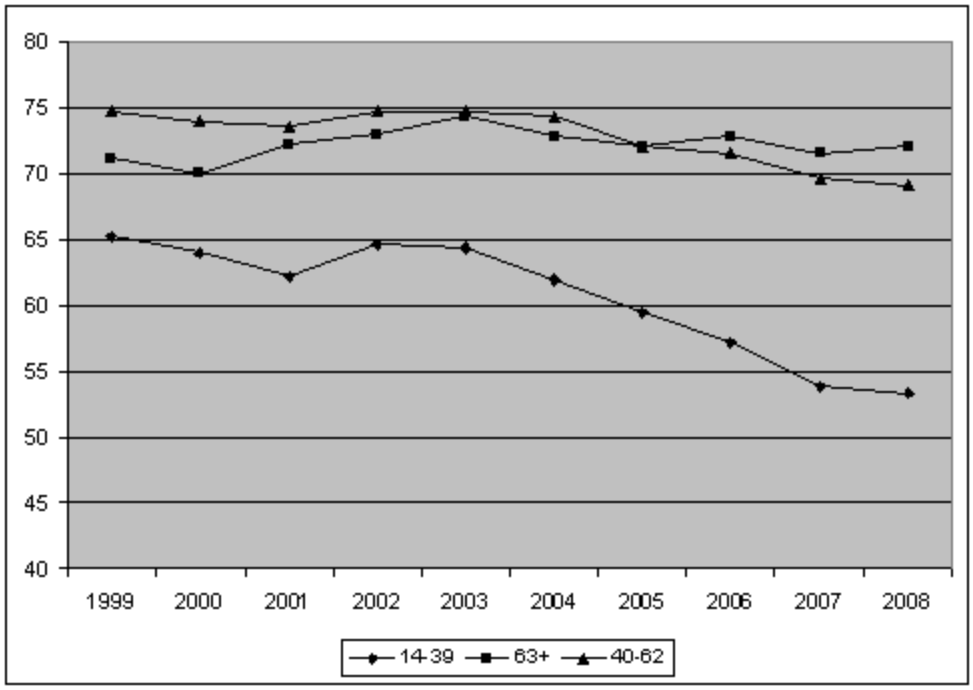

Figure 4: Traditional Newspaper Readership by Education, 1999-2008

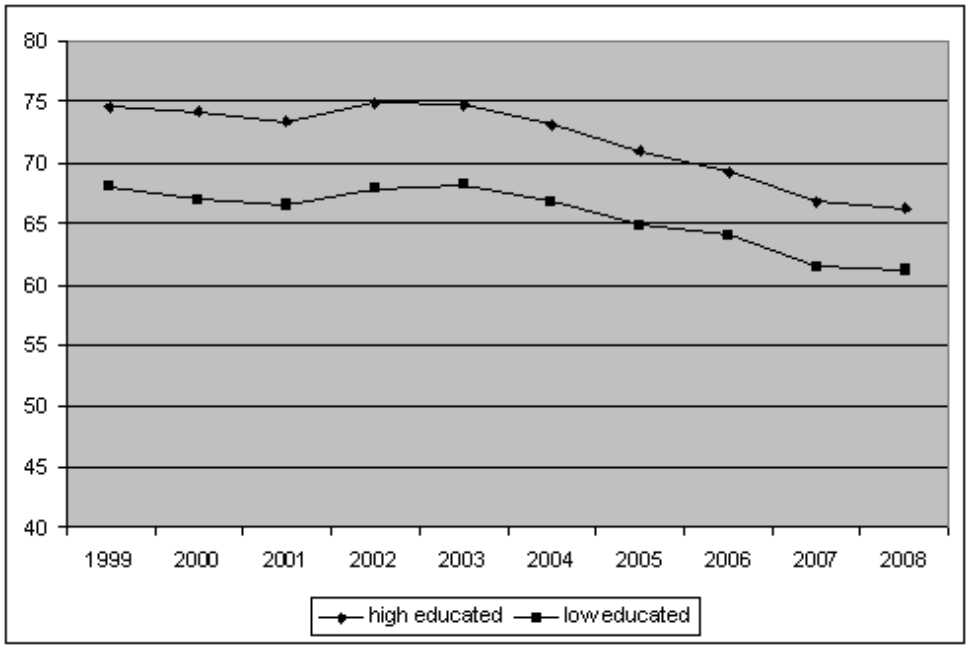

Figure 5: Traditional Newspaper Readership by Commuter Status, 1999-2008