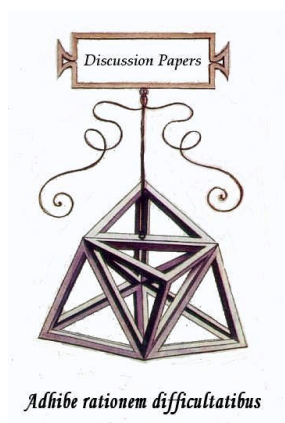




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Andrea Mangani

# Italian print magazines and subscription discounts

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All errors are my own.

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*Discussion Paper*

n. 00



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**Andrea Mangani****Italian print magazines and subscription discounts**

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**Abstract**

This paper studies the antecedents of subscription discounts of Italian print magazines. Drawing on previous empirical work on the theme, I formulate six research hypotheses regarding demand and supply factors that may affect subscription pricing. The two-sidedness of magazine industry is considered implicitly in the empirical analysis. The empirical observations show that the issue frequency, economies of scope deriving from publishing multiple titles, intra-category competition and content devoted to “hard” news are positively linked with subscription discounts. Circulation and returns do not present any evident link with subscription discounts, while the share of subscriptions on total sales does.

**Keywords:** Media markets, price discrimination, quantity discounts, magazines.

**JEL classification:** D4, L2, L82, M2.

## **1. Introduction**

Many goods and services are sold on a subscription basis. Theatres sell seats for a single show and for a bundle of shows; sport centers such as swimming pools offer tickets for a single access and subscriptions for more sessions; there are subscriptions for sport events, covering for example all the matches of the local football teams; railway, bus and airline companies sell books of tickets that include more than one trip; editorial products such as newspapers and magazines may be purchased at the newsstand or by means of a subscription, which means that each issue is delivered to a specific address.

Several economic factors explain the existence of subscriptions (Glazer and Hassin, 1982; Gabszewicz and Sonnac, 1995). First, subscriptions can cut transaction costs between the seller and the buyer: a number of products is exchanged only once and not every time the product is supplied and consumed. Secondly, the buyer faces a lower risk of price change: it is the seller that bears uncertainty about future prices. However, the payment in advance is a premium for running that risk. Finally, subscriptions stabilize the quantity sold, thus lessening market uncertainty.

A further motivation of subscriptions is price discrimination. Under certain conditions, price discrimination through subscriptions allows firms to increase their profits, with uncertain effects on social welfare. A clue that subscription offers are due to price discrimination objectives is the fact that, within a subscription, the price of a single item is lower than its price outside the subscription.

Subscriptions do not present the same technological and market characteristics across industries. For example, consumers have perfect information on the attributes of a fitness center during the subscription period, while a magazine subscription involves a certain degree of uncertainty about the content of future issues, which depends on the editor's choices as well as on a number of unpredictable events. In addition, while the consumer may decide not to use all the fitness sessions of his/her subscription, all the issues of a magazine are sent to the subscriber's address, independently from actual reading. Magazine subscriptions share these characteristics, uncertainty of contents and certainty of delivery, with newspaper and theatre subscriptions. However, not all the

magazines offer subscriptions, and the share of magazines sold through subscriptions differs considerably across countries.

This paper studies the antecedents of subscription price strategies adopted by Italian editors, with a cross-section analysis of about 275 periodicals published in 2010. The analysis draws from previous research on the theme and merits attention given the growing diffusion of online magazines. In fact, apart from the possible and debated issue of cannibalization between online and print editorial products, strong uncertainty characterizes the methods of payment on the web. After the launch of online newspapers and magazines at the end of the second millennium, the trust in new and multiform business models has rather dampened. Broadly speaking, making profits online proved more difficult than imagined; in addition, consumers showed coldness in adopting the proposed methods of payment. Among these, the subscription to electronic newspapers and magazines appeared the appropriate option from the very beginning, given the potential advantages of reducing transaction costs along with the opportunity to price discriminate. Therefore, analyzing the factors that may affect the pricing strategies of magazines may shed some light on which one will prevail on the web, taking into account that a complete and rapid transition of informative contents from print to digital support is far from obvious.

This paper draws from previous contributions on the theme, although: a) the hypotheses proposed in previous papers are discussed and integrated to conduct the empirical analysis; b) the formulation of the hypotheses assumes that the magazine industry is two-sided.

In the last fifteen years many scholars developed analytical models that consider the cross network effects of media markets: on the advertising side, advertisers are attracted by the number and the socio-demographic characteristics of readers, listeners, watchers; on the other side, the utility function of the very same users includes both informative/entertainment content and the quantity and attributes of advertising messages. The crucial feature of this system is that the prices charged on both sides reflect, to a certain extent, the cross network externalities. As far as possible, we will try to include these effects within the empirical analysis of subscription pricing.

The paper is organized as follows. The next section briefly reviews the papers that deal explicitly with magazine subscriptions. In addition, Section 2 describes some recent papers that study the competition between online and print

magazines. The third section describes the empirical methodology and formulates the research hypothesis. Section 4 provides a brief report of the Italian magazine industry and describes the data, while Section 5 shows the results of the econometric analysis. The last section discusses the results and concludes describing the main limitations of the paper and its possible extensions.

## **2. Related literature**

Few papers explicitly explore the subscription strategies of newspapers and magazines. Glazer and Hassin (1982) propose a model to study the decisions of a monopolist editor who charges a newsstand price and a subscription price. The central assumption of Glazer and Hassin (1982) is that consumers have imperfect information on the value of future issues of the magazine; each consumer knows only the expected value, for him, of each issue. In addition, consumers have different evaluations of the same issue: heterogeneity in consumers' preferences makes price discrimination between subscribers and non subscribers profitable. The main results of Glazer and Hassin (1982) are: 1) the number of issues of a subscription does not affect the optimal pricing solution of the monopolist; thus, the empirical observation of magazines with different published issues can be of another form of price discrimination, based on the heterogeneity of preferences regarding the frequency of issues; 2) the cover price and the (unitary) subscription price are higher than marginal cost; 3) consumers that assign a high evaluation to the magazine tend to purchase a subscription instead of purchasing the magazine at the newsstand; since the cover price is higher than the subscription price, the very same consumers pay a lower unitary price.

Gabszewicz and Sonnac (1995) take up the theme and identify the optimal pricing policy of a monopolist publisher. They assume that readers differ according the preference over reading frequency. In reality, the very same assumption may be expressed as differences in the total quantity that consumers wish to purchase. This interpretation makes it easier to view subscriptions as traditional non linear prices (or second degree price discrimination). Gabszewicz and Sonnac (1995) determine the optimal cover price and subscription price; they also find the conditions under which the monopolist finds it optimal to offer the magazine both at the newsstand and with a subscription. Broadly speaking,

Gabszewicz and Sonnac (1995) show that the price discrimination argument is sufficient to explain the existence of subscriptions.

Round and Bentick (1997) study the Australian magazine industry and test some hypotheses regarding both demand and supply factors that may affect the difference between the newsstand price and the subscription price (the "subscription discount"). The sample consists of 345 magazines published in 1994. An OLS analysis shows that subscription discounts are higher in case of: 1) high cover prices; 2) high issue frequency; 3) magazines owned by editorial groups with many titles in the industry, which can take advantage of economies of scope. At the same time, a broad circulation and, to a certain extent, its growth rate, is linked with lower subscription discounts; however, both variables present an unclear relationship with cover and subscription prices, especially for endogeneity problems, which are not fully examined by Round and Bentick (1997). Finally, the presence of extras combined with subscriptions, the age of the magazine and a higher intra-segment competition do not display any significant relationship with the size of subscription discounts.

Also Oster and Scott Morton (2005) explore the possible determinants of subscription discounts, although using a completely different approach. Drawing on the literature of behavioral economics, Oster and Scott Morton (2005) assume that the consumers' preferences are time inconsistent: if a product or an action present immediate costs and future benefits, the consumer will postpone the actual consumption because he/she gives an excessive weight to immediate costs. The magazine industry is a possible field of application of this theme. Magazines are vertically differentiated, that is, they differ along a quality dimension, because some may produce immediate satisfaction/pleasure (adult magazines, for example) while others imply future benefits, such as magazines that cover religious subjects. Oster and Scott Morton (2005) claim that the editor will base his subscription strategy on this distinction and will charge a lower subscription discount if the magazine is a sort of investment in the eye of the readers; on the other hand, those magazines that cause immediate satisfaction will offer a higher discount to convince readers to purchase. The most original and at the same time problematic aspect of the empirical analysis is the construction of indicators that reflect the degree of "investment-ness" of the magazine. Oster and Scott Morton (2005) use data regarding about 300 US magazines and confirm the central hypothesis; in particular, the average

subscription discount increases by 4% with an increase of a standard deviation unit of the "investment-ness" indicator.

Other more recent papers study the magazine industry, though they do not linger on subscription strategies. Kaiser and Wright (2006) put forward and estimate a model of two-sided market using panel data between 1972 and 2003. The econometric analysis shows the existence and the extent of cross network externalities between the two sides of the German magazine industry. Broadly speaking, the hypothesis of cross-subsidies across the two sides of the market, readers and advertisers, finds confirmation: advertisers value readers more than what readers value advertising. Therefore, if readers' demand grows, the advertising fees grow as well, while if the demand of advertising space goes up, the prices charged to readers go down. Simon and Kadyali (2007) study if digital content of online magazines had an impact on the circulation of their print counterparts. The sample is given by about 300 US magazines published between 1996 and 2001. In average, the circulation of a magazine falls by 3-4% when the editor launches the online version, although the effect changes accordingly the type of contents included in it. For example, offering the access to a web edition that reflects perfectly the print version means a fall in circulation of 9%. On the other hand, Simon and Kadyali (2007) do not find any evidence of complementarity between digital and print editions. Finally, Kaiser and Song (2009), partially drawing on Kaiser and Wright (2006), collect the data of six major magazine categories in Germany, reviewing the 1992-1994 period, in order to evaluate the supposed readers' advertising aversion. By means of logit demand models, Kaiser and Song (2009) do not find evidence of advertising aversion; on the contrary, the data show that readers appreciate advertising in some categories, such as women, business, politics and autos magazines, probably because of the high informative content of advertisements in those outlets.

### **3. Empirical strategy and research hypotheses**

The objective of this paper is to estimate the impact of observable magazine characteristics on the magnitude of subscription discounts, and thus observing indirectly the extent of price discrimination within the industry. Hence, the main dependent variable is  $p/s$ , where  $p$  is the cover price at the newsstand, while  $s$  is



the ratio between the cost of subscription and the issues published in a year. There are other measures of subscription discount: the simple difference ( $p-s$ ), the relative difference  $(p-s)/p$ , and the number of issues for which the total expenditure is the same. For a discussion on this point, see Round and Bentick (1997) and Oster and Scott Morton (2005).

The empirical strategy consists of two steps. First, to maintain all observations, we conduct an unconditioned analysis of the impact of (qualitative) magazine characteristics on subscription discounts. In other words, we abstract from circulation and sales data and from the existence of cross network externalities. In doing that, we critically take into account the empirical hypotheses of previous work on the theme, plus other new predictions. Then we will consider the data on circulation, that may reflect cross effects between prices on the two sides of the market, advertising revenues, share of subscriptions and so on, although the data regarding advertising quantity and advertising fees are not available. The hypotheses that drive the empirical analysis regard both the demand and supply side and are formulated as follows.

Round and Bentick (1997) claim that subscriptions ensure a minimum amount of copies sold, reduce market uncertainty and facilitate the organization of editorial content and space devoted to advertisements. These advantages are important especially for those editors who publish many titles, because they may take advantage of scope economies in the production of contents and graphic components, and in the use of printing facilities. In addition, multi-title editors may advertise their offers to a broad customers' base and, in theory, can cross-subsidize across distinct magazines. These circumstances determine a cost advantage that allows for higher subscription discounts.

**Proposition 1.** Magazines published by multi-title editors have higher subscription discounts.

Round and Bentick (1997) claim that when a magazine publishes many issues per year, the probability of mistakes in estimating the demand is lower. For magazines with few issues, if demand is overestimated the unpredicted variable costs may be quite high at the end of the year. Hence, other things being equal, the higher the frequency of issues, the higher the premium for uncertainty reduction and the higher the discount the editor can offer to subscribers. Oster

and Scott Morton (2005) put forward a similar hypothesis. Glazer and Hassin (1982) and Gabszewicz and Sonnac (1995) obtain a different result: the frequency of issues has no impact on the optimal pricing policy. Commenting this result, Glazer and Hassin (1982) conjecture that the actual offering of magazines with different issue frequency may be another form of price discrimination. However, notice that the results of Glazer and Hassin (1982) and Gabszewicz and Sonnac (1995) hold in case of monopoly, an uncommon market structure in the magazine industry.

**Proposition 2.** Higher issues per year are associated with higher subscription discounts.

Although the analytical models on magazine subscriptions assume monopoly markets, the magazines compete within each category along several dimensions: price, content variety, content quality, physical format, political orientation. Following Round and Bentick (1997), who adopt a structural approach, we expect that the number of magazines in each category affects the degree of price competition. An additional hypothesis, again drawn from Round and Bentick (1997), is that editors are reluctant, in competitive markets, to cut the price at the newsstand and prefer manipulating the subscription price.

**Proposition 3.** Subscription discounts decrease in the number of magazines in each category.

Glazer and Hassin (1982) and Gabszewicz and Sonnac (1995) share the idea of a consumers' tradeoff between newsstand purchases and subscriptions: on the one hand, subscribing for a magazine means a lower unitary price; on the other, the subscription implies the purchase of all the issues independently from the positive or negative evaluation of contents. In other words, the subscription "deprives the consumer from his freedom to adjust his purchase frequency to the best of his interest" (Gabszewicz and Sonnac, 1995, p. 423). This argument holds for all the magazines, since the consumer cannot ascertain the content of future issues when he/she purchases the subscription. However, the content depends on editorial decisions as well as on unpredictable events. Hence, it is reasonable to assume that the disutility for the consumer caused by the inability

to adjust the purchase frequency is large in case of politics, business, gossip and entertainment magazines, that we call, for the sake of brevity, "hard news" magazines. On the contrary, when the content of magazines is mostly independent from what happens around the world, the very same disutility is expected to be lower. Therefore, in case of hard news magazines the discount required to boost the subscription purchase is higher.

**Proposition 4.** Magazines with hard news content present higher subscription discounts.

First, we will analyze empirically Propositions 1 to 4 without taking into account the data on magazine circulation and the interaction between readers' consumption patterns and the advertising market. In fact, the missing data on circulation reduce considerably the size of the sample. In relation to circulation, Round and Bentick (1997) claim that the production of magazines exhibits relevant scale economies because fixed costs are quite important. Hence, magazines with scarce circulation and high costs need to increase their market share with an aggressive pricing policy, for example through high subscription discounts. On the other hand, those magazines with large circulation are *already* able to cut subscription discounts. In conclusion, Round and Bentick (1997) do not formulate any explicit empirical prediction that links circulation and subscription discounts. In reality, the radical technical progress and the broad diffusion of ICT make the argument of economies of scale less pervasive (Hakfoort and Weigand, 2000). In addition, one must consider the cross effects between the two sides of the market. Let us assume that advertisers believe that the target of a magazine remains stable, so that they concentrate on reaching as many as possible readers of that target; the advertisers' willingness to pay is higher if the magazine has many readers. Larger revenues deriving from advertising thus permits to subsidize the other side of the market, a common phenomenon in media industry (Armstrong, 2006 and Peitz and Valletti, 2008; see Kaiser and Wright, 2006, for an empirical analysis of this theme). Similarly to Proposition 3, we assume that such effect has a greater impact on subscription price than on newsstand price.

Furthermore, advertisers are not indifferent about the share of sales through subscriptions. The editors can discriminate between high and low quantity

consumers/readers (or, according the approach of Gabszewicz and Sonnac, 1995, between consumers with different preferred purchase frequency). We assume that this second-degree price discrimination increases the quantity of copies sold. The motivation is that all the issues within a subscription are delivered; this is the difference between newspaper/magazine subscriptions and subscriptions to swimming pools/fitness centers. In other words, if we add subscriptions to newsstand sales, it is reasonable to assume that the number of readers, and thus the potential "impressions", will increase; in addition, a high share of subscribers reinforces the stability of the target (Hakfoort and Weigand, 2000) and facilitates the organization of advertising campaigns throughout the year. For example, advertisers can control more easily the degree of repetitiveness and/or originality of advertisements. Therefore, advertisers would first select those magazines with a high share of subscriptions on total sales. If the willingness to pay of advertisers is higher in case of high subscription share, editors can cross-subsidize the other side of the market and cut subscription prices.

**Proposition 5.** Circulation and subscription shares are associated with higher subscription discounts.

A chronic problem of Italian magazines is the high percentage of returns on circulation and total run. The problem of returns is worse than in the newspaper industry. In 2009, the share of returns on circulation was 24.6% for weekly magazines and 28.6% for monthly titles, while the share on copies sold raised respectively to 34.3% and 43.3%. According to the association of editors, the high share of returns depends on the inefficient structure of ordinary mail distribution. Thus, a magazine must adopt all the means to reduce the returns, because they imply an incredible waste of resources. Manipulating the subscription discount the editor may increase the share of subscriptions, stabilize the number of copies sold and harmonize production and sale.

**Proposition 6.** A higher share of returns is linked with higher subscription discounts.

## 4. Data and descriptive statistics

### 4.1 The Italian magazine industry and the data

The 2009 revenues of Italian magazines amounted to 3,400 million euros, with a 21.5% revenues deriving from advertising. On the whole, periodicals attract about 12% of total advertising investments in the media industry. The copies sold were 29 millions, of which 24% through subscriptions (15% for weekly titles and 31% for monthly ones). The share of subscriptions in the other OECD countries is, in average, quite higher (apart from UK and Portugal). The data of this paper were collected using public information released by Fieg (Federazione Italiana Editori Giornali) and ADS (Accertamenti Diffusione Stampa). Fieg is the association of newspaper and magazine editors while ADS is a company (whose members are editors, advertisers and advertising agencies) which collects the editors' reports on run, circulation, returns, total newsstand sales, number of subscriptions, total sales, free subscriptions, free single copies, coupons, total free distribution and foreign circulation. To simplify the empirical analysis, the data on run, circulation, sales, etc. regard 2009, while the data on newsstand and subscription prices regard 2010. Our hypothesis is that 2009 market data affected the pricing policies of the editors in 2010. This approach should alleviate the problems of endogeneity of explanatory variables.

### 4.2 Magazine classification

There is no established method to classify magazines. In addition, the empirical studies tend to create new ad hoc classification to ease the empirical exploration. For example, Oster and Scott Morton (2005) suggest the following criteria: *Export* and *Future gain*. The first serves to distinguish between the popular magazines from more serious or even academic publications; to do that, Oster and Scott Morton (2005) examine the information relative to the cv of the authors of the magazine. The second criterion distinguishes the magazines that provide immediate pleasure to the reader from others that "teach" something important for the future; the degree of *investment-ness* is evaluated by a restricted group of observers (students). We do not consider these criteria because, apart from their questionable nature, they are too specific to that

empirical research. We will use the twenty Fieg categories and a higher level aggregation with five categories (as shown in Table 1) in order to account for heterogeneity problems: Fashion, News, Men, Literature, Technique. In addition, among the “news” magazines, we select those which are more linked with unpredictable world events: magazines on politics, business, gossip and entertainment (entertainment magazines are mainly devoted to TV shows). Clearly, these classifications are somewhat arbitrary, as all the other proposed in the literature, because magazines are differentiated along several dimensions<sup>1</sup>.

**Table 1. Magazine categories.**

I	II
Architecture Fashion Sailing Women	FASHION (87)
Men Auto & moto Hunting & fishing Sport	MEN (73)
Politics & economics Gossip Entertainment Cultural Tourism Mystic	NEWS (95)
Fiction/comedy Games	LITERATURE (30)
Hobby Pc Cooking Health	TECHNIQUE (70)

### 4.3 Dependent, explanatory and control variables

The dependent variable is the ratio between the newsstand price ( $p$ ) and the subscription price per issue ( $s$ ). Following the order of hypotheses presented in the previous section, the explanatory variables are

<sup>1</sup> Of course, the classifications of magazines does not correspond to a classification of readers, some of which read more than one title.

- *Multi-titles*. The number of titles published by the editor of a magazine in 2010. Alternatively, we consider a dummy variable equal to 1 if the editor publishes more than one title, 0 otherwise.
- *Issues*. The issues of a magazine published in 2010.
- *Competition*. For each magazine, the number of titles belonging to the same category in 2010, at the two levels of aggregation.
- *Hard news*. A dummy variable equal to 1 if the magazine treats politics, business, gossip or entertainment topics, 0 otherwise.
- *Circulation, subscriptions and returns*. Market data in 2009.

Finally, we use two control variables. First, the years that have passed since the first publication in Italy (*age*), to control for market experience and learning by doing effects on subscription strategy. The second variable is the nationality of the magazine (*foreign*); i.e., independently from the location of the current editor, this variable equals 1 if the magazine was founded abroad, 0 otherwise. This variable controls for possible pricing strategy usually adopted in foreign countries. All the variables, apart from dummies, are in natural logarithm.

#### 4.4 Descriptive statistics

There are some broad categories in the sample (see Table 2), such as Architecture (35) and Auto-moto (33), and others with few observations, like Hunting and fishing (7), Gossip (8), Games (9) and Sailing (9). The categories with a high subscription discount (cover price/subscription price) are Women (2.06) and Gossip (2.05), while those with a low discount are Hunting & fishing (1.25), Sport (1.31), Hobby (1.32), Mystic (1.32) and Fiction-comedy (1.32).

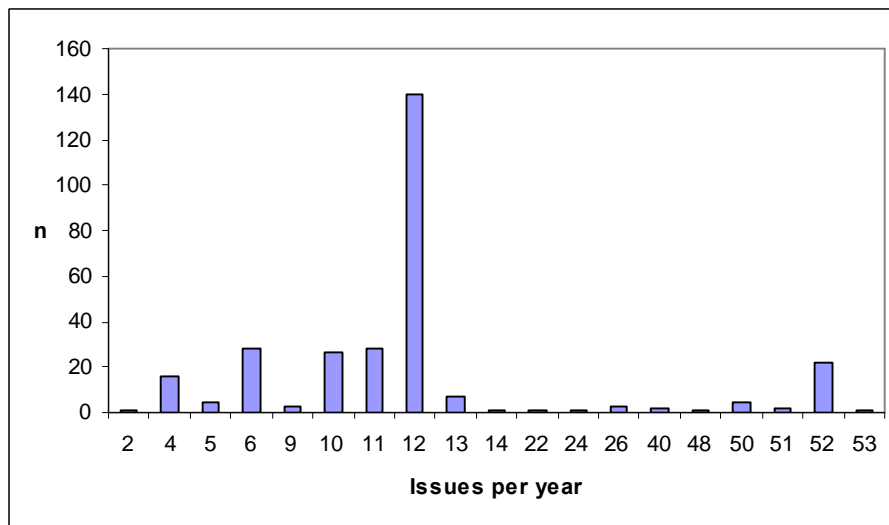
**Table 2. Magazine categories and average subscription discount.**

Category	Obs.	Average discount (p/s)	sd
Architecture	35	1.57	0.42
Auto-moto	33	1.41	0.35
Cooking	20	1,35	0.21
Cultural	19	1,46	0.21
Entertainment	14	1,79	0.29
Fashion	14	1,66	0.37
Fiction-Comedy	21	1,32	0.14

Games	9	1,44	0.24
Gossip	8	2,05	0.75
Health	11	1,45	0.34
Hobby	17	1,32	0.16
Hunting & fishing	7	1,25	0.03
Men	12	1.68	0.33
Mystic	10	1,32	0.21
Pc	22	1,45	0.23
Politics & economics	26	1,88	0.96
Sailing	9	1,44	0.28
Sport	21	1,31	0.17
Touring	18	1,40	0.21
Women	28	2.06	0.93
All categories	274	1,53	0.50

Figure 3 shows the distribution of issue frequency. Nearly half of magazines in the sample are monthly or quasi-monthly.

**Figure 1. Issues per year.**



As to the editors, the concentration per titles is quite high: the largest editor publishes 89 magazines with a CR4 of the sample equal to 0.45.

## 5. Results

Table 3 shows the results of the OLS without the data on circulation, subscriptions and returns. The OLS specifications I to IV regard different



methods of measuring scope economies of multi-title editors and different levels of magazine aggregation into the categories.

**Table 3. Magazine characteristics and subscription discounts.**

Explanatory variables	I	II	III	IV
multi-titles	0.14** (0.06)	0.16*** (0.06)	0.06 (0.00)	0.07 (0.00)
issues	0.29*** (0.06)	0.32*** (0.06)	0.32*** (0.06)	0.35*** (0.06)
competition	0.08 (0.06)	0.22*** (0.06)	0.10* (0.06)	0.21*** (0.06)
hard news	0.12** (0.06)	0.05 (0.06)	0.13** (0.06)	0.05 (0.06)
age	0.10 (0.06)	0.11* (0.06)	0.09 (0.06)	0.11* (0.06)
foreign	0.04 (0.02)	0.07 (0.05)	0.08 (0.05)	0.04 (0.02)
constant	-0.06 (0.14)	-0.78*** (0.25)	-0.02 (0.14)	-0.67*** (0.25)
<i>Obs.</i>	267	267	267	267
adjusted R <sup>2</sup>	0.16	0.20	0.14	0.17
F	13.55***	17.16***	12.19***	15.03***

Notes. Dependent variable (*subscription discount*) and *Issues* in natural log. *Multi-titles* variable in natural log in regression I and II, binary variable in III and IV. *Competition* is measured using 20 categories (regression I and III) or 5 categories (regression II and IV). Standard errors in parenthesis.

\*Significant at the 10% level.

\*\* Significant at the 5% level.

\*\*\* Significant at the 1% level.

Although the explanatory power of the empirical model is low, the sign of coefficients confirms the theoretical predictions. In particular, many issues per year are associated with higher subscription discounts. The existence of scope economies explains higher discounts, apart from when the *multi-titles* variable is a dummy. This result is affected by the fact that multi-titles editors are in minority (4.5% of observations). Probably, multi-title editors have a higher propensity to release information about their business and, on the other hand, it is difficult to gather information about magazines which are the unique publication of an editor. Also the intensity of competition, measured with the magazines included in each category, is related to higher subscription discounts, although the first regression does not confirm this result. The hard news magazines present higher discounts, but the coefficient is significant only in regression I and III. However, hard news is another category which is

underrepresented in the sample (about 10% of observations). We replicated the OLS reported in Table 3 using the relative discount  $(p-s)/p$  as dependent variable, and the results are substantially the same.

For a robustness check, we conducted the OLS for each magazine categories. Hence, we omit both *competition* and *hard news* among the explanatory variables (*hard news* magazines are included in only one of the five macro-categories). Here, as a proxy for scope economies we take the natural log of the editors' published titles.

**Tab. 4. Magazine characteristics and subscription discounts per category.**

Explanatory variables	Fashion	Men	News	Literature	Technique
multi-titles	0.19* (0.11)	0.02 (0.18)	0.30** (0.12)	0.04 (0.12)	-0.07 (0.14)
issues	0.43*** (0.11)	0.51*** (0.18)	-0.04 (0.13)	0.44*** (0.18)	0.02 (0.14)
age	0.23* (0.12)	0.20 (0.23)	0.34 (0.29)	0.27 (0.20)	0.07 (0.08)
foreign	0.02 (0.05)	-0.05 (0.07)	-0.07 (0.13)	0.10* (0.06)	0.13* (0.06)
constant	-0.15 (0.13)	0.03 (0.01)	0.22 (0.24)	-0.04 (0.14)	0.33*** (0.12)
<i>Obs.</i>	68	27	58	62	51
adjusted R <sup>2</sup>	0.27	0.21	0.06	0.17	0.00
F	13.10***	4.42**	2.78*	7.17***	0.16

Notes. Dependent variable (*subscription discount*), *issue* and *multi-titles* are in natural log. Standard errors in parenthesis.

\*Significant a the 10% level.

\*\* Significant a the 5% level.

\*\*\* Significant a the 1% level.

Table 4 shows the results. The findings reported in Table 3 are confirmed for the Fashion category, which is the broadest one. In the others, the coefficients of *multi-titles* and *issues* are never jointly significant. On the one hand, this result suggests a strong heterogeneity of magazines pertaining to the categories Men, News, Literature and Technique; on the other, the somewhat arbitrary construction of such categories may affect the results of the quantitative analysis. To test hypotheses 5 and 6 we must include data on magazine sales, thus reducing the available observations; in addition, there are possible problems of endogeneity. In fact, circulation may affect the editors' decisions on subscription discounts, while, at the same time, subscription discounts may affect circulation and total sales. However, we believe that such endogeneity problems are not

relevant since we consider the 2010 discounts along with the 2009 circulation and sales: endogeneity would require that the former have a significant impact on the latter, which is a rather courageous assumption. Of course, if the structure of prices and discounts does not change radically each year, one could conjecture that endogeneity still remains. We prefer not to explore these issues in detail and leave them for future empirical work. Table 5 in the Appendix shows the results.

The specifications I to IX depend on the variables used in the structural equation. The last two columns assume issues and circulation (column VIII) and issues and subscriptions (column IX) as the sole explanatory variables. An increase in subscription sales is systematically related with an increase in subscription discounts, while this result does not hold for circulation and returns. Similarly, the issue frequency presents a positive and significant relationship with discounts, as predicted in Proposition 2. On the other hand, economies of scope of multi-titles editors and intensity of competition do not produce relevant effects on the magazines pricing strategy.

## **6. Conclusions**

This paper employs data on Italian magazines to study the economic factors that may impact on subscription price strategies. Subscriptions are widespread in real markets and have several motivations; for example, the reduction of transaction costs and price discrimination between high-quantity and low-quantity consumers. The empirical observations show that the issue frequency is positively linked with subscription discounts, probably because many issues reduce the risk, faced by the editors, of demand volatility. This result contrasts with the theoretical papers which deal with magazine and newspaper subscriptions, even though they assume a monopoly market. To a lesser degree, the data show that multi-title editors may take advantage from economies of scope that allows for higher subscription discounts. Although rather weak, there is also an effect of intra-category competition as well as an impact of "hard news" (offered by magazines whose content largely depends on what happens around the world, such as gossip, politics and business) on subscription discounts. Circulation does not present any evident link with subscription discounts, while the share of subscriptions on total sales does. This result may be

a witness of cross network effects between the two sides of the market: advertisers wish to display ads on magazines with a high share of subscribers, and higher advertising revenues enable editors to cut the subscription price. Finally, a high percentage of returns does not present any relationship with the editors' pricing policy. Probably, endogeneity affects this subject, because subscription prices may well affect total sales, returns and the share of subscriptions, although we considered the 2010 prices against the 2009 sales. In addition, inserting the data on sales (at the newsstand and through subscriptions) means a drastic reduction of observations, with effects on the significance of those magazine categories of the sample with "small numbers".

This paper presents several limitations. Firstly, the sample is a sub-set of the magazines published in Italy. Many single-title editors do not join the data collection organized by professional associations, and, broadly speaking, are not eager to disclose information. This behavior prevents the combination of qualitative magazine characteristics, which are publicly available, with quantitative figures, that need a minimum level of certification. Secondly, this paper employs data on 2009 market sales and 2010 subscription discounts to alleviate the endogeneity problems of the explanatory variables. In reality, the pricing policy of the editors may have important effects on production and sales figures. Considering explicitly this issue means to complicate the analysis but, at the same time, it would strengthen the empirical framework.

The directions of future research are the following.

First, the objective is to explore the consistency of editors' pricing strategy over the years and take into account the change of competition intensity in each magazine category. Second, the methodology adopted with print magazines can be extended to online editions. In particular, we wonder whether the same characteristics observed in print versions have an effect also on online cover and subscription prices. Gabszewicz and Sonnac (1995) identify the newsstand and subscription optimal prices. On the one hand, the number of times a reader needs to get to the newsstand does not influence the cover price/subscription price ratio. On the other, that ratio, which is the dependent variable of this paper, decreases in the cost incurred by the reader when he/she goes to the newsstand. The motivation is that a higher cost of moving requires a lower price for each individual issue, otherwise the sales would go to zero. However, the unitary subscription price should go down as well, because it has to be lower than the

cover price. Hence, the empirical analysis could examine the extent of rebates in subscription prices during the shift from print to electronic editions, and determine the share of reduction due to lower mail costs and to other economic factors.

## References

- Armstrong, M. (2006), "Competition in Two-Sided Markets", *Rand Journal of Economics*, 37, 3, pp. 668-691.
- Gabszewicz, J.J. and Sonnac, N. (1999), "Subscription as a Price Discrimination Device", Discussion Papers, *Recherches Economiques de Louvain*, 043.
- Glazer, A. and Hassin, R. (1982), "On the Economics of Subscriptions", *European Economic Review*, 19, 2/3, pp. 343-356.
- Hakfoort, J.R. and Weigand, J.C. (2000), "Commercial Publishing: A Quiet Life? ", *Research Memorandum*, 174, CPB Netherlands Bureau for Economic Policy Analysis.
- Kaiser, U. and Song, M. (2009), "Do Media Consumers Really Dislike Advertising? An Empirical Assessment of the Role of Advertising in Print Media Markets", *International Journal of Industrial Organization*, 27(2), pp. 292-301.
- Kaiser, U. and Wright, J. (2006), "Price Structure in Two-Sided Markets: Evidence from the Magazine Industry", *International Journal of Industrial Organization*, Elsevier, 24(1), pp. 1-28.
- Oster, S.M. and Scott Morton, F.M. (2005), "Behavioral Biases Meet the Market: The Case of Magazine Subscription Prices", *The Berkeley Electronic Press: Advances in Economic Analysis & Policy*, 5(1), Article 1.
- Peitz, M. and Valletti, T.M., (2008), "Content and Advertising in the Media: Pay-tv versus Free-to-Air", *International Journal of Industrial Organization*, 26(4), pp. 949-965.
- Round, D.K. and Bentick, T.G. (1997), "Magazine Subscription Discounts in Australia", *Review of Industrial Organization*, 12, 4, pp. 555-577.
- Simon, D. and Kadiyali, V. (2007), "The Effect of a Magazine Free Digital Content on its Print Circulation: Cannibalization or Complementarity?", *Information Economics and Policy*, Special Issue on Media, 19(October), pp. 344-361.

## Appendix. Magazines

A	Cavallo mag. & lo sperone	Focus brain trainer	Io e il mio bambino	Partiamo	Tennis
Ab	Centonove	Focus domande e risp	Io programmo	Pastore tedesco	Top
Abitare	Chi	Focus extra	Iphone magazine	Pc professionale	Top girl
Ac autocaravan	Chip	Focus junior	Italia squisita	Pc world	Topgear
Ad	Ciak	Focus storia	Jack	Pescara	Topolino
Airone	Ciak si gira	For men	Jazz	Pescare apnea	Traveller
Al volante	Ciclismo	Forza milan	Jesus	Pescare mare	Trekking
Am	Cioè	Fotografia digitale facile	Kiteboard	Pescatore acqua dolce	Triatlete
Ambiente cucina	Cip e ciop	Fox uomo	La clessidra	Photoshop	Tricot selezione maglia
American superbasket	Class	Frames	La cucina italiana	Pianeta hotel	Trucco e bellezza
Amica	Classici del giallo	Fuori	La mia barca	Pico	Tu style
Antiquariato	Classici disney	G baby	Le scienze	Piscine oggi	Turisti per caso
Anna	Club 3	Gambero rosso	Left avvenimenti	Play generation	Tutto mountain bike
Applicando	Collana prestigio	Game informer	Legend bike	Playboy	Tutto wrestling
Armi	Come stai	Gardenia	L'espresso	Playhouse disney	Tuttotrasporti
Armi e tiro	Computer bild	Gcasa	L'europeo	Power rangers magazine	Tv mia
Art attack	Computer world	Gdo week	Limes	Prometeo	Tv sorrisi
Arte	Confidenze	Gente	Linus	Ps mania	Un mese in cucina
Astra	Correre	Gente enigmistica	Linux magazine	Psychologies	Unghie e bellezza
Astrella	Cose di casa	Gente motori	Litterae communionis tracce	Quale computer	Urania
Audio video foto	Cosmopolitan	Gente viaggi	L'orologio	Quattroruote	Urania collezione
Auto	Costruire	Gentleman	Love story	Quattroruote vendo & compro	Vanity fair
Auto & fuoristrada	Costruire impianti	Geo	Luoghi dell'infinito	Quattroruotine	Vela e motore
Autocar	Crociere	Giallo mondadori	L'uomo vogue	Qui touring	Velvet
Autokit	Cronaca filatelica	Giardinaggio	Luxury files	Ragazza moderna	Ventiquattro
Automobile club	Cronaca numismatica	Giardinantico	Magic patch	Rally	Vera
Automobilismo	Cucina moderna	Gioco e imparo	Magico uncinetto	Repubblica xl (la)	Vero
Automobilismo epoca	Cucina moderna oro	Gioia	Mamma	Riders	Vero cucina
Autosprint	Cucina naturale	Giornale assicurazioni	Mani di fata	Ristoranti imprese del	Vero salute
Autosupermarket	Cucina no problem	Glamour	Maria claire	Riza psicosomatica	Vie del gusto
Aviazione sportiva	Cucinare bene	Golf & turismo	Mark up	Robot	Ville & casali

Bagno e accessori	Darwin	Gq	Masterbike	Rolling stones	Ville e giardini
Banca finanza	Di più	Grandhotel	Max	Runners	Visto
Bar giornale	Di più tv	Grandi classici disney	Mc maison	Ruoteclassiche	Vita in campagna
Barca per tutti	Di più tv cucina	Graph creative	Mc world	S	Viver sani e belli
Barche e gommoni	Di più tv giochi	Grazia	Mens' health	Sale e pepe	Vivere
Bell'europa	Di più tv stellare	Guerin sportivo	Merdiani montagne	Salute naturale	Vogue bambini
Bell'italia	Diana	Guida tv nuova	Meridiani	Secreta	Vogue gioiello
Best movie	Digital music	Hachette home	Messaggero di sant'antonio	Segretissimo	Vogue italia
Bimbi sani e belli	Dirigente	Harvard b r	Micromega	Segretissimo sas	Vogue pelle
Bioarchitettura	Disney a punto	Hurrà juventus	Millecanali	Silhouette donna	Vogue sposa
Borsa e finanza	Diva e donna	I love sicilia	Moda junior	Software world	Volare
Brava casa	Domenica quiz	I romanzi	Modulo	Sorrisi e canzoni	Web designer
Burda	Domus	Icreate	Mondo sommerso	Spazio casa	Weekend e viaggi
Business people	Donna e mamma	Idea web	Motociclismo	Speciale qui toruing	Win digital home
Caccia a palla	Donna moderna	Il - il maschile del sole 24 ore	Motosprint	Starbene	Win magazine
Cambio-panoramauto	Dove	Il giornalino	Mx	Storia in rete	Win magazine giochi
Camionsupermarket	Due ruote	Il meglio di sale e pepe	National geographic	Storica	Windows magazine
Campus	East	Il mondo	Natural style	Style	Windows nt
Cani	Economy	Il mondo del golf	Nautica	Style golf	Windsurf italia
Cani utili	Elle	Il nuovo calcio	Novella 2000	Style piccoli	Wine passion
Capital	Elle décor	In moto	Nuovi argomenti	Subito pronto	Winnie the pooh
Casa chic	Espansione	In sella	Office magazine	Suite benessere	Wired
Casa facile	Estetica design	In viaggio	Oggi	Superwheels	Witch
Casa in fiore	Eurosat	Insieme	Ok la salute	System news	Writers magazine
Casabella	Evo	Internazionale	Panorama	Tattoo idea	Xoffroad
Casantica	Famiglia cristiana	Internet magazine	Panorama auto	Tavola (a)	Yacht and sail
Casastile	Famiqlia oggi	Interni	Panorama travel	Tecnologia e difesa	Yacht capital
Casaviva	Fashion files	Intimità	Paperinik cult	Telefonino.net	Yacht design
Casa da abitare	Flair	Io cucino	Paperino	Telepiù	Yacht digest
Casa e country	Focus	Io donna	Parametro	Telesette	Yoga journal

**Table 5. Magazine characteristics, circulation and subscription discounts.**

Explanatory variables	I	II	III	IV	V	VI	VII	VIII	IX
circulation	-0.04 (0.05)		-0.08 (0.05)	-0.06 (0.42)	-0.04 (0.05)	-0.01 (0.05)	-0.03 (0.05)	0.06** (0.03)	
subscriptions	0.09*** (0.02)	0.09*** (0.02)		0.09*** (0.02)	0.09*** (0.02)	0.09*** (0.03)	0.10*** (0.02)		0.07*** (0.01)
returns	-0.03 (0.06)	-0.03 (0.06)	-0.10 (0.06)		-0.02 (0.06)	-0.01 (0.06)	-0.02 (0.06)		
multi-titles	0.00 (0.02)	0.01 (0.02)	0.03 (0.03)	0.00 (0.02)		0.00 (0.03)	0.01 (0.02)		
issues	0.16*** (0.04)	0.15*** (0.04)	0.15*** (0.05)	0.16*** (0.05)	0.16*** (0.04)		0.16*** (0.04)	0.14*** (0.05)	0.14*** (0.01)
competition	0.12 (0.09)	0.11 (0.08)	0.19* (0.10)	0.12 (0.09)	0.11 (0.08)	0.12 (0.10)*			
age	-0.15 (0.13)	-0.13 (0.13)	-0.15 (0.13)	-0.14 (0.12)	-0.20 (0.11)	0.03 (0.10)	0.10 (0.15)		
foreign	0.04 (0.13)	0.08* (0.03)	0.12 (0.12)	0.06 (0.04)	0.07 (0.04)	0.05 (0.11)	0.08 (0.10)		
constant	-0.55 (0.52)	-0.56 (0.52)	-0.63 (0.55)	-0.68 (0.42)	-0.61 (0.48)	-0.71 (0.54)	-0.20 (0.43)	-0.63** (0.29)	-0.60*** (0.16)
<i>Obs.</i>	107	113	107	107	113	107	107	113	113
adjusted R <sup>2</sup>	0.27	0.28	0.17	0.28	0.28	0.20	0.27	0.15	0.27
F	7.67***	11.86***	5.47***	9.25***	9.62***	6.22***	8.85***	10.67***	21.90***

Notes. Dependent variable is subscription discount. All variables excluded *foreign* (dummy) are in natural log. Standard errors in parenthesis.

\*Significant at the 10% level.

\*\* Significant at the 5% level.

\*\*\* Significant at the 1% level.