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Magazine Subscription and Intertemporal Discounting: Some Further Evidence

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Abstract

The paper assesses price discrimination in magazine subscriptions in the Brazilian market using an integrated approach that considers also revenues from advertising. According to Oster and Scott-Morton (2005) long-term benefits of reading should play a major role in reducing the need for discount on subscription offers. However, evidences, in a market where subscription is much less widespread, does not provide support for that form of price discrimination after controlling for different characteristics of the magazines in the econometric analysis. In particular, the consideration of the subscription horizon did not exert any significant effect on the subscription discount. Nevertheless, an exploratory analysis based on principal components suggests that a multidimensional price discrimination mechanism that is composed of price and advertising discounts may be occurring. The interconnection between different forms of price discrimination was further reinforced in the regression analysis as indicated by the important role of advertising price discrimination on subscription-related price discrimination.

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1. Introduction

The existence of subscriptions as an established device for selling certain products can constitute a crucial decision for the manager in some firms and be justified mostly on two grounds: price discrimination mechanisms and advertising. On the first ground, one can highlight the reduction of transaction costs due to a reduced role for middlemen, the assurance of a greater provision of variety and usage as a price discrimination mechanism. In fact, Glaser and Hassin (1982) emphasize the latter aspect in a monopolistic setting and theoretically indicate the possibility of the coexistence of subscription and selling of individual issues of a journal. The result largely hinges on imperfect information by the consumer that can reflect general exogenous factors or the suitability of specific contents of a particular issue that are likely to affect the consumer's expected valuation. Gabszewicz and Sonnac (1999) further elaborate and address the monopolist's optimal pricing policy; in addition they prove that subscription and sale of specific units can occur simultaneously as a result of price discrimination. Nevertheless, there is a stringent assumption that the reading frequency would not be affected by the subscription and the cover prices.

The related empirical literature in price discrimination mechanisms is also limited to a handful of contributions. Round and Bentick (1997) investigate the prevalence of subscription discounts in Australia using production costs aspects as references. A higher publication frequency of the issues would be associated with less significant demand uncertainty; thus a larger subscription discount would be tenable. Nevertheless, the analysis highlights that discounts can reflect both demand and supply conditions.

The other major branch of the literature as represented, for example, by Koschatand Putsis (2002), Depken (2004) and Depken and Wilson (2004) focuses on the study of advertising in magazines which in some cases may be the most important revenue for publishing house. The main evidence that emerges is that specific audience characteristics do play a role in the price of advertising; what also emerges is whether consumers consider advertising as good or bad depends on the consumer's profile and desire for specialized content. Under the hypothesis that the core business of a publishing house is advertising, high level of discount on subscriptions would be expected as it is a way of assuring advertisement exposure for advertisers. It is important to stress, that the literature continues to lack a fully integrated model that explicitly considers the role of readers and advertisers in the firm's profit maximization. In fact, Blair and Romano (1993) note that a substantial share of newspaper's revenues in the U.S. are generated by advertising. Thus, a general observation for circulation industries is that the optimal profit maximizing problem is composed of multiple dimensions. For example, the assurance of content variety through subscriptions cannot be separated from the willingness to assure convenient advertising exposure.

The possible prevalence of non-standard preferences and significant psychological biases have led to the emergence of the Behavioural Industrial Organization (BIO) literature that suggests that managers can exploit bounded rationality of consumers based, for example, on both consumer's time-inconsistency and overconfidence [see e.g. Ho et al. (2006), Goldfarb et al. (2012) and Grubb (2015a)].¹

Oster and Scott-Morton (2005) contribute to the literature pertaining to subscriptions by considering the role of more complex intertemporal discounting. A salient implication of the model with hyperbolic discounting refers to the relation between newsstand and subscription

¹ Ellison (2006) and Goldfarb et al. (2012)] also discusses the BIO literature in terms of bounded rationality by firms.

prices. Thus, a subtle mechanism of price discrimination arises where one charges relatively more for subscriptions for magazines that can be considered long-term investments. The present paper's objectives to contribute to the literature in at least two aspects:

- (a) By considering a more conservative test for the effect predicted by Oster and Scott-Morton (2005). The Brazilian case is particularly interesting because subscriptions are far less widespread than in the U.S., In fact, in Brazil it is common to find newsstands on nearly every corner of the more densely populated districts in large cities. Thus, it could be the case that the aforementioned sophisticated price discrimination device may be less relevant when subscriptions are less common;
- (b) By investigating the subscription horizon as an additional layer of the aforementioned price discrimination mechanism and enabling analysis of different types of intertemporal discounting mechanisms;
- (c) By undertaking an exploratory analysis on the possible prevalence of multidimensional price discrimination mechanisms. In particular, the paper attempts to identify patterns associated to advertising discounts in terms of the displayed size and subscription discounts in accordance with the subscription horizons;

The paper is organized as follows. The second section briefly discusses conceptual aspects of intertemporal discounting in the context of subscriptions. The third section discusses the data construction and the empirical evidence. The fourth section provides some final comments.

2. Subscription and Intertemporal Discounting: Some Conceptual Aspects

The rapid dissemination of behavioral economics reflects the growing recognition that more realistic and often heuristic decision mechanisms appear to be relevant for consumers in different economic settings. Dynamic inconsistent preferences in a broad sense means that there is a lack of stability in consumer preferences [Spiegler (2011)] and different models may approach different phenomena that have been found both on laboratory and in the field in the last years. A modelling strategy for addressing such inconsistency may hinge on generalized forms of intertemporal utility function, hyperbolic discount, that allows for greater impatience than traditional exponential discounting. It is possible to define hyperbolic discount or the intertemporal discount rate $\delta(t)$ as a convex function of time t . A particular form of inconsistent time discounting is the *quasi*-hyperbolic discount, for which the consumer's consumption t periods ahead is discounted to present consumption at a $\beta\delta^t$ rate and, therefore, at an exponential δ rate between future periods and the β parameter to create present consumption bias.

Quasi-hyperbolic discount is used by Oster and Scott-Morton (2005), to differentiate magazines based on their level of leisureliness, or viciousness. The first has a reading cost (c) at the time they are read and investment benefit of I on the following period. Leisure magazines have an opposite structure in which the cost occurs in the future and a present consumption benefit of (L). Thus, under *quasi*-hyperbolic discount hypothesis price structure as a function of the number of issues both, n , is given by $S^l(n) = n(L - C)$, $P^l(n) = (L^* - \beta C)$, $P^i(n) = \beta I^* - C$ and $S^i(n) = n(I^* - C)$ where S^i is the subscription price of i magazine type and P^i their newsstand price for both leisure and investment magazines. Consequently, a greater present consumption bias (smaller β) means that less frequent leisure-magazine-readers would prefer to buy their magazines on newsstands and not to purchase a subscription and the opposite behavior for investment magazines. This behaviour is recognized by the BIO literature [Spiegler (2011), Grubb, (2015a)], as over-optimism with

a consumer picturing himself as an investment-magazine-reader on a near future rather than the actual hedonist reader he is today. Therefore, profit maximizing magazine publishers should offer subscription prices such that the relation between subscription price, S^i , and newsstand prices, P^i , of leisure magazines should be greater than those for investment magazines. Therefore, the ratio S^i/P^i , *SubRatio*, is related to what extent the magazine provides long-run benefits, *Future gain*.

The aforementioned model posits a sophisticated form of price discrimination that is, however, distinct from different modalities of dynamic pricing that incorporate intertemporal issues. Different contributions highlight the heterogeneity of the customer base and attempts of the firm to increase the extraction of the consumer surplus when a simple third-degree price discrimination with clearly defined consumer sub-groups is not tenable. The seminal work by Varian (1980) suggests that temporary price reductions can emerge as a mixed strategy equilibrium when there are sub-groups of informed and uninformed consumers. However, even in the case of predictable price promotions, it is possible to conceive price discrimination motivations as indicated, for example, in recent contributions by Hendel and Nevo (2013) and Besbes and Lobel (2015). The former article suggests the possibility of price discrimination between price-sensitive consumers that do stockpile the product and less price-sensitive consumers that do not. The latter article, consider consumer heterogeneity in terms of product valuation and impatience and show and derive the optimal cyclic pricing policy when product stockpiling is present. The optimal intertemporal pricing indicated by those authors consider temporary price promotions of a same product whereas the price discrimination suggested by Oster and Scott-Morton (2005) consider distinct products in connection to an allegedly stronger commitment of consumers in the case of investment magazines.

In empirical terms, Oster and Scott-Morton (2005) estimated a model in a linear fashion by ordinary least squares and provided evidence on the aforementioned price discrimination mechanism. The control variables portrayed circulation in a non-linear form and those variables together with *availability*, indicating the presence in public libraries, intended to proxy the degree of availability of the different magazines, and the number of issues (*NI*) indicating how frequently the reader is having access to a particular type of content. The number of issues can also have a joint effect with, introductory offers, should those exist, so that one can motivate an interactive term in order to assess whether valuation of subscription is due to the issues themselves or is due to the other product that is being sold together; hence, the use of the variable $NI*int.offer$. Finally, *AdRate*, which is the proportion of the cost of purchasing an advertisement page relative to magazine circulation, and measures the marginal advertisement income.

Furthermore, the study of longer horizons may bring into discussion the issue of over-confident consumers [Spiegler (2011)], once this type of consumer may underestimate uncertainty about both their reading habits and magazine quality on the future and accept a lower δ rate than a non-sophisticated consumer. Moreover, traditional theory says that firms should carefully offer new subscription options in order to avoid competition between them, BIO, as pointed out by Grubb (2015b), contemplates the possibility that a firm may maximize profits offering suboptimal options in the so-called “failing to choose the best price problem”. Inasmuch some consumers may fail choose their best option - because consumers may not search enough or be confused among options - and end up choosing a suboptimal contract.

Later in the paper, we undertake a similar econometric analysis in Brazil exercising additional care in the use of the *FutureGain* (FG) variable; on addition, we investigate the role of the subscription horizon on subscription discounts to include the hypothesis that bias

is generated by a hyperbolic discount factor rather than quasi-hyperbolic one. Next, we discuss the data construction and present the empirical results.

3. Empirical Analysis

3.1 - Data construction

Initially, we used information on the Brazilian magazine market from the list of members of a national association [Associação Nacional de Editores de Revista-ANER] where one could find publishers' contacts and relevant sites when available. In 2008 we collected information regarding subscriptions that would prevail for subsequent periods. For larger publishing houses, more information was available on their websites; however direct data requests were frequently necessary. Therefore, the majority of the information came directly from the publishing houses. A complementary source was the auditing organization [Instituto Verificador de Circulação – IVC] which provided data on magazine circulation. The study focuses on magazines with a larger circulation– with a minimum annual average of twenty five thousand copies – and a more national scope. The table in the appendix lists the selected magazines and their classification in accordance with expected future gains. Oster and Scot Morton's (2005) classification have been based on very laborious criteria performed by language experts, but such criteria should lead to an extensive classification and its use for establishing equivalences between magazines can be appealing. In fact, one can observe the existence of magazines with analogous profiles in the Brazilian market and in some cases even the local versions of the same magazines.

The classification criterion used in the present paper closely followed the one provided by Oster and Scot Morton (2005) and in fact one mostly finds similar magazines. As shown in the Appendix, few magazines are published both in Brazil and the U.S.; in these cases, correspondence between magazines is trivial; such as Scientific American. In addition, there are those cases where the genre is the same correspondence is straightforward

It is worth mentioning that our data base is composed of magazines with different subscription periods. Hence, it was possible to evaluate the average price of subscriptions for the case of short-term subscriptions (a maximum of 18 months) and for long-term subscriptions (more than 18 months) The β coefficient of each magazine subscription policy was evaluated and they do not exhibit a strong correlation with future gain classification². Since quasi-hyperbolic discount has an exponential structure in different periods of time on the future, theoretically would be expected the same β 's coefficients for each type of magazine regardless of the time-horizon subscription; while under a more general hyperbolic discounts framework leisure and investment goods the leisure-investmentness effect could be longstanding. Therefore the variable **Long**, that will be defined, is expected to be significant for this form of intertemporal discount; while FG shall overwhelm for hyperbolic discount.

It is important to note that the most obvious alternative hypothesis for future gain as the main effect to determine *SubRatio* is that publishing houses, or at least a subset of them, establishes their own policies regardless of the magazine type.

² Empirical correlation between Future Gain and Beta on data is 3.138% . Sample of 35 different magazines – the same sample of PCA – beta runs from 0.333 to 1.053 with an average of 0.710, standard deviation of 0.214 and median value of 0.667. It is interesting to note that three different magazines have shown beta greater than one.

The paper performs two empirical exercises with more restricted samples that in part reflect data availability for the particular analysis.

First, we consider an exploratory analysis that intends to investigate whether multidimensional price discrimination mechanisms are likely to prevail. In fact, as previously mentioned, one should in principle expect that the magazine's advertising policy should be related to its pricing policy as part of the general profit maximizing problem of the firm. The prevalence of second order price discrimination (non-linear pricing) in advertising was investigated, for example, by Busse and Rysman (2005) who studied these discounts using Yellow Pages advertising and Cohen (2005) that considered the case of paper towels. Nevertheless, it is worth noting that the possibility of multidimensional price discrimination is absent from the price discrimination literature in general and more specifically it is not addressed in the literature on magazine subscription. An exception is given by Nahata and Ringbom (2007). The next sub-section considers an exploratory analysis using advertising discounts according to page space and subscription discounts according to subscription horizons.

3.2 - Multidimensional price discrimination and principal components analysis

Principal Components Analysis (PCA) objective is to uncover linear combinations of a set of variables that properly portray the variance structure of the data and captures independent dimensions of the data. PCA is useful as an exploratory procedure to identify common dimensions across different variables; in addition, it constitutes a multivariate statistical technique to reduce the dimensionality of the data [see Manly (2005) for an introduction].

The present empirical application considers five variables, where three of those pertain to steps reflecting discounts in advertising prices and the remaining two variables indicate subscription discount according to the subscription horizon. Specifically:

FPTT: price of a full page advertisement relative to a two-thirds page advertisement; TTHP: price of a two-thirds page advertisement relative to a half page advertisement; HPTP: price of a half page advertisement relative to one-third page advertisement;³ SRS: average price of a subscription divided by the newsstand price for short-term subscriptions (maximum of 18 months);⁴ and SRL: average price of a subscription divided by the newsstand price for long-term subscriptions (more than 18 months).

The results obtained with Stata 13.0 SE are summarized in Tables 1 and 2

The evidence from Table 1 suggests that we can retain the first two principal components that capture the variance of the data. Thus this indicates that a significant dimension reduction is possible; in addition, this indicates that important common patterns across different discount indicators appear to exist. This exploratory evidence is suggestive as it is consistent with a multidimensional price discrimination mechanism for magazines. It is possible to improve the interpretation of the retained PCs by obtaining correlations with the original variables as reported in Table 2. The results allow identification of two distinct dimensions in the data; thus it is possible to consider PC₁ as reflecting *subscription discounts* whereas PC₂ is indicative of *advertising discounts*

³The previous variables were normalized so as to compare prices with equivalent page spaces

⁴ As the number of issues may vary

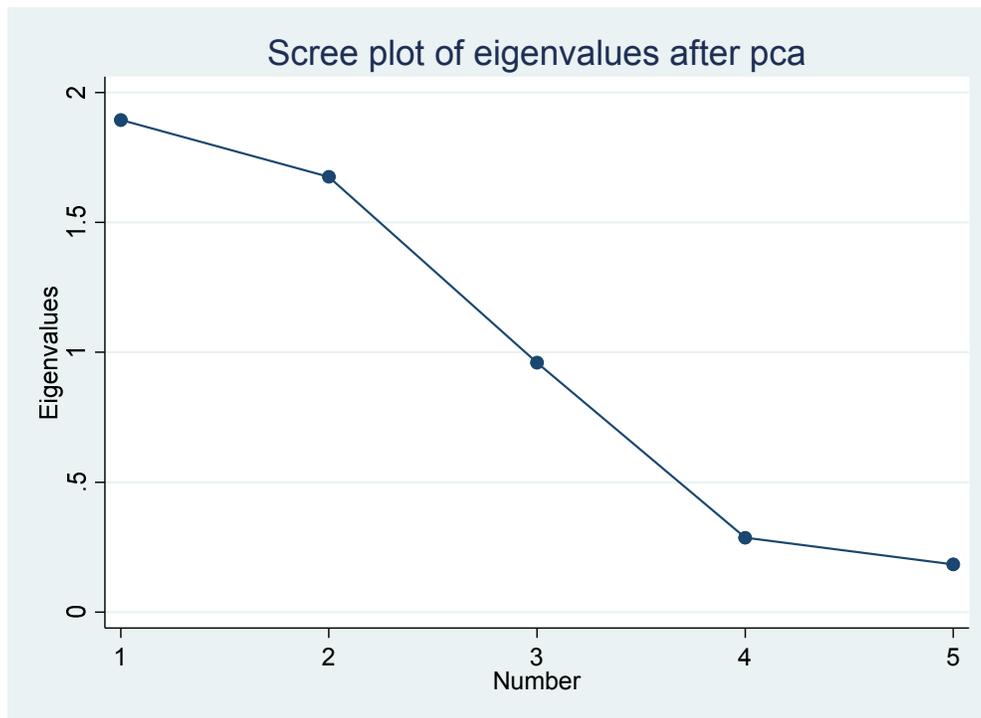
Table 1

Principal components analysis: advertisement and subscription discounts (N = 33)

principal component	eigenvalue	proportion of variance	cumulative proportion of variance
PC ₁	1,894	0.379	0.379
PC ₂	1,676	0.335	0.714
PC ₃	0.960	0.192	0.906
PC ₄	0.286	0.057	0.963
PC ₅	0.184	0.037	1.000

Figure 1

Scree plot of eigenvalues after principal components analysis



The evidence from Table 1 and Figure 1 suggests that we can retain the first two principal components that capture the variance of the data. Thus this indicates that a significant dimension reduction is possible; in addition, this indicates that important common patterns across different discount indicators appear to exist. This exploratory evidence is suggestive as it is consistent with a multidimensional price discrimination mechanism for magazines. It is possible to improve the interpretation of the retained PCs by obtaining correlations with the original variables as reported in Table 2. The results allow identification of two distinct dimensions in the data; thus it is possible to consider PC₁ as reflecting *subscription discounts* whereas PC₂ is indicative of *advertising discounts*

Table 2

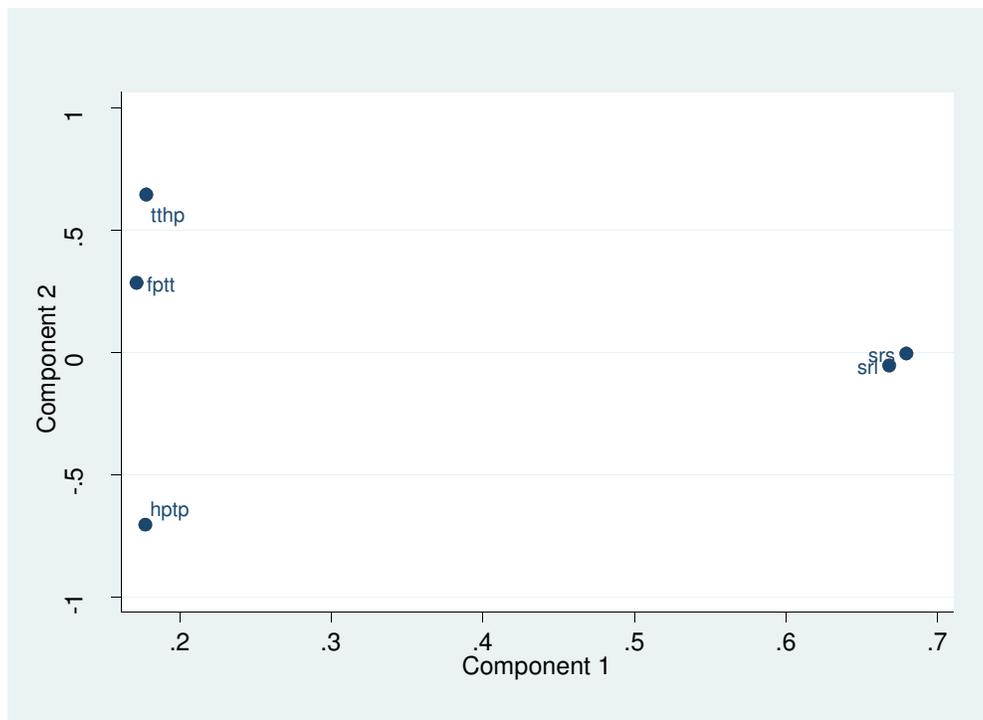
Principal components analysis: correlation with original variables

	FPTT	TTHP	HPTP	SRS	SRL
PC₁	0.236	0.245	0.244	0.935	0.919
PC₂	0.369	0.837	-0.913	-0.006	-0.069

The interpretation of the first two principal components can also take advantage of the loadings plot presented in Figure 2 that displays the coefficients of each variable for the first component versus the coefficients for the second component. Such figure indicates which variables have the largest effect on each component. Loadings can range from -1 to 1. SRS and SRL have large and similar positive loadings on PC1 whereas FPTT, TTHP and HPTP have more moderate but asymmetric effects on the second principal component.

Figure 2

Loading plot



The exploratory evidence pertaining to the possible prevalence of multidimensional price discrimination in magazines warrants further investigation at the empirical level. Moreover, it is relevant to perform a broader characterization of the profit maximization problem of a publishing house at the theoretical level.

In the next sub-section, we perform an econometric analysis for SubRate exploring a novelty form of price discrimination that encompasses intertemporal aspects of preferences and the

expected future gains of subscription. The application to the Brazilian case provides a more conservative assessment of a salient empirical implication of their theoretical model.

3.3 - Future subscription gains and subscriptions discounts: an econometric assessment

In this sub-section, we perform an econometric investigation of the role of perceived future gains of subscription on magazine discounts by using as a reference the previously mentioned empirical specification suggested by Oster and Scott-Morton (2005). However, some contrasts prevail in our empirical application:

- a) The Brazilian market for magazines is smaller than the one in the U.S.. In the present analysis, we focus on larger magazines of national circulation and thus consider titles with average⁵ annual circulation above 25000 units. With this restrictive filter for the sample, we did not consider controls in the regression for availability as approximated by variables related to circulation;
- b) The editorial market in Brazil is dominated by a few publishing houses and the relative importance, can in principle, be relevant for efficient distribution channels. Later, we consider dummy variables pertaining to salient small and large examples of publishing houses;
- c) The classification adopted can be considered to be clearer in the more extreme cases, In other words, one should expect a reasonable consensus on magazines that are likely to provide long-term or short-term gains, however intermediate cases could be less clear. Thus, we discard magazines with intermediate value from the sample. The referred variable reported in the appendix ranged from 3 to 12; however, magazines with future gains between 5 and 8 are excluded from our sample;
- d) The form of price discrimination advanced by Oster and Scott-Morton (2005) is motivated by intertemporal aspects in the preference for magazines. Thus the subscription horizon can, in principle, suggest an additional layer for the price discrimination publishing house's problem. In the present application, we investigate this effect by using a dummy variable with a stacked sample that considers magazines with different subscription horizons. Because the theoretical model is strongly motivated by subscription as a present consumption bias problem it is very important to realize that while this bias influences a consumer's choice regarding whether to subscribe or not, it does not affect comparison across different subscription options. Hence, different subscription horizon leads makes us able to do inference over the ordinary discount rate (δ).

Next, we describe the variables used in the regression analysis:

SubRatio: average subscription price divided by the newsstand price, this is the dependent variable;

FG: future gain indicated in the magazine classification reported in the appendix - where larger values indicate magazines that provide longer term benefits, the expected sign of the coefficient is negative;

CIRCSQ: the square of the magazine circulation, Oster and Scott-Morton (2005) accounted for linear and non-linear effects of circulation on the dependent variable, and the best and most parsimonious fit can be found using only CIRCSQ in the Brazilian case;

⁵ Average of annual circulation of 2008 and 2009 according to IVC.

AdRate: advertising intensity measured by the ratio between the price of full page advertisement and magazine circulation and this may be seen as the marginal advertisement income from selling an additional magazine. The expected sign of the coefficient is negative as a higher value of such variable would reduce the necessity of implementing a price discrimination mechanism through subscription prices;

Week: dummy variable that assumes a value of 1 for monthly publication and 0 for weekly publication. However, a monthly magazine needs one visit to the newsstand in a month, a weekly magazine needs four; therefore, not only is the monthly cost of transaction quadrupled for those weekly magazine readers that do not have access to newsstands, but they do have a greater risk of not being able to buy some desired issue;

Long: dummy variable assumes a value of 1 for longer term subscriptions (more than 18 months) and is noteworthy that longer term subscriptions are less affected by present consumption bias and therefore one could expect, in principle, a negative effect on SUBRATE;

CVADV: the variable approximates price discrimination in advertising and is defined as the coefficient of variation across FPTT, TTHP and HPTP that were considered in the previous principal components analysis.⁶ The larger the variability of relative advertising prices, across different page sizes, the more intense is the price discrimination in advertising, This pricing decision is crucial for establishing the economic feasibility of the magazine and precedes other pricing decision, Thus the exogeneity of such variable is conceivable. One could expect a negative sign for the corresponding coefficient as it would decrease the necessity of additional price discrimination through subscriptions;⁷

Summary statistics and estimation results appear in Tables 3 and 4;

Table 3

Summary statistics (N = 66)

Variables	Mean	Std, dev.	Minimum	Maximum
SubRatio	0.690	0.177	0.467	1.444
FG	7.227	3.295	3	12
AdRate	0.560	0.287	0.198	1.347
Week	0.273	0.445	0	1
Long	0.515	0.504	0	1
CIRCSQ	8.46E+10	2.49E+11	6.42E+08	1.20E+1
CVADV	0.078	0.024	0.038	0.130

⁶ The lack of information for advertising prices for some smaller firms implied a slight reduction in the sample size for the regression analysis.

⁷ Oster and Scott-Morton (2005) consider also the effect of introductory offers in their analysis. Publishers in Brazil seem to have a completely different introductory-offer policy than their counterparts in the US. Although every subscription in the sample has an introductory offer, only about 10%⁷ of the subscriptions offers involve some kind of gift. The other offers actually involve reductions on subscription prices or extensions on the subscription period, variables that are already considered in the empirical model of the present paper.

The Brazilian editorial market provides a more conservative assessment of the price discrimination advanced by Oster and Scott-Morton (2005) because newsstands are more prevalent and subscriptions are less widespread. The evidence is qualitatively similar with that obtained by those authors in terms of significant coefficients with a negative sign in the case of *AdRate* and *Week*, albeit the marginal significance of the former. In line with that previous work, one can observe a relevant effect accruing from *CIRCSQ*.

Table 4

Regression results - Dependent variable: SubRatio

Regressors	Coefficient	p-value
Constant	0.972	0.000
FG	0.002	0.665
CIRCSQ	1.50e-13	0.009
Week	-0.100	0.042
AdRate	-0.120	0.099
CVADV	-2.700	0.020
Long	-0.018	0.382
R ² = 0.225		no. of observations: 66

Note; the reported p-values reflect standard errors that are robust to heterocedasticity

However, important contrasts emerge because no significant effect is detected regarding future gains of the magazine (FG) affecting magazine subscription discounts. Thus, the Brazilian cases evidence does not provide support for the sophisticated form of price discrimination suggested by the aforementioned authors. In fact, this possibility was tenable because newsstands are far more widespread in Brazil than in other countries.

The subscription horizon could, in principle, provide an additional layer for the price discrimination of the publishing house. However, no significant effect emerges. This result can reflect the limited spectrum of horizons that are available in the Brazilian magazine market.

Finally, the aforementioned interconnection of different modalities of price discrimination was reinforced in the econometric analysis in terms of a significant and negative coefficient of CVADV.

4. Final Comments

The paper's objective was to propose an integrated approach for modelling a price discrimination mechanism in magazines, that was advanced by Oster and Scott-Morton (2005), and advertising pricing. Specifically, with regard to discrimination mechanism; magazine subscription discounts would be positively associated with the degree to which the magazine provides long-term benefits. The application to Brazil is appealing as a conservative assessment because subscriptions are less common in Brazil than in other countries and in fact, newsstands are much more widespread. The evidence did not corroborate the prevalence of this sophisticated price discrimination mechanism in Brazil.

Nevertheless, an exploratory analysis based on multivariate statistical analysis suggested that complex multidimensional price discrimination processes are likely to occur. In particular, price discounts on magazines and advertising discounts should be considered as part of a more general profit maximizing program by the publishing house. Such result was reinforced

, at some level, by the negative and significant coefficient of CVADV on SUBRATE and indicates that if displacement effects may occur under more aggressive advertising price discrimination, perhaps a coexistence of the different layers of price discrimination may be particularly relevant in less extreme cases.

Different avenues for future research are possible:

- a) At the theoretical level, the models for magazine subscription lack an even more integrated effort of modelling price discrimination in multiple dimensions;
- b) At the empirical level, additional investigations on the interrelations between different forms of price discrimination is warranted, Moreover, the growing availability of digital contents over the Internet and the increasing unbundling possibilities for magazine subscriptions merit additional assessments of subscription discounts mechanisms.

Appendix

Magazine classifications

Magazine (in Brazil)	Reference magazine (in the U.S.)	Future gain
Aventuras na História ¹	American History	12
História Viva ²	American History	12
Dinheiro Rural ^{1,2}	Farmer's Digest	11
Época Negócios ^{1,2}	Business Week	11
Globo Rural ^{1,2}	Farmer's Digest	11
Info Exame ^{1,2}	PC World	11
Isto é Dinheiro ^{1,2}	Business 2.0; Business Week	11
Meu Próprio Negócio	Business Week	11
Pequenas Empresas Grandes Negócios ¹	Business Week	11
Terra Viva	Farmer's Digest	11
Você S.A. ¹	Business Week	11
Bravo! ¹	Art & Auction	10
Arquitetura & Construção ^{1,2}	Architectural Digest	9
Época ^{1,2}	Newsweek	9
Exame ^{1,2}	Newsweek	9
Istoé ^{1,2}	Newsweek	9
Men's Health ¹	Men's Health	9
Scientific American Brasil	Scientific American	9
Veja ¹	Newsweek	9
Vida Simples ¹	Sierra	9
Women's Health ¹	Men's Health	9
Boa Forma ²	Muscle and Fitness	8
Corpo a Corpo ²	Fitness	8
Decoração & Estilo ²	House Beautiful	8
Galileu ²	Popular Science	8
Mente & Cérebro	Psychology Today	8
National Geographic Brasil	National Geographic	8
Nova Escola	Scholastic Parent & Child; Psychology Today	8
Planeta	National Geographic	8
Saúde	Health	8
Superinteressante	Popular Science	8
Viva Saúde	Health	8
AUTOEsporte ²	Autoweek	7
Bons Fluídos ²	Christianity Today	7
Casa & Decoração ²	House and Garden	7
Casa Cláudia ²	House and Garden	7
Casa e Jardim ²	House and Garden	7
Crescer ²	Parent's Magazine	7
Dieta Já ²	Shape	7
Faça Fácil ²	Crafting Traditions	7
Motor Show	Automobile, Autoweek	7

Pais & Filhos	Parent's Magazine	7
Runner's World	Runner's World	7
Vogue	Vogue	7
Car and Driver ²	Car and Driver	6
Menu	Bon Appetit	6
Quatro Rodas	Four Wheeler	6
Receita Minuto	Bon Appetit	6
Viagem e Turismo	Travel and Leisure	6
Capricho ²	Seventeen	5
Criativa ²	Woman's World	5
Elle ²	Elle	5
Atrevida ²	Teen	4
Cláudia ^{1,2}	Marie Claire	4
Estilo de Vida ^{1,2}	Glamour	4
Istoé Gente ^{1,2}	Glamour	4
Manequim ^{1,2}	In Style	4
Marie Claire ¹	Marie Claire	4
Nova ¹	Cosmopolitan	4
Placar ¹	Sports Illustrated	4
Quem ¹	Glamour	4
Revista Gloss ¹	Cosmo Girl!	4
Todateen	Teen	4
Atrevidinha	Teen People	3
Contigo ^{1,2}	People Magazine	3
Mundo Estranho ¹	Teen People	3
Playboy ¹	Playboy	3
Recreio	Teen People	3
Sexy	Playboy	3
Vip ¹	Playboy	3
Yes! Teen	Teen People	3

Note: the table indicates the equivalence with classifications proposed by Oster and Scott-Morton (2005). Magazines marked with superscript 1 composed the sample used in the econometric estimations and with superscript 2 compose the sample used in Principal Components Analysis.

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