Price Discrimination and Competition in Two-Sided Markets: Evidence from the Spanish Local TV Industry

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Abstract

In this paper, we empirically test the relation between price discrimination and product market competition in a two-sided market environment using a new data set of Spanish local TV stations that provides information on subscription and advertising prices per station for 1996, 1999 and 2002. Due to changes in regulation during this period affecting the degree of local market competition, we use differences in concentration across cities and years to investigate the relation between competition and price discrimination practices in this setting. Consistent with our predictions, our findings suggest that a U-shaped relation between competition and price discrimination exists, where stations in less competitive markets are more likely to price discriminate. Finally, cable subscription fees and advertising prices are higher in more competitive markets which suggests that tougher competition may increase market segmentation through station differentiation, driving stations to charge higher uniform prices to more loyal customers. This may indicate that less price discrimination may be associated with lower consumer surplus in all markets.

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1 Introduction

Mainstream economic theory postulates three conditions for the existence of profit-maximizing price discrimination: firms must be able to prevent resale among consumers, they must be able to identify differences in willingness to pay among consumers, and finally they must have market power. While all three are equally necessary for the success of price discrimination practices, policy makers and economists have mostly paid attention to the third condition that relates market power and price discrimination. An early example of this is the Clayton Act of 1914 characterizing price discrimination as an illegal practice, later amended by the Robinson-Patman Act of 1936 that narrowed down illegality of price discrimination to intermediate markets. Over the years, much antitrust action has taken place against second degree price discrimination practices that arguably induced competitors out of business (see the IBM case between 1969-82 or the Microsoft case between 1998-2002).

The emergence of new technologies and two-sided platforms in new markets have changed the way we view competition between firms. This emergence additionally demands the economists and policy makers understanding about the relation between price discrimination and product market competition through a new literature aiming to understand the inner workings of two-sided markets, multi-market platforms and trade-offs faced by firms operating in these new settings. Unfortunately, the empirical literature supporting and testing the numerous theoretical works on this topic has been lacking and therefore there is still much to learn about the empirical validity of existing theories. Therefore, one of the goals in this paper is to document the incidence of pricing and price discrimination practices in two-sided markets. We empirically test the relation between price discrimination and product market competition in the Spanish local TV industry during a period of time when that industry underwent several changes in regulation that provide quasi-exogenous variation in the degree of product market competition.

The empirical literature on price discrimination and competition has largely documented the validity of the first condition on resales, but has consistently failed to show a negative relationship between market power and price discrimination. The main goal of this paper is to revisit the empirical relation between price discrimination and competition in the Spanish local television by providing a theoretical framework that predicts the existence of a U-shaped relation between price discrimination and competition. Our findings confirm the non-monotonic relation between price discrimination and competition where stations in cities with intermediate levels of competition are less likely to price discriminate. Overall, we find that price discrimination is negatively related to the degree of product market competition. Additionally, we test whether median prices are positively or negatively correlated with increases in product market competition to determine whether decreases in price discrimination practices are associated with higher or lower consumer surplus.

In this paper, we use a new data set collected from three independent issues of AIMC's Spanish local TV station Census in years 1996, 1999 and 2002. This collection of censuses provides information on the number of local TV stations located in each town in Spain in each of those years, as well as station-specific data for a sample of all stations. This set of characteristics include information on whether the station broadcasts its content, whether it sells advertising and if it price discriminates in either the market of TV content or advertising. In our data, 9% of stations selling advertising report to price discriminate in advertising. Similarly, 6% of stations that do not broadcast content (cable and pay-per-view stations) report to price discriminate when charging subscription fees to their viewers. Between 1996 and 2002 the Spanish local TV industry went through two major changes in regulation contracting first and expanding later the number of stations per city from 2.6 in 1996 to 1.98 in 1999, and finally 2.72 in 2002. As a matter of fact, in our data, only 31 out of 499 cities did not see their number of stations vary during these years. In this paper, therefore, we empirically examine how the observed variation in price discrimination

practices relates to observed changes in the degree of product market competition.

Contrary to previous empirical results in the literature, we find no instances of a positive correlation between price discrimination and product market competition. To be precise, we observe repeated evidence of a U-shaped relation between price discrimination and competition. This U-shaped relation indicated that stations in markets with very few and many stations are more likely to price discriminate and stations competing with a moderate number of stations are less likely to price discriminate. This finding is true for both, the TV content market and the advertising market, although only statistically significant in the TV content market. When omitting the U-shaped relation, our findings suggests an overall negative correlation between price discrimination and competition in both markets.

Finally, our last set of results shows that stations facing more competition charge higher subscription fees (if a cable TV station) as well as higher prices for advertising spots. In addition, more competitive markets have a higher share of stations broadcasting their content and, therefore, charging a prize of zero. This finding, together with our previous results, indicates that even though stronger competition may reduce the incidence of price discrimination, it may also increase prices. This could be explained by the fact that stronger competition may induce stations to differentiate from each other and, therefore, increase market segmentation. As a result, stations may charge higher uniform prices to their most loyal customers.

Similarly to other papers studying the impact of competition on economic outcomes, we are concerned about the endogeneity of market structure and firm entry. Traditionally, we may worry that stations in more profitable markets are more likely to price discriminate and more profitable markets may induce more firm entry. This is not the case here, since we find that stations in less competitive markets are also more likely to price discriminate. In any case, we address the endogeneity issue by taking advantage of the change in regulation of 1999, which mandated that no

city, regardless of population size, ought to have more than two stations. We restrict our attention to the sample of cities with at most two stations in 1999 and confirm that all our results are robust.

Our paper draws from Busse and Rysman (2005) and Borzekowski, Taragin and Thomadsen (2005) using a simple reduced form approach to study the empirical relation between price discrimination and competition. Similarly to these papers, our industry is characterized by the fact that differences in costs are either easy to control for or negligible. Therefore, differences in prices are easily attributable to differences in willingness to pay. To the best of our knowledge, our paper is among the first providing evidence for both market sides on the empirical association between price discrimination and product market competition in the presence of network effects in the Spanish local TV industry.

The paper is organized as follows. After the introduction, we review the empirical literature on the relation between competition and price discrimination. In section 3, we adopt the model by Liu and Serfes (2009) and show that when transportation costs are large (no competition for the marginal consumer) price discrimination is always preferred to uniform pricing. This result shows that overall there is a non-monotonic relation between competition and price discrimination practices. Section 4 details the institutional features of the Spanish local television industry and describes the data used. In section 5, we describe the empirical methodology and show our results. Also in section 5, we relate our empirical results to existing evidence in the literature. Section 6 concludes.

2 Literature Review

Traditional economic theory establishes that three conditions are necessary for price discrimination: no re-sale between consumers, differences in willingness to pay among consumers, and market

power. Following these simple premises, there is a large theoretical and empirical body of literature studying price discrimination in one-sided markets. We focus in this literature review on the empirical literature on price discrimination in two-sided markets.

Recent theoretical literature studied the relation between price discrimination and competition in the context of two-sided markets. Some of these papers (Rochet and Stole (2002), Stole (1995) and Rysman (2004) among others) examine the nature of non-linear pricing under competition and find that under different circumstances prices decline proportionally more at the top of the product range. Other work from Seim and Viard (2004) presents and estimates a model that yields ambiguous predictions about the relationship between price discrimination and competition. Similarly, Katz (1984) and Borenstein (1985) demonstrate that price discrimination is possible in free-entry markets. A separate array of papers in the marketing literature model firms's incentives to price discriminate when consumers have different brand loyalty sensitivities. Dogan, Haruvy and Rao (2005) and Chen, Narasimhan and Zhang (2001) show that rebating (second-degree price discrimination) and third-degree price discrimination can be profitable with increased competition. Closest to the goal of our paper is Liu and Serfes (2009), which specifically studies price discrimination and competition in two-sided markets. They demonstrate the existence of a directly proportional relationship between competition and price discrimination.

The multiple predictions layed out by different models makes the relation between price discrimination and competition still an empirical question. To the best of our knowledge, there are four empirical papers closely related to ours: Busse and Rysman (2004); Borzekowski, Thomadsen and Taragin (2006); Miravete and Röller (2003); and Borenstein (1989). The first paper documents the relation between price discrimination and competition in yellow page directories. The second examines this relation in the market for mailing lists. The third uses a structural approach to study quantity discounts in cellular telephone plans; while, the fourth paper finds that competition

affects low prices more than proportionally. Close to Borenstein (1989), Stavins (2001) observes that the gap between the price of unrestricted and restricted seats increases with competition in the airline industry. Finally, Borenstein and Rose (1994) show that airline routes with greater competition exhibit greater level of price dispersion. Asplund, Eriksson and Strand (2002) find that in the newspaper industry more competitive markets have a higher incidence of third-degree price discrimination, while Becerra, Santalo and Silva (2012) show that the relation between price discrimination and product market competition varies according to quality in the hospitality industry. Our paper contributes to this literature with an empirical examination of the relation between price discrimination and competition in the Spanish local television sector. We use panel data and the two sided market structure of this industry to unravel the relation between price discrimination and competition.

Finally, it is worth mentioning the stream of papers in the industrial organization literature examining price discrimination practices in different industries. Shepard (1991) identifies price discrimination in gas stations providing full and self service; while, Ivaldi and Martimort (1994) analyze price discrimination in electric utilities in France. Similarly, Graddy (1995) documents the existence of third-degree price discrimination in the highly competitive Fulton fish market. Other papers structurally estimate welfare consequences of price discrimination, such as Leslie (1998) at a Broadway Theater, McManus (2000) for specialty coffee, Cohen (2000a) for paper towel, Clerides (2000) in the book publishing industry, Crawford and Shum (2003) in cable television, and Nevo and Wolfram (2002) for the ready-to-eat cereal industry, respectively. Our paper also contributes to this literature providing a reference to price discrimination practices in two-sided markets and the Spanish local TV industry.

3 Model

In this section, we adopt the model and results in Liu and Serfes (2009) (hereafter LS), adding a simple extension for the monopoly case under very high transportation costs and, therefore no competition.

In a nutshell, LS start off by characterizing a model with two platforms, A and B. These platforms are present in two different linear-city markets, 1 and 2, of length 1. Platform A locates in both markets at point 0, and platform B locates at the endpoint 1. For simplicity (and a more accurate application to the empirical setting), we assume that marginal cost of production c in both markets is equal to zero, such that $c = 0$. Fixed costs for both platforms is the same in both markets and equal to F.

Customers are uniformly distributed along the two linear cities and they choose whether to obtain the good from platform A or B. Customers of a platform in a market value the number of customers of the same platform in the other market, such that their utility of consumption is equal to $v + \alpha n_{lk}$; where v is the direct utility of consumption of good 1 or 2, n_{lk} the number of consumers in the other market l consuming the good from the same platform k and α the indirect network utility. To keep algebra simple, we assume the indirect network utility parameter does not vary by platform or market. As usual in this type of models, consumers must pay a transportation cost t per distance between their location and the product of their choice. Thus, net utility of an individual located in x in any of the two markets will be:

$$u(A) = v + \alpha n_{lA} - tx - p_A$$

and

$$u(B) = v + \alpha n_{lB} - t(1 - x) - p_B,$$

where p_A and p_B are prices set by platform A and B, respectively. The consumer located at x will choose to buy product A as long as $u(A) > u(B)$, and buy product B otherwise.

Both platforms consider two possible pricing policies: uniform prices or perfect price discrimination. The former implies charging the same price to all consumers within a market; while the latter implies a different price for each consumer (almost perfect price discrimination). In LS (2009), platforms charge price equal to 0 to customers of other platforms and limit price their closest customers. In the end, they show that profits under uniform pricing and price discrimination are such that

$$\Pi^{UP} = t - \alpha$$

and

$$\Pi^{PD} = \frac{t}{2},$$

once we assume that $c = 0$ and $\alpha_1 = \alpha_2$. When comparing these two profit functions, it is apparent that $\Pi^{UP} > \Pi^{PD}$ as long as $\frac{t}{2} > \alpha$. If t (transportation cost) is a proxy for the intensity of competition, the result implies that as competition decreases (t increases) firms are more likely to use uniform pricing when the entire market is served by both or either firm. This result is contrary to the common notion that firms need market power to price discriminate in a profit-maximizing manner. LS (2009) explain that this is the case due to the two-sided market structure in their model.

This result is not monotonic on the degree of competition. As t increases and goes beyond a threshold point $t^* = 2v + \alpha$ such that $t > 2v + \alpha$, firms will always find optimal to price discriminate over setting uniform prices. This is so because perfect price discrimination no longer implies limit pricing and platforms can charge the full willingness to pay to their customers and zero (under the

assumption of non-negative prices) to customers with negative net willingness to pay. In this case, profits for uniform pricing and price discrimination prices are

$$\Pi^{UP} = \frac{1}{2}\frac{v^2}{t-\alpha}$$

and

$$\Pi^{PD} = \frac{tv^2}{(t-\alpha)^2}.$$

Subsequently, $\Pi^{PD} > \Pi^{UP}$ as long as $t > -\alpha$, which is always true.

To summarize both sets of results within a sentence, there is not a monotonic relation between competition and price discrimination in two-sided markets. For low degrees of competition, as competition increases the likelihood of observing price discrimination decreases. If products offered by the two platforms are different enough ($t > 2v + \alpha$) that limit pricing no longer plays a role; then, it is never optimal to set uniform prices and price discrimination becomes the dominant profit-maximizing strategy.

See Figure 1 for a graphical representation of the policy function. This figure shows that as t increases (competition decreases), while holding v and α constant, the area for which uniform pricing (UP) is optimal also increases. Once t goes beyond $t^* = 2v + \alpha$, it becomes optimal to perfectly price discriminate (PD) across consumers regardless of the values of v and α.

Therefore, the empirical implications of this model are mixed since there is no monotonic relation between competition and the likelihood of observing price discrimination practices. If we take the number of firms as a proxy for competition ($\frac{1}{t}$), we should observe a U-shaped relationship between the number of firms and the likelihood of using price discrimination practices. The goal of this paper is to test whether such relation is observed in the data.

4 Institutional Details and Data

Television stations do not differ much from a regular firm as they also maximize profits. Television stations operate in two-sided markets and therefore the difference with other firms lies in the nature of the product they sell and their ability to obtain revenues through two different channels: the sale of content and the sale of advertising spots.

On the one hand, television stations produce content that they sell directly to television consumers. On the other hand, television stations sell television space to advertisers. Since consumers value television content free of advertising and advertisers value the number of television viewers, stations face a trade-off on how much to charge consumers to view their content versus the amount of revenues obtained from advertisers. Some stations may broadcast their content for free in order to maximize their advertising revenues by maximizing the number of viewers. Other stations may choose to limit the amount of advertising maximizing profits through a subscription rate to viewers. This is only profitable if these stations have the appropriate technology that allows them to monitor television consumption. When monitoring is not possible, or it is too costly, stations may broadcast (charge price equal to zero) and maximize profits through advertising revenues.

In this regard, advertising and subscription rates are determined by demographic and market characteristics. Whether the stations can charge higher or lower prices will depend on the consumers willingness to pay and the expected number of viewers, as well as the degree of each station's content differentiation, the degree of market segmentation and the number of direct competitors faced by each station. It is also well-known that TV stations maximize revenues by price discriminating across viewers and advertisers (second and third degree price discrimination), to the extent that competing stations are not offering the same content and they are not undercutting their prices. In this paper, we precisely document this relation; that is, whether and how the number of competing

stations has an impact on the likelihood of observing price discrimination for local TV viewership and advertising.

4.1 The Liberalization of Spanish Local Television Sector

Up to the mid 1980s, Spain had two TV stations, TVE and TVE2. The former was the main Spanish national television station, while the latter emitted from small satellite stations that had little independence on their programming decisions and served as window to minority content and local news. During the mid 1980s, as a consequence of the consolidation of the new democratic regime, the central government granted the right to its regional counterparts to develop regional stations. To this point, local stations were not recognized as legal entities by the existing telecommunication regulation nor by the central and respective regional governments. Since a number of local stations were created in the late 1980s as a result of the joint effort of local civil associations, police authorities often did not know what to do as activities of local stations were considered alegal.

The growth in number and importance of local stations exacerbated the need for a legal framework that would regulate their activities as well as protect them from the abuse of others. As a result of different lobbying pressures, the socialist government approved the law of local TV stations in 1996 which aimed at regulating the composition, commercial activities, ownership and competitive structure of the Spanish local TV station sector. In particular, it limited the number of stations to two per town (regardless of the population size), banned TV networks and restricted stations ownership and control to local government agencies.

The 1996 Spanish national election shook the political arena as the socialist party lost the election. The new party in power, the right-winged Partido Popular, had a very different perspective on how the Spanish local television industry ought to be regulated. In particular, the Partido

Popular believed this industry needed to be deregulated and so it initiated a deregulation process facing more obstacles than originally anticipated.

Even though the Partido Popular won the election, it did not so by parliamentary majority forcing the new government to rely on the support of smaller groups to reform the existing regulation. Consequently, the Partido Popular chose to start a "silent" liberalization. Badillo (2003) documents how the government chose not to enforce the law prepared and passed during the previous socialist government. This changed after the 2000 election when the Partido Popular gained full control of the Parliament and decided to push forward with a full liberalization of the local television industry. The Partido Popular finally passed the law in 2002 overruling the 1996 strict regulation and effectively liberalizing and deregulating the Spanish local television sector. With the new regulation in place, the government no longer limited the number of stations per municipality, the ownership nor the control structure of each station. In particular, stations were no longer required to be run by a municipal government agency nor public consortium, stations were allowed to be run for profit, and to be part of networks with other local television stations.

These changes in regulation from 1996 to 2002 experienced by this sector had a dramatic change in entry and exit decisions as well as the concentration of market power and business practices. This paper uses these changes in market structure across different cities and years to study the relation between competition and price discrimination in the Spanish local television industry. In the next section, we describe the data used to establish this empirical relation.

4.2 Data Description

We have assembled a new data set composed by the three censuses of local TV stations collected by AIMC during the years of 1996, 1999 and 2002. Each one of these censuses contains a list of all local TV stations by city in Spain. AIMC sent a questionnaire to each local TV station in the list

requesting station-specific information such as address, name and job title of the person answering the questionnaire, the station's coverage area, whether it broadcasts content, subscription fee if pay-per-view and price of advertising among many others. The information detailed in each of these censuses describes well the business decisions of each TV station. For the purpose of this paper, we use the fact that stations report the use of second and third degree price discrimination in both the content and the advertising market. We merge this information provided by AIMC with annual information from the Business Census published by "La Caixa" to account for differences across markets in demographics. As a result, we collect information for 1,285 station/year observations split in 183 stations in 1996, 457 in 1999 and 645 in 2002.

Before describing summary statistics, we define clearly the two measures of price discrimination per market used in this paper. Questionnaire respondents report on prices charged for viewing content and advertising space. In some cases, they report a range of prices that may actually depend on age group of the customer (content market) or quantity (number of advertising spots). We do not distinguish between second and third degree discrimination, thus, our measures are dummy variables that take value 1 if the questionnaire respondent reports any sort of price discrimination, and 0 otherwise. For that purpose, we create two price discrimination dummy variables per market. On the TV content side, we have $Content\_PD\_1$ and $Content\_PD\_2$. $Content\_PD\_1$ takes value 1 if a station charges a positive price for viewing their content and reports to price discriminate, and 0 if the station charges a positive price for viewing their content but does not report to price discriminate. Therefore, this variable excludes all stations that broadcast their content. $Content\_PD\_2$ is the same variable as $Content\_PD\_1$ except that $Content\_PD\_2$ takes value 0 for all stations that broadcast their content. This makes sense if we think of broadcasting as charging a uniform price of zero for every TV consumer. On the advertising side, we also have two dummy variables, Adv_PD_1 and Adv_PD_2. The former takes value 1 if the station sells

advertising and price discriminates, and 0 if the station sells advertising and reports to set a uniform price policy. This variable does not take into account stations that do not offer advertising. Instead, Adv_PD_2 is the same as Adv_PD_1 plus adding stations without advertising with value 0. This characterization is justified by the fact that not offering advertising is the same as offering advertising at a very high unafordable uniform price. We turn next to describing summary statistics and tabulations in Table 1 to Table 8.

Table 1 shows summary statistics of all variables used in our empirical analysis across stations and years. Note that 9% of all stations report to price discriminate in advertising and 6 % report to price discriminate in content viewing. These percentages decrease to 7% and 1%, respectively, once we account for the fact that some stations do not offer advertising or do not broadcast their content. This table also shows summary statistics on our three measures of competition. $COMP\_1$ counts the number of stations physically located in a given city, $COMP\_2$ counts the number of stations located in a station's coverage area, and $COMP\_3$ counts the number of stations potentially received by an inhabitant of a given city. On average, stations located in markets with two other stations, compete with 5 other stations in their coverage area and are located in markets that potentially receive 4 stations. Finally, our data also includes station characteristics, such as the number of days of emission, the average hours per day, the share of content produced in-house, whether the station is privately owned, whether it belongs to a (horizontal) local TV station network, and the amount in pesetas (old Spanish currency prior to adopting Euros) charged by the station for subscription and advertising spots. If a station is price discriminating, we selected the median of the price range reported by the questionnaire respondent. The data also contains city characteristics, such as population and unemployment rates.

Table 2 offers summary statistics of the data broken up by year. Interestingly enough, price discrimination practices decreased over time in advertising but increased in the TV content market.

Note that all three measures of competition increased during this period of time. Most other variables did not change over the course of the 6 years from 1996 to 2002. If anything, the number of hours emitted per day emitted per station increased from 12 to almost 18 hours from 1999 to 2002.

Tables 3 and 4 bring up interesting evidence regarding the number of firms that decided to simultaneously price discriminate in both markets versus set uniform prices in one side of the market and price discriminate in the other. The evidence in these tables is relevant to evaluate the validity of symmetry assumptions across markets used broadly when solving two-sided market models. Table 3 tabulates price discrimination practices for all stations and all years. Just by looking at the 163 stations that do not broadcast and sell advertising, we observe that the symmetry assumption is quite accurate since 136 of those are either setting uniform prices or price discriminating in both markets. On the other hand, when including stations that broadcast or do not sell advertising spots, we observe that these stations are more likely to charge uniform prices than setting price discrimination practices. Finally, Table 4 repeats the exercise in Table 3 breaking up the data by year. Note that the same pattern observed in Table 3 is present in each one of the annual panels in Table 4.

To conclude this section, we detail changes in the number of stations per city across years. Since this paper empirically examines the relation between price discrimination practices and product market competition, it is central to show that indeed there were changes in the number of stations per city. As explained above in the institutional description section, these changes were driven by changes in the regulatory framework in the Spanish local TV industry; and therefore, can be thought of as exogenous to market conditions specific to any given city in our sample. Table 5 shows the joint distribution of the number of stations per city in 1996 and 1999; while Table 6 and 7 do so for 1999 and 2002, as well as 1996 and 2002, respectively. In Tables 5 and 6, we observe

that even though the number of stations does not vary in many cities (see the number of cities in the main diagonal), there are many others that observe entry and exit. For this purpose, Table 7 shows the total change in the six years covered in our sample from 1996 to 2002. Of the 499 cities that appear in the census at least once, only 82 cities did not experience any changes between 1996 and 2002; whereas the rest (417 cities) did so. In particular, it is interesting to mention that 308 cities with no local station in 1996 end up reporting at least one station by 2002. Conversely, 34 cities with stations in 1996 did not have a local station in 2002. Finally, to summarize all changes in Tables 5 and 6, we tabulate changes between 1996 and 1999 to those between 1999 and 2002 in Table 8. Table 8 shows that only 31 markets (cities) out of 499 did not experience any changes in the number of stations between 1996 and 2002. Note that a few markets increased the number by one (or two) and then decreased the number by one (or two), and viceversa.

The next section describes the empirical methodology and the type of regressions used to explore the empirical relation between price discrimination and product market competition, as well as our methodology to address the presence of endogeneity. More profitable markets may actually induce more entry and simultaneously provide more incentives for firms to find ways to price discriminate and increase profits. Last, we describe our results and discuss their relation to previous literature.

5 Empirical Methodology and Results

This section details the empirical methodology used in this paper and its potential endogeneity problems. Then, we present results of regressions that control for year and province unobservable factors and compare them with those that control for station level characteristics as well as endogeneity of product market competition. Finally, we frame our results within the existing empirical literature.

5.1 Empirical Methodology

We start our empirical analysis by running simple linear regressions of whether a station price discriminates on the amount of local competition it faces in each market (content and advertising) such that

$$Y\_PD\_\#_{ijt} = \alpha_0 + \alpha_1 COMP_{ijt} + \alpha_2 COMP_{ijt}^2 + \alpha_3 X_{ijt} + u_{ijt},$$

where $Y\_PD\_\#_{ijt}$ stands for the price discrimination dummy variables defined in the previous section ($Content\_PD\_1$, $Content\_PD\_2$, Adv_PD_1 and Adv_PD_2) for station i located in market j in year t. As independent variables, we use $COMP_{ijt}$ as our three measures of product market competition (the number of stations located in city j in year t, the number of stations in station i's coverage area and the number of stations received by inhabitants in city j in year t) and X_{ijt} are market and station characteristics that may or may not vary across stations within a market or across years.

The purpose in this paper is to estimate the parameters α_1 and α_2. Running a simple linear regression will only recover the parameter of interest if the error term u_{ijt} is uncorrelated with the variable $COMP_{ijt}$. There are two possible problems that could cause u_{ijt} and $COMP_{ijt}$ to be correlated; therefore, making the simple linear regression yield a biased estimate of the parameters α_1 and α_2. The first potential problem is endogeneity of firm entry. More profitable markets accommodate a larger number of firms. In turn, firms in more profitable markets may be more likely to use price discrimination when maximizing profits. The second potential problem is one of omitted variable bias. There may be year, market or station specific factors not available in our data set, which correlate with measures of product market competition $COMP_{ijt}$.

We address both these problems in different ways. First, we use the panel format of our data

to include province and year fixed effects and therefore control for regional and national specific competition that is not captured by our specifications. Second, we use changes in regulation occurred between 1996, 1999 and 2002 to study how changes in product market competition drive price discrimination practices. Under the regulation passed in late 1996, no city was allowed to have more than two local stations. We restrict our sample to those cities abiding by the law and assume that changes in the number of stations in these markets were driven by changes in regulation; hence, by orthogonal reasons to market profitability.[1] Once we have described our methodology, we present our results in the next subsection.

5.2 Results

This section describes the results of using the methodology detailed above to estimate the empirical correlation between the incidence of price discrimination practices and product market competition in the presence of two-sided markets. First, we provide the results of running OLS regressions assuming that decisions are independent across markets. Next, following our theoretical framework, we introduce the squared value of each measure of local competiton to capture the expected curvature of the relationship between price discrimination and competition. Finally, we examine the relation between median prices and product market competition to determine whether less price discrimination translates into lower prices as well; therefore, higher consumer surplus. We conclude this section addressing the potential problem of market structure endogeneity and discussing the overall empirical results.

[1] Not reported here, we have also instrumented for the number of stations in a market and in the coverage area of each station. Our instrument was the number of stations in each market with a three-year lag. This variable is correlated with the fixed cost of entry in a given market but uncorrelated with the contemporaneous demand conditions determining entry decisions and price discrimination practices. In other specifications we also included city and station fixed effects. These two empirical strategies failed to provide any interesting results. We comment on these further in the text.

5.2.1 OLS of Price Discrimination on Competition

We start this subsection describing results in Tables 9, 10 and 11. These tables show OLS regressions of the variables $Content\_PD\_1$, $Content\_PD\_2$, Adv_PD_1 and Adv_PD_2 on three different measures of local competition while using a variety of fixed effects controling for invariant factors at the year and province level, clustering standard errors at the city and year level.[2] Looking at the top quadrants of each table (columns (1) to (12)), we observe that the results for regressions on $Content\_PD\_1$ and $Content\_PD\_2$ show a quite robust negative correlation between price discrimination practices and competition. Moreover, the squared term of our competition measure shows up positive and highly signficant, confirming the non-monotonic relation predicted in our theoretical framework.

In the bottom cuadrants (columns (13) to (24)) of tables 9 to 11, we find that correlations of the advertising market side, measured by Adv_PD_1, with two of our three measures of local competions, namely $COMP\_2$ and $COMP\_3$, remain negative and significant. These results show that, over time, these stations are more likely to price discriminate in the advertising market when the number of stations in their coverage area decreases; therefore, facing lower levels of local product market competition. On the other hand, regressions where we include the squared term of the competition measure or use Adv_PD_2 for price discrimination display coefficients statistically not different from zero, leaving us with not much to say from this evidence.

Given that different characteristics between stations in more competitive markets and those in less competitive ones could also be correlated with price discrimination practices in our sample, we use table A1 in the appendix to show results of running a set of regressions for $Content\_PD\_2$ and Adv_PD_2 introducing city and station controls. Results are robust (albeit statistically weaker)

[2] City and station level controls are introduced in table A1 in the appendix and commented below. Not included in the paper we have also run specifications with city and station fixed effects.

to the ones presented in the tables 9 to 11. First, there is a negative and significant correlation between $Content\_PD\_2$ and our competition measures with a positive and significant coefficient for competition squared term. Second, we find mostly negative but insignificant correlations between our competition measures and Adv_PD_2.

Another way of capturing these differences would be introducing city and station fixed effects. An important empirical caveat for this method is that price discrimination decisions may be mainly affected by early decisions on whether content will be broadcasted or distributed under subscription. Although not shown in this paper, we find that in regressions with city and station fixed effects there is almost no variation left to be explained for our competition controls (R-squares of 86 to 96 percent). Organitazional inertia within stations across years and across stations within the same city leaves almost no intertemporal station and city variance. Once we introduce the fixed effects, these capture most of the variance leaving little explanatory power for our competition measures which become statistically not different from zero.[3]

To summarize the results in this section, assuming that decisions in the TV content and advertising market are independent of each other,[4] we find a robust negative relation between price discrimination and competition with a U-shape captured by the positive and significant quadratic term, as standard theory would predict. Stations that face the weakest and strongest competition (more stations located in the same city and more stations located in the station's coverage area) are also more likely to price discriminate in the TV content market or the advertising market. These results are clearly statistically stronger on the TV content side.

[3] Only in the advertising market side and without the square term we find negative and statistically significant effects in the correlation after including year and station fixed effects, showing that, once we follow stations over time, we observe that these are more likely to price discriminate in the advertising market when the number of stations in their coverage area decreases; and therefore, stations face lower levels of local product market competition.

[4] Not reported here, in a previous version of the paper, we ran seemingly unrelated regressions and found non-statistically significant correlations between both pricing decisions.

5.2.2 Price and Competition

So far we have empirically established a U-shaped and mostly negative relation between price discrimination and competition. However, this result still does not reveal any information about the level of prices. There might be less price discrimination in more competitive markets due to the fact that there is more market segmentation and differentiation across stations, in which case, stations would charge higher uniform prices to a reduced number of loyal customers. For this reason, we examine the empirical relation between price levels and our three measures of product market competition. We define two price variables for the TV content market and one for the Advertisement one. $Cable\_Fee$ captures prices reported in the AIMC questionnaire of all stations emitting through cable or charging a positive price. When a station offers a range of prices, we take the median price in the range. TV_Fee is the same variable as $Cable\_Fee$, but the former includes those stations broadcasting content; therefore, charging price equal to zero. Finally, Adv_Fee takes values of spots as quoted by the answers in the AIMC questionnaire. Stations that do not sell advertising are not included in this variable.

Table 12 reports results of running OLS regressions of these three prices on our two measures of competition using year and province fixed effects. Results show that $Cable\_Fee$ and Adv_Fee are positively correlated with our three measures of competition. Despite this, TV_Fee is negatively correlated with all measures of competition. The disparity in results between $Cable\_Fee$ and TV_Fee springs from the fact that local stations broadcast their content more often in larger and more competitive markets.

Results in this section suggest that if competition decreases the incidence of price discrimination, it may be doing so increasing prices for viewers (conditional on paying a positive price) and advertisers. A potential channel consistent with these would be through market segmentation and station differentiation. Viewers may observe a larger number of stations broadcasting their con-

tent due to increasing competition, effectively lowering the average price paid for viewing content emitted by local TV stations. The combination of these results implies that less discrimination in the TV content market may translate into lower prices; therefore, larger viewer surplus. The opposite result occurs in advertising where less discrimination implies higher median prices and lower advertiser surplus.

5.2.3 Dealing with Endogeneity

In this section, we address the potential role of endogeneity biasing our previous estimates of the correlation between price discrimination practices and product market competition. We deal with this issue taking advantage of the several quasi-exogenous changes in regulation in the Spanish local TV industry between 1996 and 2002. Under existing regulation in 1999, no more than two stations were permitted per city. Since previous and posterior regulation did not limit the number of stations, we can think of changes in market structure between 1996 and 1999, and between 1999 and 2002 as quasi-exogenous.

Using Exogenous Changes in Regulation. As detailed in the section above describing the institutional environment in the Spanish local TV industry between 1996 and 2002, changes in regulation in this industry mainly responded to changes in the Spanish government, after general elections in 1996 and 2000, rather than changes in the industry itself. This allows us to hypothesize that changes in local product market competition from 1996 to 1999 as well as those from 1999 to 2002 were unrelated to changes in viewers taste for local television. Existing regulation in 1999 did not permit cities to have more than two local stations. We focus our attention to cities with two stations or less in 1999, while running the same empirical analysis above. In order to do so, we use $Content\_PD\_2$ and Adv_PD_2 as dependent variables in the set of tables, restricting the sample to those cities with two or less stations in 1999.

Table 13 shows results of running OLS regressions of the first of our competition measures, the number of stations in a given city, while using year and province fixed effects to control for year and province level unobservables. We find a robust negative correlation between price discrimination and product market competition across markets within a year and a province. This indicates that stations located in markets with more competing stations (or with more highly station-populated coverage areas) are less likely to price discriminate. This is true for price discrimination practices in both the advertising and TV content markets. We also cluster standard errors at the city/year level so that standard errors in our regression account for the fact that price discrimination practices may be correlated across stations within a market and year. As seen in columns (4) to (6) and (10) to (12), we find a significant U-Shape empirical relation between price discrimination and competition, but this appears only for the TV content market.

Tables 14 and 15 display results of running similar OLS regressions using number of stations in the reach area (table 14) and number of stations received by inhabitants of a given city (table 15) as our competition measures. Once again, our estimates show that price discrimination is negatively correlated with our measures of product market competition; while the squared competition term capturing the U-shape of the correlation is only signficant for the TV content market.

Finally, Table 16 examines the robustness of our results in Table 12, limiting our sample to cities with two or less stations in 1999. Running OLS regressions with the reduced sample in Table 16 displays similar qualitative results. TV_Fee is negatively correlated with the degree of competition due to the increasing number of broadcasting stations in larger markets; while $Advertisement\_Price$ is positively correlated with the number of stations in a station's coverage area or city.

5.2.4 Discussion of Results

To summarize, we observe that there is a U-shape empirical relation between price discrimination and competition in that stations in most concentrated markets and in most competitive markets are more likely to implement price discrimination practices. Overall, there is a negative correlation to product market competition when measured as the number of competing stations in a city, in a station's coverage area or located in the same city. These findings are at odds with previous ones in the empirical literature, since others find a positive relation between price discrimination and product market competition. For example, Borzekowski et al (2009) justify their findings stating that firms facing more competition use price discrimination to extract surplus through high prices charged to their more loyal customer base and steal business from competing firms lowering prices to those customers loyal to other firms. Our results suggest that the same forces are present but they only come into play when comparing with moderate and high degrees of competition. Highly concentrated markets exhibit higher levels of price discrimination incidence than markets with moderate levels of competition.

Our second finding denotes a positive correlation between prices and the degree of competition (the number of stations located and emitting in a city as well as in each station's coverage area). This result in isolation could lead us to claim that stations in more profitable markets charge higher prices and are more profitable themselves, therefore, we would expect to see a higher number of stations. However, this explanation, relying on the endogeneity of entry, is difficult to reconcile with our finding of less price discrimination in markets with intermediate levels of competition as well as the overall negative correlation between price discrimination and competition. On the other hand, our results in Table 1A indicates that, once we control for station characteristics in our cross-section, the relation between price discrimination and product market competition remains in the TV content market and vanishes in the advertising market. This may indicate that as product

market competition increases stations may choose to differentiate in dimensions other than prices (number of days and hours on air and the percentage of content produced in-house). As stations differentiate from each other, market segmentation increases and stations may charge higher prices to both viewers and advertisers, since their average customers have a higher willingness to pay for their TV content and advertisers are able to identify their potential customers better. These higher prices may be coming from uniform prices or price discrimination practices in ways that are uncorrelated with the degree of market competition and specific to firm-specific unobservables.

The current theoretical literature focuses on price competition and the corresponding price discrimination strategies; the assumption being that the location of firms is constant in the product space. As an example, Liu and Serfes (2009) assume the location of both platforms as constant at the extremes of both markets under consideration. In order to reconcile our results with the current state of the literature, we need to consider yet another stage in the game played by firms (or local TV stations in our particular case), such that these firms could choose where to locate in the product spectrum. To the best of our knowledge, no paper in the theoretical literature has yet produced such a model; therefore, we hope that our study will foster future research on models which take into account strategic decisions between firms that accomodate product positioning and price discrimination strategies.

6 Conclusions

In this paper, we empirically examine the relation between price discrimination and competition in a two-sided market setting, namely the Spanish local TV industry between 1996 and 2002. Our results indicate that there exists a non-monotonic relation between price discrimination and competition such that stations in least and most competitive markets are more likely to price discriminate and stations in markets with intermediate levels of competition are less likely to

price discriminate. In addition to this result, stations in more competitive markets charge charge higher prices. The former is consistent with market power being a necessary condition for profitable price discrimination, while the latter may suggest that, as more stations enter a market, those may decide to differentiate, increasing market segmentation and therefore increasing their degree of local market power. Then, local TV stations may charge higher uniform prices to a smaller set of loyal consumers and customers with a higher willingness to pay. Even if market competition increases, consumer surplus may actually decrease if stations find a way to increase market segmentation through product differentiation.

Liu and Serfes (2009) is, to the best of our knowledge, the only paper that directly examines, from a theoretical point of view, the relation between price discrimination and competition in two-sided markets. From simple early data tabulations and later empirical results, we validate the symmetry assumption used in their paper to solve their model. Despite that, their results indicate that in two-sided markets there is a positive relation between price discrimination and product market competition. The empirical results for our specific example of the Spanish local TV industry indicates otherwise. This makes us wonder why our findings differ from their prediction and we argue that endogenous product market location may be the missing piece in their model. We hope that empirical results in our paper may help future empirical and theoretical work to further the understanding of two-sided markets.

Future research should explore the way changes in competition in two-sided markets may not only change optimal pricing strategies, but also product positioning and competition between firms through dimensions other than pricing. Understanding how non-pricing and pricing competition interact in a multi-market setting may help reconcile empirical evidence from studies like ours, showing a non-monotonic relation between price discrimination and competition, and that from others reporting a positive relation between price discrimination and competition.

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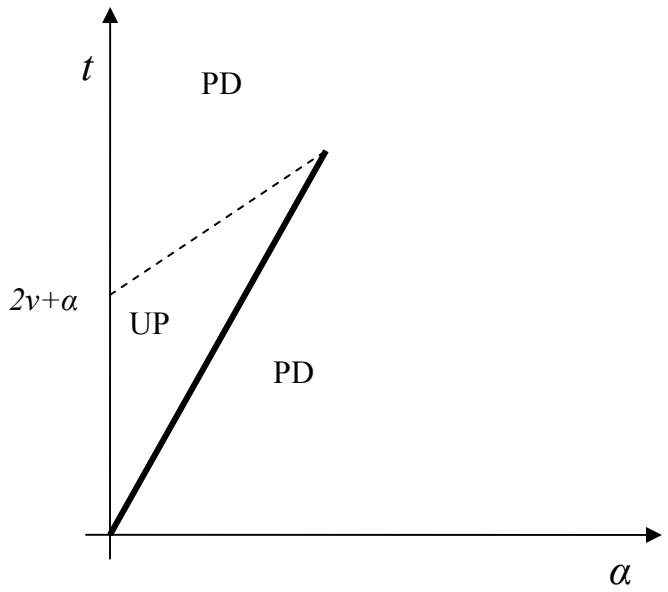
Figure 1. Price Discrimination vs. Uniform Pricing



t = transportation cost, higher *t*, lower product market competition
v = utility from consumption
α = intensity of network effects
PD = Price Discrimination area
UP = Uniform Pricing Area

Table 1. Summary Statistics of All Variables Across Years

Variable	Obs	Mean	Std. Dev.	Min	Max
Adv_PD_1	1020	0.09	0.28	0	1
Adv_PD_2	1261	0.07	0.26	0	1
Content_PD_1	252	0.06	0.23	0	1
Content_PD_2	1267	0.01	0.10	0	1
Advertising?	1261	0.81	0.39	0	1
Broadcast?	1267	0.80	0.40	0	1
COMP_1	1291	2.46	2.69	1	17
COMP_2	1291	5.56	7.73	1	69
COMP_3	1289	4.42	3.32	1	17
# Days Emission	1195	6.57	1.17	1	7
# Hours/Day Emission	1135	14.99	8.66	0.5	28
Private Ownership?	1255	0.80	0.40	0	1
% Own Content	1193	0.69	0.30	0	1
Local TV Network	1291	0.58	0.49	0	1
City Population	1275	150474.80	431022.80	1082	3016788
City Unemp Rate	1275	4.21	1.86	0.6	12.2
Cable Fee	263	1758.33	939.16	0	14000
TV Fee	1236	317.31	792.40	0	14000
Adv Price	791	11686.66	17288.03	0	130000

Note: This table provides summary statistics for all main variables used in the empirical analysis of this paper. In this paper we use three measures of competition. COMP_1 is the number of stations physically located in a given city. COMP_2 is the number of stations located within the coverage area of a given station. COMP_3 is the number of stations received by inhabitants of a given city. COMP_1 and COMP_3 are competition measures that vary across cities while COMP_2 varies across stations within a city.

Table 2. Summary Statistics of Main Variables by Year

	Year 1996			Year 1999			Year 2002		
Variable	**Obs**	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**	**Obs**	**Mean**	**Std. Dev.**
Adv_PD_1	156	0.12	0.32	343	0.10	0.30	521	0.07	0.26
Adv_PD_2	175	0.10	0.30	448	0.08	0.27	638	0.06	0.23
Content_PD_1	31	0.03	0.18	106	0.07	0.25	115	0.05	0.22
Content_PD_2	179	0.01	0.07	449	0.02	0.12	639	0.01	0.10
Advertising?	175	0.89	0.31	448	0.77	0.42	638	0.82	0.39
Broadcast?	179	0.83	0.38	449	0.76	0.43	639	0.82	0.38
COMP_1	184	2.61	3.02	457	1.98	2.10	650	2.76	2.91
COMP_2	184	5.46	6.40	457	4.67	6.68	650	6.23	8.65
COMP_3	182	3.26	3.23	457	3.76	2.78	650	5.22	3.49
# Days Emission	160	6.73	1.06	385	6.50	1.21	650	6.58	1.16
# Hours/Day Emission	160	11.43	7.61	385	12.64	8.27	590	17.48	8.41
Private Ownership?	173	0.80	0.40	450	0.79	0.41	632	0.80	0.40
% Own Content	163	0.69	0.27	425	0.72	0.29	605	0.68	0.31
Local TV Network	184	0.67	0.47	457	0.52	0.50	650	0.60	0.49
City Population	180	179330.60	454220.70	453	131827.00	418793.30	642	155542.40	432953.60
City Unemp Rate	180	6.43	1.68	453	3.96	1.59	642	3.76	1.63
Cable Fee	28	1597.54	356.63	114	1795.12	1255.47	121	1760.88	636.83
TV Fee	174	241.56	593.07	439	404.80	982.43	623	276.81	678.66
Adv Price	125	11719.14	18899.61	281	11945.80	17800.09	385	11486.97	16383.21

Note: This table breaks the data summarized in Table 1 by year in our sample.

Table 3. Pricing for Advertising and TV Content Across Years

	Market for TV Advertising				
Market for TV Content	**No Info**	**No Adv**	**Adv - No PD**	**Adv - PD**	**Total**
No Info	**6**	**5**	**11**	**2**	**24**
Broadcast	**18**	**152**	**778**	**61**	**1009**
PPV - No PD	**6**	**77**	**133**	**22**	**238**
PPV - PD	**0**	**6**	**5**	**3**	**14**
Total	**30**	**240**	**927**	**88**	**1,285**

Note: This table tabulates pricing decisions for the advertising as well as viewership market for the 1,285 TV stations we have information across years.

Table 4. Pricing for Advertising and TV Content per Year

Year 1996

Market for TV Content	Market for TV Advertising: No Info	No Adv	Adv - No PD	Adv - PD	Total
No Info	4	0	1	0	5
Broadcast	3	16	114	14	147
PPV - No PD	2	3	21	4	30
PPV - PD	0	0	1	0	1
Total	9	19	137	18	183

Year 1999

Market for TV Content	Market for TV Advertising: No Info	No Adv	Adv - No PD	Adv - PD	Total
No Info	2	2	4	0	8
Broadcast	4	70	248	21	343
PPV - No PD	3	30	55	11	99
PPV - PD	0	3	2	2	7
Total	9	105	309	34	457

Year 2002

Market for TV Content	Market for TV Advertising: No Info	No Adv	Adv - No PD	Adv - PD	Total
No Info	0	3	6	2	11
Broadcast	11	66	416	26	519
PPV - No PD	1	44	57	7	109
PPV - PD	0	3	2	1	6
Total	12	116	481	36	645

Note: This table tabulates pricing decisions for the advertising as well as viewership market for the 1,285 TV stations we have information for each separate year in our sample.

Table 5. Tabulation of No. Stations per City in 1996 and 1999

	No. Stations per City 1999									
No. Stations per City 1996	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**12**	**13**	**Total**
0	120	180	38	7	4	0	0	0	0	349
1	15	49	10	2	1	0	0	0	0	77
2	6	23	12	1	1	1	0	0	0	44
3	1	4	5	4	0	0	0	0	0	14
4	0	1	0	1	0	1	0	0	0	3
5	0	2	1	0	0	0	0	0	0	3
6	0	0	0	0	2	0	1	0	0	3
7	0	0	1	0	0	0	0	0	0	1
9	0	0	0	1	0	0	0	1	0	2
13	0	0	0	0	0	0	1	0	0	1
15	0	0	0	0	0	0	0	0	1	1
17	0	0	0	0	1	0	0	0	0	1
Total	142	259	67	16	9	2	2	1	1	499

Note: This table tabulates the number of stations per city in 1996 and 1999 within our sample. The 120 cities appearing in (0,0) are cities with a positive number of stations in 2002.

Table 6. Tabulation of No. Stations per City in 1999 and 2002

	No. Stations per City 2002													
No. Stations per City 1999	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**10**	**11**	**13**	**16**	**Total**
0	15	104	16	6	1	0	0	0	0	0	0	0	0	142
1	54	168	25	8	2	2	0	0	0	0	0	0	0	259
2	6	16	28	10	4	2	0	0	0	1	0	0	0	67
3	0	0	6	5	1	3	0	0	0	0	1	0	0	16
4	0	0	1	1	2	2	2	1	0	0	0	0	0	9
5	0	0	0	0	0	1	0	0	1	0	0	0	0	2
6	0	0	0	0	0	0	2	0	0	0	0	0	0	2
12	0	0	0	0	0	0	0	0	0	0	0	1	0	1
13	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	75	288	76	30	10	10	4	1	1	1	1	1	1	297

Note: This table tabulates the number of stations per city in 1999 and 2002 within our sample. The 15 cities appearing in (0,0) are cities with a positive number of stations in 1996.

Table 7. Tabulation of No. Stations per City in 1996 and 2002

	No. Stations per City 2002													
No. Stations per City 1996	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**10**	**11**	**13**	**16**	**Total**
0	41	236	49	18	3	1	1	0	0	0	0	0	0	349
1	25	31	12	4	2	3	0	0	0	0	0	0	0	77
2	8	20	5	4	4	3	0	0	0	0	0	0	0	44
3	1	1	7	3	0	2	0	0	0	0	0	0	0	14
4	0	0	1	0	0	0	0	0	1	0	1	0	0	3
5	0	0	2	1	0	0	0	0	0	0	0	0	0	3
6	0	0	0	0	0	0	2	1	0	0	0	0	0	3
7	0	0	0	0	0	0	0	0	0	1	0	0	0	1
9	0	0	0	0	0	1	0	0	0	0	0	1	0	2
13	0	0	0	0	0	0	1	0	0	0	0	0	0	1
15	0	0	0	0	0	0	0	0	0	0	0	0	1	1
17	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	75	288	76	30	10	10	4	1	1	1	1	1	1	499

Note: This table tabulates the number of stations per city in 1996 and 2002 within our sample. The 41 cities appearing in (0,0) are cities with a positive number of stations in 1999.

Table 8. Tabulation of Changes in Number of Stations per City between 1996/1999 and Changes between 1999/2002

	Change in No. Stations 1999/2002								
Change in No. Stations 1996/1999	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**	**8**	**Total**
-13	0	0	1	0	0	0	0	0	1
-7	0	0	1	0	0	0	0	0	1
-6	0	0	0	0	1	0	0	0	1
-5	0	0	0	0	0	0	0	1	1
-4	0	0	0	2	0	0	0	0	2
-3	0	0	1	2	0	0	0	0	3
-2	0	0	3	4	3	2	1	0	13
-1	0	4	29	5	3	2	0	1	44
0	2	18	31	108	18	7	2	0	186
1	1	40	130	14	5	2	0	0	192
2	3	11	20	5	2	0	0	0	41
3	0	3	5	2	0	0	0	0	10
4	1	1	0	1	1	0	0	0	4
Total	7	77	221	143	33	13	3	2	499

Note: This table tabulates changes in the number of stations across years 1996, 1999 and 2002 in our sample. The unit of observation is the city.

Table 9. OLS Regressions with Fixed Effects of Price Discrimination on Number of Stations Located in a Given City

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dep Variable:	Content_PD_1						Content_PD_2					
COMP_1	-0.0154***	-0.0153***	-0.0154*	-0.0338**	-0.0334**	-0.0470**	-0.0020***	-0.0019***	-0.0016**	-0.0074***	-0.0072***	-0.0086***
	(0.0054)	(0.0054)	(0.0081)	(0.0167)	(0.0169)	(0.0235)	(0.0006)	(0.0006)	(0.0007)	(0.0023)	(0.0024)	(0.0030)
COMP_1^2				0.0024	0.0024	0.0041*				0.0004***	0.0004***	0.0005***
				(0.0016)	(0.0017)	(0.0022)				(0.0001)	(0.0001)	(0.0002)
Constant	0.0807***	0.0804***	0.0465	0.0998***	0.0994***	0.0872	0.0160***	0.0157***	0.0075	0.0239***	0.0235***	0.0174**
	(0.0216)	(0.0217)	(0.0404)	(0.0306)	(0.0308)	(0.0550)	(0.0043)	(0.0043)	(0.0065)	(0.0066)	(0.0066)	(0.0086)
FE Year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
FE Province	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	252	252	252	252	252	252	1,267	1,267	1,267	1,267	1,267	1,267
R-squared	0.01	0.01	0.23	0.01	0.01	0.24	0.00	0.00	0.08	0.01	0.01	0.08

	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Dep Variable:	Adv_PD_1						Adv_PD_2					
COMP_1	-0.0027	-0.0022	0.0001	0.0011	0.0038	0.0016	-0.0005	-0.0003	0.0016	0.0092	0.0109	0.0085
	(0.0027)	(0.0027)	(0.0030)	(0.0087)	(0.0089)	(0.0099)	(0.0025)	(0.0025)	(0.0026)	(0.0076)	(0.0076)	(0.0083)
COMP_1^2				-0.0003	-0.0004	-0.0001				-0.0007	-0.0008*	-0.0005
				(0.0006)	(0.0006)	(0.0007)				(0.0005)	(0.0005)	(0.0006)
Constant	0.0945***	0.0931***	0.1095***	0.0886***	0.0837***	0.1074***	0.0719***	0.0712***	0.0933***	0.0577***	0.0550***	0.0837***
	(0.0122)	(0.0122)	(0.0272)	(0.0178)	(0.0181)	(0.0298)	(0.0097)	(0.0097)	(0.0242)	(0.0138)	(0.0139)	(0.0254)
FE Year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
FE Province	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,020	1,020	1,020	1,020	1,020	1,020	1,261	1,261	1,261	1,261	1,261	1,261
R-squared	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.00	0.07	0.00	0.01	0.07

Note: This table shows OLS regressions using fixed effects to control for time invarying unobservables. Columns (1) to (12) have measures of price discrimination on TV content, and columns (13) to (24) have measures of price discrimination on advertising. The independent variable is the number of stations in each station's city and its square. Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 10. OLS Regressions with Fixed Effects of Price Discrimination on Number of Stations in Coverage/Reach Area

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dep Variable:	Content_PD_1						Content_PD_2					
COMP_2	-0.0131***	-0.0127***	-0.0146**	-0.0308**	-0.0313**	-0.0335*	-0.0008***	-0.0008***	-0.0006***	-0.0022***	-0.0021***	-0.0020***
	(0.0047)	(0.0048)	(0.0071)	(0.0132)	(0.0130)	(0.0184)	(0.0002)	(0.0002)	(0.0002)	(0.0006)	(0.0006)	(0.0007)
COMP_2^2				0.0019*	0.0021**	0.0020				0.00004***	0.00004***	0.00004***
				(0.0010)	(0.0010)	(0.0015)				(0.00001)	(0.00001)	(0.00001)
Constant	0.0775***	0.0768***	0.05	0.0974***	0.0977***	0.0725	0.0156***	0.0155***	0.0067	0.0198***	0.0195***	0.0116
	(0.0207)	(0.0207)	(0.0420)	(0.0284)	(0.0284)	(0.0487)	(0.0042)	(0.0041)	(0.0064)	(0.0053)	(0.0052)	(0.0072)
FE Year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
FE Province	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	252	252	252	252	252	252	1,267	1,267	1,267	1,267	1,267	1,267
R-squared	0.01	0.01	0.24	0.01	0.01	0.24	0.00	0.00	0.08	0.01	0.01	0.08

	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Dep Variable:	Adv_PD_1						Adv_PD_2					
COMP_2	-0.0021***	-0.0020***	-0.0015*	-0.0023	-0.0021	-0.0022	-0.001	-0.0009	-0.0006	0.0003	0.0003	0.0001
	(0.0007)	(0.0007)	(0.0008)	(0.0020)	(0.0020)	(0.0022)	(0.0006)	(0.0006)	(0.0007)	(0.0018)	(0.0018)	(0.0018)
COMP_2^2				0.00001	0.00001	0.00000				0.00003	0.00003	0.00001
				(0.00003)	(0.00003)	(0.00003)				(0.00003)	(0.00003)	(0.00003)
Constant	0.1003***	0.0995***	0.1180***	0.1009***	0.1001***	0.1210***	0.0764***	0.0758***	0.1003***	0.0724***	0.0721***	0.0979***
	(0.0114)	(0.0114)	(0.0272)	(0.0138)	(0.0138)	(0.0283)	-0.0089	-0.0088	-0.0244	-0.0105	-0.0105	-0.0249
FE Year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
FE Province	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,020	1,020	1,020	1,020	1,020	1,020	1,261	1,261	1,261	1,261	1,261	1,261
R-squared	0.00	0.01	0.08	0.00	0.01	0.08	0.00	0.00	0.07	0.00	0.00	0.07

Note: This table shows OLS regressions using fixed effects to control for time invarying unobservables. Columns (1) to (12) have measures of price discrimination on TV content, and columns (13) to (24) have measures of price discrimination on advertising. The independent variable is the number of stations in each station's coverage area. Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 11. OLS Regressions with Fixed Effects of Price Discrimination on Number of stations received by inhabitants of a given city

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dep Variable:	Content_PD_1						Content_PD_2					
COMP_3	-0.0145**	-0.0158**	-0.0132	-0.0354*	-0.0382*	-0.0332	-0.0021***	-0.0021***	-0.0020*	-0.0064**	-0.0072**	-0.0071*
	(0.0070)	(0.0075)	(0.0087)	(0.0193)	(0.0199)	(0.0261)	(0.0007)	(0.0008)	(0.0011)	(0.0029)	(0.0032)	(0.0039)
COMP_3^2				0.0022	0.0024*	0.002				0.0003*	0.0003**	0.0003*
				(0.0014)	(0.0014)	(0.0018)				(0.0002)	(0.0002)	(0.0002)
Constant	0.1037***	0.1081***	0.0511	0.1406***	0.1477***	0.0868	0.0203***	0.0205***	0.01	0.0304***	0.0325***	0.0197*
	(0.0329)	(0.0346)	(0.0428)	(0.0525)	(0.0547)	(0.0669)	(0.0057)	(0.0059)	(0.0074)	(0.0101)	(0.0111)	(0.0117)
FE Year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
FE Province	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	252	252	252	252	252	252	1,265	1,265	1,265	1,265	1,265	1,265
R-squared	0.01	0.02	0.24	0.02	0.02	0.24	0.00	0.01	0.08	0.01	0.01	0.08

	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Dep Variable:	Adv_PD_1						Adv_PD_2					
COMP_3	-0.0045**	-0.0034	-0.0035	-0.0056	-0.0015	0.0015	-0.003	-0.002	-0.002	-0.0026	0.0011	0.0045
	(0.0022)	(0.0023)	(0.0038)	(0.0078)	(0.0083)	(0.0096)	(0.0019)	(0.0020)	(0.0031)	(0.0064)	(0.0067)	(0.0076)
COMP_3^2				0.0001	-0.0001	-0.0003				-0.00002	-0.0002	-0.0004
				(0.0005)	(0.0005)	(0.0005)				(0.0004)	(0.0004)	(0.0004)
Constant	0.1079***	0.1028***	0.1217***	0.1104***	0.0981***	0.1120***	0.0837***	0.0795***	0.1046***	0.0830***	0.0722***	0.0924***
	(0.0151)	(0.0152)	(0.0286)	(0.0238)	(0.0246)	(0.0326)	(0.0122)	(0.0122)	(0.0252)	(0.0190)	(0.0193)	(0.0273)
FE Year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
FE Province	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,019	1,019	1,019	1,019	1,019	1,019	1,259	1,259	1,259	1,259	1,259	1,259
R-squared	0.00	0.01	0.08	0.00	0.01	0.08	0.00	0.00	0.07	0.00	0.00	0.07

Note: This table shows OLS regressions using fixed effects to control for time invarying unobservables. Columns (1) to (12) have measures of price discrimination on TV content, and columns (13) to (24) have measures of price discrimination on advertising. The independent variable is the number of stations received by inhabitants of each given city and its square. Standard errors in parentheses and clustered at the city and year level. * significant at 10%; ** at 5%; *** at 1%.

Table 12. Prices and Local Competition

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dep Variable:	**Cable Fee**								
COM_1	75.3256***	76.0976***	77.4331***						
	(21.9296)	(22.9579)	(24.6394)						
COM_2				6.5758	7.3788	27.7319**			
				(21.3870)	(21.8781)	(12.1998)			
COM_3							33.2951*	31.4546	53.1617**
							(18.1655)	(22.1891)	(21.2337)
Constant	1,631***	1,630***	1,403***	1,744***	1,742***	1,468***	1,645***	1,651***	1,416***
	(60.7873)	(60.1547)	(105.1443)	(72.1150)	(71.5584)	(101.4600)	(69.5628)	(75.4481)	(105.5416)
Year FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Province FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	263	263	263	263	263	263	263	263	263
R-squared	0.01	0.02	0.20	0.00	0.00	0.20	0.00	0.01	0.20

	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Dep Variable:	**TV Fee (=0 if broadcasting)**								
COM_1	-32.7176***	-30.1907***	-29.8771***						
	(5.1534)	(5.2792)	(9.3894)						
COM_2				-20.2791***	-19.7778***	-19.2309***			
				(2.6515)	(2.6149)	(3.4852)			
COM_3							-30.0571***	-29.6517***	-23.7228***
							(4.3252)	(4.6992)	(8.6701)
Constant	399***	392.7***	357.1***	432.6***	429.8***	385.1***	452.1***	450.3***	361.2***
	(30.0491)	(29.1648)	(45.3485)	(32.4789)	(31.8229)	(42.8725)	(35.5670)	(35.4702)	(46.5107)
Year FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Province FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,236	1,236	1,236	1,236	1,236	1,236	1,234	1,234	1,234
R-squared	0.01	0.02	0.23	0.04	0.04	0.25	0.02	0.02	0.23

	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
Dep Variable:	**Avertisement Price**								
COM_1	1,282.2***	1,305.5***	1,098.1***						
	(303.4620)	(304.1875)	(225.6849)						
COM_2				377.2***	380.0***	286.2***			
				(118.6942)	(118.9733)	(98.1978)			
COM_3							942.6***	1,010.8***	830.5***
							(266.6520)	(269.7432)	(288.0015)
Constant	8,475.3***	8,417.0***	8,493.2***	9,286.7***	9,268.8***	9,865.9***	7,528***	7,227.1***	8,797.4***
	(890.8319)	(894.3699)	(1789.4895)	(786.1535)	(786.9179)	(821.2016)	(1161.6731)	(1161.4917)	(1960.1354)
Year FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Province FE	No	No	Yes	No	No	Yes	No	No	Yes
Observations	791	791	791	791	791	791	790	790	790
R-squared	0.04	0.04	0.13	0.03	0.03	0.12	0.03	0.04	0.12

Note: This table shows regressions of prices on local competition. Columns (1) to (9) regress prices of pay-per-view television, columns (10) to (18) those of tv content where stations broadcast charge zero price, and columns (19) to (27) those of advertising. For those stations using price discrimination, we picked median reported prices. We use the same three definitions of competition as elsewhere in the paper.

City and year clustered standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 13. OLS Regressions of Price Discrimination (COMP_1) on Local Market Competition, Sample Cities with Two Stations or Less in 1999

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dep Variable:	Content_PD_2						Adv_PD_2					
COMP_1	-0.0025***	-0.0021**	-0.0018*	-0.0079***	-0.0071**	-0.0092**	-0.0045**	-0.0038*	-0.0042*	-0.0009	0.0008	-0.0017
	(0.0009)	(0.0009)	(0.0009)	(0.0026)	(0.0031)	(0.0037)	(0.0019)	(0.0020)	(0.0024)	(0.0078)	(0.0082)	(0.0091)
COMP_1^2				0.0004***	0.0004**	0.0006**				-0.0003	-0.0004	-0.0001
				(0.0002)	(0.0002)	(0.0002)				(0.0005)	(0.0005)	(0.0006)
Constant	0.0177***	0.0170***	0.007	0.0249***	0.0237***	0.0177*	0.0689***	0.0676***	0.0683***	0.0642***	0.0614***	0.0961***
	(0.0048)	(0.0047)	(0.0073)	(0.0070)	(0.0073)	(0.0098)	(0.0091)	(0.0090)	(0.0093)	(0.0137)	(0.0141)	(0.0265)
FE Year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
FE Province	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,106	1,106	1,106	1,106	1,106	1,106	1,102	1,102	1,102	1,102	1,102	1,102
R-squared	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.01	0.08	0.00	0.01	0.08

Note: This table reports OLS regressions of Price Discrimination in TV content (columns (1) to (6)) and advertising market (columns (7) to (12)). We limit our sample to those cities that in 1999 had two stations or less as mandated by law. Competition is measured with the number of stations located within a city.
Robust standard errors and clustered by year and city in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 14. OLS Regressions of Price Discrimination (COMP_2) on Local Market Competition, Sample Cities with Two Stations or Less in 1999

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dep Variable:	Content_PD_2						Adv_PD_2					
COMP_2	-0.0009***	-0.0008***	-0.0007**	-0.0024***	-0.0023***	-0.0023***	-0.0013**	-0.0012*	-0.0013*	-0.0016	-0.0016	-0.0019
	(0.0003)	(0.0003)	(0.0003)	(0.0007)	(0.0007)	(0.0008)	(0.0006)	(0.0006)	(0.0007)	(0.0018)	(0.0018)	(0.0020)
COMP_2^2				0.00004***	0.00004***	0.00004***				0.00001	0.00001	0.00002
				(0.00001)	(0.00001)	(0.00001)				(0.00003)	(0.00003)	(0.00003)
Constant	0.0170***	0.0167***	0.0064	0.0213***	0.0208***	0.0117	0.0663***	0.0656***	0.0659***	0.0671***	0.0667***	0.0990***
	(0.0045)	(0.0045)	(0.0070)	(0.0057)	(0.0056)	(0.0079)	(0.0086)	(0.0085)	(0.0085)	(0.0102)	(0.0102)	(0.0263)
FE Year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
FE Province	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,106	1,106	1,106	1,106	1,106	1,106	1,102	1,102	1,102	1,102	1,102	1,102
R-squared	0.00	0.00	0.08	0.01	0.01	0.08	0.00	0.01	0.08	0.00	0.01	0.08

Note: This table reports OLS regressions of Price Discrimination in TV content (columns (1) to (6)) and advertising market (columns (7) to (12)). We limit our sample to those cities that in 1999 had two stations or less as mandated by law. Competition is measured here as the number of stations located in a station's coverage area. Robust standard errors and clustered by year and city in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 15. OLS Regressions of Price Discrimination (COMP_3) on Local Market Competition, Sample Cities with Two Stations or Less in 1999

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dep Variable:	Content_PD_2						Adv_PD_2					
COMP_3	-0.0024***	-0.0025**	-0.0023*	-0.0066**	-0.0072**	-0.0072	-0.0061***	-0.0049***	-0.0058*	-0.0051	-0.0015	0.0037
	(0.0009)	(0.0010)	(0.0014)	(0.0032)	(0.0037)	(0.0045)	(0.0017)	(0.0018)	(0.0032)	(0.0061)	(0.0065)	(0.0083)
COMP_3^2				0.0003*	0.0003*	0.0003				-0.0001	-0.0002	-0.0007
				(0.0002)	(0.0002)	(0.0002)				(0.0004)	(0.0004)	(0.0005)
Constant	0.0225***	0.0226***	0.0094	0.0316***	0.0332***	0.0185	0.0845***	0.0798***	0.1080***	0.0824***	0.0722***	0.0906***
	(0.0064)	(0.0068)	(0.0080)	(0.0108)	(0.0121)	(0.0124)	(0.0120)	(0.0118)	(0.0265)	(0.0188)	(0.0192)	(0.0283)
FE Year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
FE Province	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,104	1,104	1,104	1,104	1,104	1,104	1,100	1,100	1,100	1,100	1,100	1,100
R-squared	0.00	0.01	0.08	0.01	0.01	0.08	0.01	0.01	0.09	0.01	0.01	0.09

Note: This table reports OLS regressions of Price Discrimination in TV content (columns (1) to (6)) and advertising market (columns (7) to (12)). We limit our sample to those cities that in 1999 had two stations or less as mandated by law. Competition is measured here as the number of stations received by inhabitants of a given city. Robust standard errors and clustered by year and city in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table 16. OLS Regressions of Cable and Advertising Price, Using Sample of Cities with Two or Less Stations in 1999

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Dep Variable:	**TV Fee**								
COM_1	-49.43***	-44.405***	-43.00***						
	(9.1621)	(9.0874)	(14.6480)						
COM_2				-21.27***	-20.46***	-17.39***			
				(3.8683)	(3.7419)	(4.1994)			
COM_3							-37.62***	-37.62***	-33.60***
							(4.9019)	(5.8817)	(10.0931)
Constant	419.89***	415.90***	359.16***	417.48***	407.14***	371.00***	469.33***	469.31***	374.76***
	(41.73)	(40.62)	(44.87)	(34.06)	(32.05)	(50.42)	(37.85)	(38.06)	(46.64)
FE Year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
FE Province	No	No	Yes	No	No	Yes	No	No	Yes
Observations	1,078	1,078	1,078	1,078	1,078	1,078	1,076	1,076	1,076
R-squared	0.04	0.04	0.26	0.02	0.02	0.25	0.02	0.03	0.24

	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Dep Variable:	**Advertising Price**								
COM_1	1,445.6**	1,489.5**	1,669.2***						
	(629.9)	(650.5)	(568.7)						
COM_2				255.3***	254.4***	206.6**			
				(93.8)	(93.9)	(96.3)			
COM_3							946.8***	1,066.6***	1,002.6**
							(324.2)	(351.1)	(439.5)
Constant	9,111***	9,116***	10,009***	7,681***	7,596***	7,441***	6,798***	6,330***	8,401***
	(659.4)	(658.1)	(2025.8)	(1294.1)	(1329.2)	(2098.3)	(1267.5)	(1331.0)	(2154.2)
FE Year	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
FE Province	No	No	Yes	No	No	Yes	No	No	Yes
Observations	669	669	669	669	669	669	668	668	668
R-squared	0.01	0.01	0.13	0.03	0.03	0.15	0.03	0.03	0.14

Note: In this table, we report correlation of prices of pay-per-view and broadcast television and prices of advertising on measures of local competition. We restrict our sample to those cities that had at most two stations in 1999. Prices are measured in pesetas (old Spanish currency before the Euro). Robust standard errors and clustered by year and city in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Table A1. OLS Regressions of Price Discrimination in TV Content Market and Advertising with City and Station Controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dep Var:	**Content_PD_2**						**Adv_PD_2**					
COMP_1	-0.00050	-0.00185*					0.00432	0.00160				
	(0.00038)	(0.00112)					(0.00533)	(0.00918)				
COMP_1^2		0.00012*						0.00025				
		(0.00007)						(0.00076)				
COMP_2			-0.00019*	-0.00067**					-0.00114	-0.00059		
			(0.00011)	(0.00032)					(0.00084)	(0.00226)		
COMP_2^2				0.00001*						-0.00001		
				(0.00001)						(0.00004)		
COMP_3					-0.00063	-0.00219					-0.00139	-0.00618
					(0.00048)	(0.00196)					(0.00287)	(0.00749)
COMP_3^2						0.00012						0.00037
						(0.00012)						(0.00052)
Days	-0.00158	-0.00151	-0.00158	-0.00152	-0.00160	-0.00153	-0.00037	-0.00024	-0.00016	-0.00022	-0.00026	-0.00004
	(0.00231)	(0.00229)	(0.00231)	(0.00230)	(0.00231)	(0.00234)	(0.00673)	(0.00674)	(0.00674)	(0.00674)	(0.00672)	(0.00671)
Hours/Day	-0.00054*	-0.00051	-0.00053*	-0.00050	-0.00052	-0.00051	-0.00079	-0.00073	-0.00039	-0.00043	-0.00050	-0.00045
	(0.00032)	(0.00031)	(0.00032)	(0.00031)	(0.00032)	(0.00032)	(0.00105)	(0.00105)	(0.00105)	(0.00107)	(0.00103)	(0.00104)
Private?	0.00283	0.00319	0.00297	0.00329	0.00292	0.00318	0.03988**	0.04061**	0.04354***	0.04321***	0.04197**	0.04280**
	(0.00687)	(0.00690)	(0.00690)	(0.00692)	(0.00682)	(0.00673)	(0.01650)	(0.01740)	(0.01652)	(0.01648)	(0.01667)	(0.01701)
Perc Own Content	-0.00495	-0.00479	-0.00492	-0.00481	-0.00466	-0.00434	-0.04564	-0.04526	-0.04362	-0.04380	-0.04319	-0.04213
	(0.00930)	(0.00926)	(0.00932)	(0.00930)	(0.00945)	(0.00957)	(0.03007)	(0.03004)	(0.02996)	(0.02999)	(0.02996)	(0.03010)
Network?	-0.00010	0.000003	-0.00034	-0.00036	-0.00051	-0.00025	0.02108	0.02129	0.01899	0.01900	0.01990	0.02066
	(0.00448)	(0.00447)	(0.00452)	(0.00452)	(0.00441)	(0.00452)	(0.01545)	(0.01551)	(0.01568)	(0.01569)	(0.01552)	(0.01550)
Constant	0.02548	0.02596	0.02526	0.02527	0.02678	0.02938*	0.03300	0.03391	0.03094	0.03091	0.03463	0.04262
	(0.01646)	(0.01668)	(0.01638)	(0.01638)	(0.01645)	(0.01621)	(0.04835)	(0.04842)	(0.04837)	(0.04841)	(0.04882)	(0.04988)
Observations	1,024	1,024	1,024	1,024	1,022	1,022	1,026	1,026	1,026	1,026	1,024	1,024
R-squared	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02

Note: The dependent variable in this table is Content_PD_1. That variable takes value 1 if TV stations offer pay-per-view content and price discriminate, and 0 if offer pay-per-view and do not price discriminate.
All regressions include controls for population and unemployment rate. Robust standard errors in parentheses and clustered at the city and year level. * significant at 10%; ** significant at 5%; *** significant at 1%