Does Vertical Integration Decrease Prices? Evidence from the Paramount Antitrust Case of 1948

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Abstract

I empirically examine the impact of the 1948 Paramount antitrust case on ticket prices using a unique data set collected from Variety magazine issues between 1945 and 1955. With weekly movie theater information on prices, revenues and theater ownership for an unbalanced panel of 393 theaters located in 26 different metropolitan areas, I find evidence that vertically integrated theaters charged lower prices and sold more admission tickets than non-vertically integrated theaters. I also find that the rate at which prices increased in theaters were slower before vertical separation than it was after separation. These findings together with institutional and antitrust case aftermath detail are consistent with the prediction that vertical integration lowers prices through the elimination of double-marginalization. A back of the envelope calculation suggests that losses in consumer surplus due to the Supreme Court resolution suggesting theater vertical separation from major studios were sizable.

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1 Introduction

Understanding the impact of the organization of production is a central topic in Economics since Coase (1937). Coase was later followed and extended by a number of theories such as transaction cost economics (Williamson, 1975 and 1985; Klein, Crawford and Alchian, 1978), property rights (Grossman and Hart, 1986; Hart and Moore, 1990; Hart, 1995), incentive-based theories (Holmstrom and Milgrom, 1991 and 1994) and post-adaptation theories (Simon, 1951; Baker, Gibbons and Murphy, 2002). Despite this wide range of theories and different approaches to this question, the empirical literature in this field has been dwarfed and is lacking to support and test existing theoretical predictions (Lafontaine and Slade, 2007). Therefore, my goal in this paper is to further contribute to the understanding of the impact of vertical integration by documenting differences in behavior between integrated and non-integrated theaters in the US between 1945 and 1955.

This exercise should be of interest to economists in general but in particular to those in organizational economics, industrial organization and antitrust policy for three main reasons. First, in 1948 the US Supreme Court determined in the antitrust case of US vs. Paramount that Paramount and seven others were forbidden to use bundling and other clauses that restrained competition in the studio and exhibition market, as well as forced to sell the bulk of their theater branches (only Paramount, RKO, Warner Bros., Fox and MGM owned theaters out of the eight studios involved in the actual case). The latter part of the ruling represents an unprecedented opportunity to examine the changes in economic performance due to an exogenous change in organizational form as the empirical literature in organizational economics suffers of pervasive problems of endogeneity, spurious correlations and reverse causality.

A second reason why the empirical results in this paper should be of interest is the significance of the implications of my findings for antitrust policy design. The FTC and Department of Justice have recommended in the past to break up firms charged with abuse of market power into several units as a solution to their corresponding antitrust cases. Examples of these are the Standard Oil case of 1911 and the AT&T case of 1982 as well as the preliminary sentence of the relatively recent Microsoft sentence in 2000. This paper provides micro-evidence (at the theater level) of the impact of this type of sentence in economic performance and therefore helps policy makers design and apply better policies in future antitrust cases of similar characteristics. Spengler (1950), one of the most influential papers in industrial economics, has its origin in the empirical setting studied here. Spengler argued that while horizontal integration may increase prices and lower welfare, vertical integration may actually decrease prices and increase welfare through the elimination of double-marginalization. Therefore, antitrust policy should not rule against all types of integration

and focus in discouraging horizontal integration. While this applies to many industries, Spengler was inspired by the US vs. Paramount antitrust case. Therefore, this paper provides empirical evidence on the empirical setting that motivated the first empirical prediction of the impact of vertical integration on prices and double-marginalization.

Finally, as I examine price changes in an industry during a whole decade, this paper should also be of interest to those interested in understanding the evolution of prices in the economy as in Nakamura (2008) and Nakamura and Steinsson (2008). My observation here may indicate that closer attention must be paid to changes in the organization of production to understand changes in prices over time.

In summary, this paper empirically examines the impact of the Supreme Court ruling on movie theater ticket prices in the US versus Paramount antitrust case where Paramount and seven other studios were accused of using their market power to prevent entry in movie production and distribution through movie bundling and vertical integration in movie exhibition. After a number of appeals at lower level courts, the Supreme Court mandated in 1948 that Paramount and the other studios to sell up to 50% of their theater holding in the US and stop movie bundling. This paper uses the exogenous vertical separation of movie theaters mandated by the Supreme Court to investigate the impact of vertical integration on economic performance and movie ticket prices. In particular, I empirically explore whether theaters that were once vertically integrated had lower prices than independent theaters before and after the Supreme Court sentence in 1948. Following predictions in Spengler (1950), this decrease in prices should come along with an increase in quantity and an increase in consumer surplus and welfare.

For this purpose, I use a new and unique data set collected from old issues of Variety (a specialized movie industry trade magazine) edited between January 3rd of 1945 and December 28th of 1955. This data set provides weekly movie theater information on prices, revenues and theater ownership for a sample of 393 theaters located in 26 different metropolitan areas in the US. The high frequency of the data allows me to control by city, year and theater fixed effects while focusing on changes in price, movie receipts and admission sales before and after the change in theater vertical structure due to the Paramount decree. I also complement these data with information from other sources that provide information on the number of screens of most theaters in my data set (from a website named cinematreasures.com), on the introduction of television (Gentzkow, 2006) and on the city level theater market concentration (Movie Yearbook issues between 1945 and 1955).

In the end, the data for this paper contains roughly 143,000 observations at the movie, theater and week level. A result that comes from simple observation of the data is that most theaters offered double programming (two or more within a week) and also the fact that uniform pricing across

movies and weeks within a theater was the rule (contrary to what is stated in the literature). For this reason, I collapse the data at the theater/year and theater/week level for most of the empirical work below and therefore I end up working with 2685 and 106,702 observations respectively. This is far more data and detail than utilized in most papers that have previously examined the aftermath of this antitrust case. Therefore, and taking the limitations of the data into account, I offer both cross-sectional estimates and within-theater before-after estimates of the impact of vertical disintegration on movie ticket prices and theater revenues and admissions.

The cross-sectional results suggest that vertically integrated theaters sold their tickets at lower prices than non-integrated theaters both when considering evening and matinee prices. Consequently, integrated theaters sold more admission tickets but they did not collect statistically higher revenues even after controlling for size differences. The before-and-after estimates that exploit variation in prices within theaters show a slightly different result and yet similar in spirit. First, the data show that integrated theaters did not experience an immediate increase in prices once they became non-integrated. Second, integrated theaters increased prices at lower rates than non-integrated theaters but they increased prices at faster rates after separating from their parent studios than theaters that were always non-integrated. These results are similar for both evening and matinee prices. Contrary to cross-sectional results, admissions and tickets did not go down at different rates for integrated and non-integrated theaters after separation.

I also provide evidence at the movie, theater and week level and find similar results to those provided with the data at the theater-week level. I find that integrated theaters set lower ticket prices and that their prices do not change whenever showing a movie distributed by other studios. If anything, I find robust results that movies distributed by integrated studios sell at lower ticket prices regardless of who owns the movie theater where they are showing. This suggests that even after vertical separation major studios would contract with theaters that charged the lowest prices as a way to deal with double-marginalization and escape high prices.

Finally, I also estimate logit demand and price sensitivity taking advantage of rich variation in movie programming across theaters, cities and weeks. My estimates are very similar to those of Davis (2006) but given the lower prices charged over 60 years ago the implied elasticities range between 0.45 and 0.75. Given these and my reduced-form results, the change in organizational form increased prices 10% over five years (in excess to what they would have increased due to other factors). That would diminish attendance by 4.5% to 7.5% on average aside from the increase competition from television and the alleged change in movie quality. Although it is difficult to quantify social welfare because I do not have theater cost information available, it is easy to see that consumer welfare clearly went down as a result.

Given the importance of the Paramount case, this is obviously not the only empirical study offering evidence on the aftermath of the Supreme Court ruling on this instance. Whitney (1955) and Cassady (1958) were among the first to analyze the aftermath and impact of the Paramount case through a number of interviews with industry practitioners. Whitney (1955) notes that the impact in supply may have increased quality but also increased prices leaving the net effect on consumers ambiguous, while Cassady (1958) focuses on the aftermath in exhibition contracts. This case also inspired several studies of bundling and its consequences such as Kenney and Klein (1983 and 2000) as well as Hanssen (2000). More recently, others such as De Vany and Eckert (1991) and De Vany (2004) have investigated the effect of the case on many dimensions and, by looking at the impact on market stock values, found that the case had no effect on firm's profits. While researching the uniform pricing practices in the movie-theater industry, Orbach and Einav (2007) argue that the resolution of the case restrained pricing practices in this industry. Gil (2008), not the author of this paper, investigated the legal standing of the antitrust case while focusing on the relevance of minimum pricing clauses and their anticompetitive consequences for the motion picture industry. Finally, the two papers that are closer to my paper here are perhaps Hanssen (2010) and Silver (2010). While the former argues that studios vertically integrated into exhibition to implement a sustainable collusive agreement that would favor each other's movies screenings, the latter explores the impact of the vertical separation of theaters on movie production using historical data and finds that ticket prices were unaffected by the Paramount case and that, if anything, larger transaction costs diminished total surplus in this industry beyond potential gains in consumer surplus. This paper contributes to this literature by exploring a long unbalanced panel data set at the theater level and therefore answering questions that previously were only explored with aggregate data in a shorter time period.

The empirical contribution of this paper differs from those of others studying vertical integration and my own previous work in two ways. On one hand, many others have studied the impact of vertical integration on prices as a way to finding out whether vertical integration affects outcomes through lower costs or higher productivity. Recent examples of this literature are Hastings and Gilbert (2005) and Hortacsu and Syverson (2007). While the former examines the effect of vertical integration on gasoline pricing in California finding a positive correlation between vertical integration and wholesale pricing, the latter paper investigates the effect of vertical integration on prices in the cement and ready-mixed concrete industry and finds that prices fall and quantities rise when markets become more integrated. Hortacsu and Syverson (2007) interpret their results as an increase in productivity due to a more efficient use of logistics for larger and vertically integrated firms in these industries. My paper explores the relation between vertical integration and prices

in a setting where improvements on productivity are unlikely and therefore the increase in prices after vertical separation must come from the emergence of a double mark-up. Most similar to this paper are Slade (1998) and Barron and Umbeck (1984) since they also exploit changes in vertical integration due to antitrust action in the UK beer industry and the US gas retailing industry respectively and find as well that prices went up after vertical separation.

On the other hand, my own previous work has examined related topics. In particular, Gil (2010) examines the empirical relation between movie characteristics and vertical integration at the studio level between 1940 and 1960 finding that the Paramount case decreased the number of movies produced by studios, increase the duration of movies and increased the number of coproductions in the industry. Gil (2009) explored the impact of vertical integration in the Spanish movie industry and found that integrated theaters show their movies longer than non-integrated theaters and that integrated distributors are more likely to distribute movies of more uncertain performance. This paper adds to my previous work in that I can answer more directly the question of how vertical separation (integration) affects consumer surplus as the data allows for theater level variation in prices and organizational form during a time when price uniformity across theaters was not the norm.

The remainder of the paper is organized as follows. The next section describes the institutional details and contracting practices surrounding the Paramount antitrust case and it describes the data used in the paper. Section 3 presents a simplified version of the model in Spengler (1950) using revenue-sharing contracts between distributors and exhibitors that provides testable implications. Section 4 shows reduced form results of the impact of vertical integration on ticket prices, admissions and box office revenues using theater-year level data. This section also provides robustness checks using data at the theater/week level and variation in movie scheduling at the movie, theater and week level as well as alternative specifications. Section 5 estimates a simple logit demand model and provides back of the envelope calculations using implications from the previous reduced form results. Finally, section 6 concludes.

2 Institutional Details and Data Description

This section describes institutional detail around the 1948 Paramount antitrust case as well as movie contracts used before and after the case resolution. Before that, let me describe the agents that are relevant to the case. This industry is mainly composed by three types of agents: producing studios, distributors and exhibitors. Studios produce movies and solve coordination problems between all agents involved in production, from directors to producers passing through script writers and

acting casts. Movie distributors are those agents that serve as intermediaries between studios and exhibitors as they receive movies from the former and deliver them to the latter. Finally, exhibitors own theaters that play movies provided by distributors and sell admission tickets to viewers.

The incentives driving actions of these agents are not providing a conflict of interest between studios and distributors as they both benefit from higher revenues from the movies, but they are in conflict with the incentives of theaters. It is important to note that during the period of analysis there were no ancillary markets such as DVD sales or TV markets (television audiences were just developing at that stage). Therefore the main conflict of interest between theaters and studios/distributors were the incentives to cut the run length of movies too short (from the studio perspective) and increasing audience turnover through high admission prices and increasing revenues from the theaters' concession stands. Since ancillary markets did not exist, all three agents made their living out of the box of revenues collected at theaters. This made control over theater decisions more important than what it may be nowadays.

2.1 Contractual Environment

Prior to the Paramount case the US motion picture industry and its contractual environment were very different from the industry today. The goal of this section is then to point out such differences as well as to provide a sufficient understanding of how the Paramount antitrust case changed contracting practices in this industry.

According to Kenney and Klein (1983) and Ornstein (1995), prior to the case the eight largest studios controlled and had interests in 3137 out of 18,075 theaters in the US, being the majority of these first-run theaters located in large cities. As a matter fact, these same studios controlled over 70% of first-run theaters in the 92 largest cities in the US. At that time, the exhibition market separated theaters in groups according to runs where first-run theaters would obtain movies at release and hand those down to theaters in the second-run market, third-run market and so on. Therefore, it was important for theaters to own their outlets because it guaranteed exhibition for their own production as well as it reduced costs and uncertainty (De Vany and Eckert, 1991). It also allowed the studios to control prices directly in the first-run theaters in major cities where independent theaters may lower them excessively due to competition from lower-run theaters (Dewey, 1955).

On the other hand, studios also had to contract with independent theaters when they wanted to show their movies in those theaters. They used block booking contracts containing a number of controversial clauses. These contracts bundled movies (sold movies in groups) to exhibitors and specified a revenue split for all movies in the bundle that would increase if box office revenue exceeded a certain threshold number (Kenney and Klein, 1983). Although at the beginning these

contracts specified the exact movies to be shown by the exhibitor, eventually these contracts only contained a vague statement that the theater would show a certain number of movies distributed by the studio and only those among the "best" films available from the distributor. It is well-known that no contract prevented an exhibitor from sourcing movies from other distributors (Kenney and Klein, 1983; De Vany and Eckert, 1991; Hanssen, 2010) and that these contracts allowed the exhibitors to refuse a given number of films (Hanssen, 2000) within the bundle.

Finally, among all the clauses included in these exhibition contracts used to constrain downstream exhibitor behavior perhaps the minimum price clause (RPM) is the one that has attracted more attention. As pointed out above when talking about vertically integrated theaters, this clause was used to prevent independent theaters from lowering their prices too much when facing competition from lower runs theaters.[1] Ultimately, this was effectively a minor concern given the existence of double-marginalization and therefore higher prices charged at independent theaters (Orbach, 2004).[2]

2.1.1 The Paramount Antitrust Case

Following one of the worst years for Hollywood, the Department of Justice filed suit against Paramount Pictures and seven others: Warner Bros., MGM, RKO, Fox, Columbia, Universal and United Artists. The decision of filing suit came after the independent "Snow White" was the great winner of the Academy Awards in 1938 and a feeling emerged that big movie studios were using their size and market power to cut in quality while preserving their number of showings.[3]

The Department of Justice accused the defendants of restraint of trade through three main points. First, the use of block booking and blind bidding[4] to assure marketing their movies and limit entry by independent studios. Second, the use of their own theater branches to gain market power in the theater market. Third, and finally, they were accused of colluding among them to drive out of business other studios and other exhibitors. The accusations, and therefore potential penalties, were targeting two different groups of studios. On one end, there were the five majors that owned production, distribution and exhibition (Paramount, Warner Bros., Fox, MGM and RKO)

[1] Cassady (1958) stresses out the importance of charging high enough prices combined with the use of block booking contracts as a way to sustain and finance the star-based studio model.

[2] Hanssen (2010) argues that attenuating double-marginalization was not a reason for the studios to vertically integrate into theater ownership since their affiliated cinemas were showing movies from rival filmakers as well. This paper does not debate this as it is not interested in understanding what drives vertical integration but whether vertical integration has an effect on prices.

[3] Coincidentally, 1939 left one of the best vintages in motion picture history with pieces such as "Gone with the Wind" and "Wuthering Heights."

[4] See Mulligan and Wedzielewski. (2011) for a thorough description of blind bidding practices in the US motion picture industry.

and on the other side, there were the three minors (Columbia, Universal and United Artists) that only owned production and distribution. The former group was subject to all three accusations, while the latter was only accused of block booking and blind bidding.

Given the difference in stakes, the big five rushed in 1940 to negotiate a decree with the Department of Justice according to which they would be able to keep their theater divisions but would renounce to the use of block booking and blind bidding together with other contractual practices. The only condition was that the three minors had to sign this decree as well by 1942. As the three minors did not own theaters and relied mainly in the contractual practices under scrutiny, Columbia and Universal failed to sign the decree within the deadline. As a result, the case was reopened and taken to court in 1945. At this time, the studios could not hide behind the state of the economy as this was booming after the war (1946 is a historical record in admission tickets sold). Instead, the studios claimed that the demand overseas was weak at that point (Europe was under reconstruction after World War II).[5] These arguments were not convincing enough for the Department of Justice and in 1946 the District Court[6] ruled against the studios and banned bundling as well as other contractual practices but allowed the five majors to keep their theater branches.

The ruling did not satisfy any of the parts involved in the case and both the plaintiff and defendants decided to appeal to the Supreme Court. After a round of appeal, in May of 1948 the Supreme Court ruled against the studios and decided not only to ban bundling but also to force the vertical separation of theaters from the five majors. After that, the case went back to the District Court for confirmation while the Supreme Court encouraged the eight defendants to sign a decree and save millions in legal fees as the case could go on for much longer. The District Court confirmed the sentence by the Supreme Court and therefore the defendants proceeded to sign the second decree in what was considered by some the biggest victory in antitrust history up to that moment (Adams, 1951).

2.1.2 The Aftermath of the Paramount Case

After the sentence was confirmed, the three minors were resigned to abandon block booking and blind bidding practices (Mulligan and Wedzielewski, 2011) as well as other vertical restrictions included in their distribution contracts. This same resignation did not take place among the big five studios whom, for the most part, decided to fight to keep their theater branches. And so different rounds of negotiations started between the five majors and the Department of Justice to

[5] Surprisingly enough, there was no mention at any given point of the introduction of television as potential source of competition.

[6] US District Court for Southern District of New York.

save their respective asset holdings in the exhibition market.

The first of the five to sign the Paramount decree was RKO in December of 1948. Howard Hughes was the owner of RKO by then and saw through the Paramount decree a way to level competition with the other four majors since RKO was the smallest of all five studios. Therefore by agreeing immediately (December 31st 1948) and signing the Paramount decree, Hughes was looking for a rapid institutionalization of the Supreme Court ruling. Despite this, the actual divestiture of RKO theaters did not occur until two years later in December of 1950 when the RKO Theater Company spun off from RKO pictures.

Paramount followed RKO shortly after signing the decree in December of 1949. It differed from RKO in that it immediately spun off its theater holdings from the Balaban and Katz theater divisions and grouping all other theaters into the United Paramount Theaters company. Paramount had started investing in the flourishing TV industry and, if convicted in the Paramount case, it may have been prohibited from owning interests in other vertically related media industries. Paramount identified the potential losses of continuing the ongoing litigation process and decided to sign the decree and not delay any longer the separation from its theatrical divisions.

Not much later Warner Bros. and Fox signed the decree in 1951 but, similarly to RKO, they did not separate from their theater branches until two years later in 1953. Warner Bros. named its theater division Stanley Warner Corporation and Fox named its Fox National Theaters. Finally, Loew's theaters that had acquired MGM earlier (the only case of backward integration among the five majors) signed the decree in 1954 and spun off the MGM studios from Loew's theaters. The vertical separation of MGM theaters was slightly more complex than other studios' as MGM had developed a number of interlocking arrangements with other exhibition companies that took five years to undo.

In terms of the movie contracts used at arm's length as a consequence of the sentence, the contracts were now specific to the movie and theater at use (as opposed to the group of movies and exhibitor as before). The contracts still specified revenue-sharing terms but these contracts were now specific to the movie at stake and in some instances more sophisticated as studios introduced sliding scales and other forms (Cassady, 1958) setting higher prices for better films. Interestingly enough, the change in sharing terms did not mean a change in the overall percentage of revenues paid from exhibitors to studios. Despite that, Conant (1960) argues that this new form of contracting was more time consuming than the previously used bundling according to exhibitors' observations. For this reason, the players in the industry eventually implemented a system of tracking and splitting (Ornstein, 1995) where the use of purely individual (movie per movie) contracting was restricted to exhibitors that were more likely to complain (Kenney and Klein, 1983).

In short, the resolution and aftermath of the Paramount antitrust case changed completely the organization and structure of transactions in the distribution and exhibition motion picture industries. On the one hand, arms' length transactions became regulated as block booking and blind bidding became prohibited. Studios were now forced to distribute and contract their movies one by one increasing transaction and search costs for both distributors and exhibitors and disallowing all kinds of risk sharing across movies within studio cohort of movies. In return, this new way of organizing transactions would increase competition between studios through the increase in studio entry, and therefore benefit final consumers by an improvement in movie quality. On the other hand, the case also changed (increased) the number of market transactions as it banned vertical integration of studios and distribution into exhibition. This increased the studios' exposure to risk at the production stage, while decreased market power concentration in the theater market hopefully benefitting consumer surplus through lower prices and theater entry increasing variety of choices for final consumers.

In the end, this case left a quasi-natural experiment where firms (studios in this setting) were forced to changed the way they organized transactions from within the firm to market transactions and doing so at different points in time. This represents a unique opportunity to further our understanding of the effect of vertical integration (or vertical separation) on economic outcomes and in particular here on prices and movie ticket sales.

2.2 Data Description

In this paper, I use a unique data set with movie theater information contained in old Variety magazine issues published between January 3rd 1945 and December 28th 1955. The resulting data set of this collection effort contains weekly movie theater information for a total of 393 theaters in 26 different cities. As the number of theaters and cities changes week by week, the data set is an unbalanced panel data set for which I offer a summary in Table 1. The end of each row offers the total number of theaters for each city that Variety offered information. Note that even though theater turnover exists there is also a lot of repetition in reporting which allows this paper to exploit high frequency panel data. See also that Variety reported information on 23 cities in each one of the years in the sample and only three other cities appear only for one year (Columbus, OH; Birmingham, AL; and, Lincoln, NE).[7]

Figures 1A and 1B show how Variety displayed the information in its weekly issues. The magazine reported information on a sample of movie theaters within a sample of cities that aimed

[7] They also offered information for a limited number of weeks for Toronto and Montreal in Canada, and London in the UK. As this paper only focuses in the US, I leave that information out of the analysis.

to provide the big picture of the status of the movie industry and attendance in the US. Let us remember that television was only starting to develop in those years and therefore Variety was the main provider of such information in an integrated manner. For each of the theaters reported, Variety provided information on the theater capacity, admission prices for matinees and evening shows as well as theater ownership. Aside from the theater specific information, the publication also contained information on the movie or movies playing in that theater, the studio that produced the movie, the number of weeks that the movie had been playing in that theater as well as whether the movie was a rerun and an estimate of the weekly box office of the movie theater. Finally, Variety also provided the same information on the movies screened during the previous week. In this paper, I use this information instead of the current week information because the revenue numbers are more accurate than the within week reported projections.

Table 2 provides a closer view of the data for the city of Boston listing the theaters that appeared in Variety over the 11 years covered in the sample and specifying for any given years the number of weeks that information is reported.[8] The table also notes in yellow what theaters, and during what years, were owned by studios. Therefore, these tables show that there is a substantial amount of variation in vertical integration across and within theaters. This makes for an excellent setting to study the relation between vertical integration and theater performance.

Overall I end with 143,200 movie/theater/week observations. Contrary to general belief in previous literature, theaters did not charge different prices for different movies and therefore theaters showing several movies at the same time would charge the same price for all movies and for different movies showing in different weeks. Given that uniform pricing was a spread-out practice and that the goal of this paper is to investigate the impact of organizational form on prices, I collapse the data to the theater/year and theater/week level leaving 2685 and 106,702 observations respectively for the main part of the empirical analysis in this paper. Figure 2 shows weekly admission prices for evening and matinee shows for Radio City Music Hall in New York City between January of 1945 and December of 1955. It is easy to see that despite the increase in prices over a span of 11 years the theater kept prices constant as well over long periods of time,[9] and therefore it makes sense to collapse the data at the theater/year and theater/week level for the empirical analysis below. The fact that theaters charged the same prices over extended periods of time allows me to collapse the data at the theater/year level without losing any of the true variation in the data.

Variety offers no information regarding the number of screens operated by each theater. The

[8] As some theaters changed names during this time period, I was able to recover that information from cinematreasures.com and include it in the table with green color.

[9] I chose Radio City Music Hall in New York City because Variety reported prices for this theater for every week during the 11 years I collected data for.

fact that some theaters regularly screen 2, 3 or 4 movies in a week seems to indicate that there may exist differences in the number of screens across theaters and therefore it became imperative to complement the data set with this information as this may translate in differences in costs that are passed on to prices. For this reason, I looked for each theater listed in Variety in the website www.cinematreasures.com[10] which documents the existence and characteristics of old theaters.[11] As most theaters do not exist any longer, the information is gathered through contributions from individuals that attended the movie theater back in the day or that are related to previous owners. Most testimonials provide information on when a theater was rebuilt and increased its number of screens as well as reseated to fit more or less people. Given this information, I am able to collect and check information on the number of screens and seats during the period of time of my sample.

It is also important to highlight that during this time period television was introduced in the US spreading quickly across cities and states to reach over 80% of US households in 1960. This event provides a source of exogenous variation in competition faced by theaters in most cases creating exit despite strategic considerations (Takahashi, 2011). It is useful then, before presenting summary statistics and proceeding with the empirical analysis, to understand the kind of variation in TV adoption as exogenous source of theater competition.

Figure 4 depicts the evolution of the percentage of US households with a TV set between 1940 and 1960. As described above, almost no households owned a TV prior to 1945 and this percentage spiked shortly after up to 80% by 1960. As for my sample, I obtain the year of TV introduction for all cities and markets in my data set from Gentzkow (2006). See in Table 3 that, as expected, bigger cities were early adopters (NYC, Chicago, LA and Washington DC) and smaller cities were late adopters (Portland, OR, and Lincoln, NE). It is fair to assume that cities in my sample follow a similar pattern to the US as a whole in television adoption.

I proceed in Table 4 to report summary statistics of the main variables used in this paper for both theater/year and theater/week level data. First of all, note that the percentage observations belonging to theaters that at some point were owned by a studio changes from 56% to 61% depending on whether I collapse the data at the theater/year or theater/week level noting that Variety reports information more often in a weekly basis of theaters that were ever owned by a studio than purely independent theaters. Despite that, the percentage of actually integrated studio does not vary much across samples (32% to 34%). Given this sampling unbalance, I report that the average evening price is $1 ranging from 0.25 or 0.28 to 3.6 and that theaters that were ever integrated

[10] As most theaters in those years only had one screen, I assume one screen for those theaters that I could not find in www.cinematreasures.org. This did not change results.

[11] This website has also been used by Takahashi (2011).

charged on average (across cities and years) \$0.026 less or \$0.007 more than independent theaters depending on whether I use the yearly or weekly data. The average price for a matinee show is the same across samples and around \$0.60 where integrated theaters charge less than non-integrated theaters. On average, theaters collected \$14,232 and sold 14,349 tickets in the weekly data while these numbers average around 13,000 in the yearly data. The average theater in the sample has only one screen and 1,575 seats per screen. While there is no difference in terms of the number of screens between theaters ever integrated and independent theaters, the former had more seats and therefore collected higher box office revenues and sold more tickets than the latter. Finally, the empirical analysis also includes variables that measure the number of years since TV was introduced in a market and the Hirschman-Herfindhal Index (HHI hereafter) using theater counts by theater circuit and city. It turns out that independent theaters are located in more concentrated markets and markets that adopted television earlier than theaters that were ever integrated. These last two variables are measured at the city and year level and therefore there are slight and meaningless differences across both yearly and weekly data samples.

Note that a complication from the data is that in the second half of the period Variety started reporting information within cities in movie theater groups that charged the same admission prices and showed the same movies. This created problems of seat capacity and revenue reporting as seats were reported jointly and average movie theater revenues across theaters were reported. I address the first issue by fixing the number of seats within the lifetime of a theater.[12] Since I cannot directly address the second issue, I coded up when and where joint revenue reporting takes place and I provide robustness checks without this set of observations.

Table 5 provides summary statistics at the theater/movie/week level for those variables that have variation at that frequency. This table shows that theaters that were ever integrated showing movies of the studio that owned them represent 18% of all 143,200 observations while a total of 15% are from integrated theater showing movies from studios that currently own them. These data also shows that theaters that were ever integrated showed more movies from the big five studios and less movies from the three minors than independent theaters. Within the subsample of theaters ever integrated, these theaters showed more movies from the major five studios and less from the minor three studios when they were in fact integrated than after separation.

As time variation is relevant in this project, I present the evolution of the main variables of interest across years in Figure 3. This figure displays yearly averages for revenues, and evening and matinee shows admission prices as well as the share of integrated movie theaters in the sample.

[12] Reports in www.cinematreasures.com seem to indicate that reseatings and theater restructuring never changed drastically the number of seats of a theater.

It is easy to see that both evening show and matinee prices increase between 1945 and 1955 from 0.8 and 0.4 to 1.3 and 0.8 respectively. Similarly, the share of integrated theaters in the sample starts at 60% (as the sample is composed of large cities only) in 1945 and goes down to 0% in 1955. Finally average reported revenues go down from almost \$16,000 to barely \$14,000. As I compute admission tickets as the ratio between revenues and evening shows prices, it is easy to see that admission ticket sales will go down more sharply than revenues given the relatively rapid increase in prices observed in the data. Therefore, the empirical analysis below takes into account these patterns and rely on within market and within theater variation across time to estimate the relation between prices and organizational form.

3 Revisiting Spengler's Theoretical Framework

In this section I adapt the model of Spengler (1950) to the case of revenue sharing between upstream and downstream non-integrated firms. As I show below, the model results in exactly the same implications as the original paper.

3.1 A Model of Double-Marginalization with Revenue Sharing

Let me model the interaction between an upstream producer j and a downstream retailer i. Similarly to Spengler (1950), the downstream retailer faces a linear demand function $P(Q) = a - bQ$. Following institutional features explained above, I assume that the cost function of the upstream producer and downstream retailer are such that $C^U(Q) = F^U$ and $C^D(Q) = mQ + F^D$ respectively. When upstream and downstream firms are not integrated, they split revenues using revenue sharing contracts such that the upstream producer keeps s percentage of the revenues and by default the downstream retailer keeps $1 - s$ percentage.

I first consider the case when upstream and downstream producers are not integrated. Given the assumptions above, the downstream retailer maximizes profits such that

$$\max_Q (1-s)(a-bQ)Q - mQ - F^D$$

which yields

$$Q^{NI} = \frac{a - \frac{m}{1-s}}{2b}$$

and

$$P^{NI} = \frac{a + \frac{m}{1-s}}{2}.$$

Taking this into consideration, the upstream producer problem is

$$\max_s sP(s)Q(s) - F^U$$

such that

$$Q(s) = \frac{a - \frac{m}{1-s}}{2b},$$

$$P(s) = \frac{a + \frac{m}{1-s}}{2},$$

and

$$(1-s)P(s)Q(s) - mQ(s) - F^D \geq 0.$$

Taking FOC, s^* is the value that solves

$$\frac{a^2}{2}s^3 - \frac{3a^2}{2}s^2 + (\frac{3a^2}{2} + \frac{m^2}{2})s + (\frac{m^2}{2} - \frac{a^2}{2}) = 0$$

and such that $0 < s^* < 1$.

Let me now consider the case when upstream and downstream agents are integrated. In this case, the integrated firm maximizes profits such that

$$\max_Q (a - bQ)Q - mQ - F^D - F^U$$

and solving FOC I find that

$$Q^I = \frac{a-m}{2b}$$

and

$$P^I = \frac{a+m}{2}.$$

When comparing P^I and Q^I with P^{NI} and Q^{NI}, it is easy to show that $P^I < P^{NI}$ and $Q^I > Q^{NI}$ for any $0 < s^* < 1$.

3.2 Testable Implications

The model above provides two testable implications:

• The model predicts that vertically integrated retailers will charge lower prices than non-integrated retailers *ceteris paribus*. Therefore, a theater in my empirical setting will increase prices

when going from integrated to disintegrated.

• The previous decrease in prices also suggests that non-integrated retailers will sell less units than integrated retailers *ceteris paribus*.

Finally, a third implication that I can evaluate with the data at hand suggests that a change from integration to non-integration is associated with a decrease in consumer surplus *ceteris paribus*. In the next section, I take these implications to the data.

4 Empirical Evidence

In this section, I first test the direct implications of the model by empirically analyzing the relation between economic outcomes (prices, ticket sales and revenues) and vertical integration at the theater level. I also provide robustness checks by dropping observations with severe measurement error in revenue reporting as well as repeating the cross-sectional analysis at the theater, movie and week level.

I leave for the following section the estimation of movie theater demand and"back of the envelope" calculations on the loss of admissions due to the increase in prices associated with the wave of disintegration in the US movie theater industry.

4.1 Vertical Integration, Lower prices and Higher Revenues?

To establish the empirical relation between outcomes (prices, quantities and revenues) and vertical integration, I use two different specifications. My first specification runs the following OLS regression using theater/year level data,

$$y_{ijt} = \alpha_0 + \alpha_1 Ever\_Integ_{ij} + \alpha_2 Integ_{ijt} + \alpha_3 X_{ijt} + \gamma_t + \rho_j + \epsilon_{ijt} \quad (1)$$

where y_{ijt} stands for the left hand side variables in the empirical analysis (evening prices, matinee prices, ticket admissions and box office revenues) by theater i, city j and year t. I use the first specification above to estimate cross-sectional differences between studio-owned and independent theaters. Right hand side variables in the first specification are a dummy variable $Ever\_Integ_{ij}$ that takes value 1 if theater i in city j was ever integrated and 0 otherwise, a dummy variable $Integ_{ijt}$ that takes value 1 if theater i in city j was integrated in year t and 0 otherwise, and theater and time-varying characteristics X_{ijt} such as the number of screens and seats per screen at theater i, the number of years since television was introduced in city j and the theater market HHI in city j in year t. It is important to include both dummies $Ever\_Integ_{ij}$ and $Integ_{ijt}$ to

distinguish price differences due to theater characteristics that are present and unobservable before and after vertical divesture from those differences due to vertical integration. This first specification also includes city and year fixed effects to capture city and year specific unobservables correlated with pricing decisions at the theater level.[13]

I introduce a second specification to estimate differences in changes in prices over time. For this purpose, the second specification varies from the first one in that the dependent variable is in logs such that

$$\ln(y_{ijt}) = \alpha_0 + \alpha_1 Ever\_Integ_{ij} + \alpha_2 Integ_{ijt} + \alpha_3 Time_t +$$

$$+\alpha_4 Ever\_Integ_{ij} * Time_t + \alpha_5 Integ_{ijt} * Time_t + \alpha_6 X_{it} + \gamma_t + \rho_i + \epsilon_{ijt} \quad (2)$$

where I now include as independent variables a time trend $Time_t$ (years since 1944) and its corresponding interactions with the dummies described above $Ever\_Integ_{ij}$ and $Integ_{ijt}$. This second specification also includes theater fixed effects and effectively compares the evolution of the outcome variable before and after vertical separation within the lifetime of a theater.[14]

I show results of running specifications (1) and (2) for all four outcome variables in Table 6. Column 1 shows that integrated theaters charged 5 cents less than independent theaters, while column 2 shows that integrated theaters increased prices over time faster after separation from their studios and at the same rate as independent studios before separation. Columns 3 and 4 repeat the same exercise as columns 1 and 2 with matinee prices. Theaters that were ever owned by a studio charge around 6 cents less than independent theaters even after separation from their parent studios according to results in specification 3. Similarly to column 2, column 4 shows that integrated theaters increased prices at slower rates before separation than they did after separation from their parent studios. Interestingly enough, integrated theaters increased matinee prices at slower rates than independent theaters before separation while they increased matinee prices at faster rates than independent theaters.[15]

On the other hand, column 5 shows that integrated theaters sold more admission tickets than independent theaters even after controlling for size differences as larger theaters sold also more tickets than smaller theaters. Contrary to results in prices, average weekly admission sales per year

[13] Table 12 provides results of running specification (1) with city/year fixed effects as part of my robustness checks. When including such fixed effects, all X_{ijt} variables (observables and unobservables) that vary across years and cities are controlled for.

[14] Results do not change qualitatively if using levels instead of logs. The main advantage comes from the interpretation of the coefficients as change rates.

[15] Note that specification (2) contains theater fixed effects effectively eliminating price differences between independent theaters and those ever owned by studios in a counterfactual year of 1945. The positive coefficient of $Integ_{ijt}$ accounts for the fact, that given the restriction imposed by the theater fixed effect, prices of integrated theaters grew slower while integrated than after divesture.

went down at statistically similar rates in integrated and independent theaters. Finally, columns 7 and 8 repeat the same exercise as in columns 5 and 6 with average weekly box office revenue per year. I find no statistical difference between integrated and independent theaters in terms of levels of revenues while larger theaters (more screens or more seats) collect higher revenues. I also find no statistical difference in price decrease rates over time between integrated and independent theaters.

In summary, Table 6 shows that integrated theaters charged lower prices for evening shows than independent theaters did prior to separation but no statistically different prices after separation. Regarding matinee prices, theaters that were ever owned by a studio seemed to charge statistically lower prices than independent theaters regardless of whether they were in fact owned by a studio. I also find that integrated theaters sold more tickets but collected the same level of revenues. So far as changes over time are concerned, integrated theaters increased prices (both evening and matinee prices) at slower rates during integration than after separation.

One potential concern with these results is that it may be driven by differences in price trends across cities that cannot be captured by the time-varying variables measuring TV penetration, market concentration and year fixed effects in regressions of Table 6. For this reason, in Table 7 I run alternative specifications to columns 2, 4, 6 and 8 of Table 6 that control for city/year fixed effects and, effectively, city-specific time trends. These specifications include dummy variables that take value 1 if I observe an integrated theater 4 or more years before studio separation, 1 to 3 years before separation, 1 to 3 years after separation and 4 or more years after separation respectively, and 0 otherwise. These specifications also include theater fixed effects to control for differences in levels across theaters. Results in column 3 of Table 7 show that the impact of vertical separation on evening prices are not immediate as there is no statistically significant change within one to three years after separation and the result only shows four or more years later. This is not unexpected as uniform pricing and price stickiness were the rule and probably attenuated any sudden increases in prices after separation in this context. Contrary to this, column 6 shows that there are no differences in changes in matinee prices that are not captured by city/year fixed effects. This result is consistent with the result in column 3 of Table 6 in that differences in prices between integrated and independent theaters prevail before and after separation. Finally, columns 9 and 12 show that integrated theaters sold more tickets and collected more revenues prior to separation and that this decrease was perhaps faster than in independent theaters (as I control for city-specific time trends) in the case of admission sales but statistically the same in terms of box office revenues.

4.2 Robustness Checks

I repeat now the analysis with theater/week level data as well as implement a number of robustness checks that take care of poor measurement error in the controls as well as the dependent variables.

4.2.1 Using Theater-Week Level Data

In the next set of tables, I run the same specifications as in my main Table 6 with theater/week level data. The disaggregation of the data allows me to have time trends that account for weeks and even months across years as well as changes in studio ownership within a year.

Table 8 shows results of running OLS regressions for specifications 1 (columns 1 to 3) and 2 (columns 4 to 6) of evening prices on the independent variables using theater/week level data. Results in column 1 show no statistical relation between prices and integration across years and cities as it was clear in Figure 4. In column 2 I introduce city fixed effects to account for variation across cities and I find that theaters when integrated charge 4 cents less than independent theaters. There is no apparent difference between prices of theaters ever integrated and independent theaters after studio separation. Column 3 introduces city and year fixed effects and shows a difference of again roughly 4 cents between integrated and independent theaters. Note that a difference in mark-up of around 4% (the average price charged in the sample is \$1) is a fairly reasonable estimate for savings due to the elimination of double-marginalization adding to the plausibility of the results.

This first three specifications also include controls for the number of screens and the capacity per screen, but these appear to be statistically insignificant. Evening prices are also positively correlated with the number of years since television was introduced in a market and negatively correlated (if anything) with market concentration.

The second set of specifications in Table 8, columns 4 to 6, uses $\ln[Evening\_Price]$ as dependent variable as well as time trends and interactions with the different organizational form dummies used previously. I start with column 4 where I include theater and year fixed effects together with a within year week trend named $YearWeek$ (taking values between 1 and 53) interacted with $Ever\_Integ$ and $Integ$ dummies. Results show that prices of independent theaters within a year go up at a weekly rate of 0.0004% and that this differs from those theaters ever integrated (0.0011%) and those in fact integrated (0.0007%). In other words, theaters that are ever integrated increase prices at a faster rate than independent theaters, but the former increase prices at a slower rate when are in fact integrated. Columns 5 and 6 introduce month-year and year trends respectively. The results in these two columns are consistent with those in column 4. Let us focus on the results of column 6. Within the lifetime of a theater, evening prices went up on average at a yearly rate of

2.4%. Theaters that were ever integrated increased prices at almost 2% faster than other theaters, but while integrated their prices grew as slowly as 0.4% slower than theaters that were independent all along. If anything, the number of years since introduction of television is positively correlated with evening prices while HHI has no statistical significance.

In summary, the results in Table 8 confirm that when comparing integrated and non-integrated theaters in the cross-section within a city and week integrated theaters charged 4 cents less (4% less) than independent theaters. When comparing changes in prices over time, this table shows that integrated theaters increased prices 0.4% slower than independent theaters and after becoming independent their prices increased at a rate 2.1% faster than before and 1.7% faster than theaters that were independent all along.

Table 9 repeats the same exercise with matinee prices and find similar results. Column 1 shows no statistical relation between vertical integration and matinee prices. If anything the number of screens and the capacity per screen are negatively correlated with matinee prices, and the number of years since television introduction is positively correlated with prices. In columns 2 and 3 I introduce city and year fixed effects respectively. The results there show that theaters that were ever integrated charged 4 cents less than theaters that were independent all along but these theaters did not seem to charge statistically significant lower prices when they were in fact integrated. As in Table 8, columns 4 to 6 use the $ln[Matinee\_Price]$ as dependent variables and week, month and year time trends respectively with organizational forms interactions in the right hand side as well as theater fixed effects. The results are similar across specifications in that all three indicate that even though theaters that were ever integrated increased prices at a faster rate than independent theaters, when integrated these theaters increased prices at lower rates than independent theaters. Therefore, the results for evening shows and matinee shows prices are also here very similar.

In Table 10 I examine the relation between admission tickets sold and vertical integration with the same specifications as in Table 8 and 9. It is important to note here that Admissions (tickets sold) is measured with noise as this is the result of dividing reported revenue (rounded up or down by Variety most of the time) by the reported evening show price (even though matinee shows must have had positive attendance). Having this caveat in mind, the cross-sectional regressions in columns 1 to 3 show that integrated theaters sold more tickets only when they were in fact integrated and not after becoming independent theaters. These specifications also show that the number of screens and capacity per screen is positively correlated with admissions sales and that every year since TV introduction was associated with up to 800 weekly attendees less. Theaters in more concentrated markets were also selling less tickets. Columns 4 to 6 (as in the previous two tables) use $ln[Admissions]$ as dependent variable and introduces week, month and year time

trends respectively. Interestingly enough there is no difference in decrease rates in admissions between integrated and independent theaters.

Finally, Table 11 repeats the same exercise with weekly box office revenues per theater as dependent variable. The cross-sectional results here show no difference in revenues between integrated and independent theaters. Similarly to results in Table 10, theater size is positively correlated with revenues and HHI is negatively correlated with revenues. Columns 4 to 6 show again that there is no difference in revenue decay rates across theaters of different organizational forms.

In summary, the results here are in line with those of Table 6 and confirm that integrated theaters charged lower prices for evening and matinee shows and that this practice translated into more tickets sold but no difference in box office revenues. The evidence here also shows that theaters increase prices at a slower rate when they are integrated than after becoming independent and at slower rate than theaters that were independent all along.

4.2.2 Further Robustness Checks

A first simple robustness check is to run the cross-sectional specifications in Table 6 with city/year fixed effects with the theater/year level data. Using such type of effects allows me to control perfectly for differences in local market power as well as for differences in television penetration across markets and years. Results in Table 12 show that integrated theaters charged 4.4 cents lower for evening shows and 6.2 cents lower in matinee shows. The evidence shows that differences in evening prices vanished after separation, while differences in matinee prices remained. Similarly to results in Table 6, integrated theaters reported same average weekly revenues as independent theaters, but reported higher admission sales than independent theaters.

The second robustness check that I implement is to run the same cross-sectional specifications from Table 6 and Tables 8 to 11 taking as observation the movie-theater-week triad as unit of analysis while accounting for whether the movie on screen is distributed by the same studio that owns the theater. I show results of this exercise in Table 13 from columns 1 to 12 for Evening Price, Matinee Price, Admissions per Movie and Box Office per Movie (I divide total admissions and box office by the number of movies screened in a given week and theater) as dependent variables.

Columns 2 and 3 show that integrated theaters charge around 3 cents less than independent theaters. Most importantly, columns 1 to 3 show that movies from the five majors and three minors are screened in theaters with lower prices (4 cents lower). Not surprisingly due to uniform pricing practices (see again Figure 2), whether an integrated theater showed a movie distributed by its own studio did not affect prices. All other results and correlations are the same as in Tables 6 and

8. Columns 4 to 6 repeat the exercise with $Matinee\_Price$ as dependent variable. I find that, similarly to Tables 6 and 9, theaters that were ever integrated charged 3 cents lower prices than independent theaters regardless of the movie screened or whether they are currently integrated. The results in these specifications also show that, just like in columns 1 to 3 in this table, movies from the eight studios implicated in the antitrust case are more likely to screen in theaters that charge lower matinee prices (2 cents lower). Other results are similar to those in Tables 6 and 9.

Finally, columns 7 to 12 repeat the same exercise with $Admissions\_per\_Movie$ and $Box\_Office\_per\_Movie$ These specifications show that integrated theaters sell more admission tickets and collect more revenues than independent theaters even after accounting for whether the movie is distributed by a big studio. These theaters did not seem to collect higher revenues when they screened movies of their own studio. Overall, movies from big five studios were collecting higher revenues and selling more tickets while movies from the other three studios involved in the case seemed to do as well as independent movies. All other results are in line with those in Tables 6, 10 and 11.

The results in Table 13 seem to suggest two main channels for the negative relation between vertical relation and prices. First, integrated theaters operate at lower cost and that translates into lower prices which then drives up admission sales regardless of the studio of the movie playing. Second, the fact that movies from integrated studios (all eight of them) sell at lower prices than movies from other studios seems to suggest that these studios were concerned with high prices and therefore actively looked for outlets where prices were indeed lower.

Finally, I take into account the fact that Variety was jointly reporting revenues of theaters that showed the same movies and charged the same prices within a city and week. This joint reporting practice clearly introduced noise in revenue (and admissions) reporting and therefore may tilt the initial results towards statistical insignificance.

Table 14 addresses this problem by dropping all observations from cities and years in that jointly revenue reports occur. Columns 1 and 2 repeat the analysis in columns 5 and 6 Table 6 using $Admissions$ and $ln[Admissions]$ as dependent variables. If anything, integrated theaters sold more tickets prior to separation and appeared to have faster decay rates than independent theaters. Columns 3 and 4 repeat the analysis of columns 7 and 8 in Table 6 using $Box\_Office\_Revenues$ and $ln[Box\_Office\_Revenues]$ as dependent variables. There are no significant differences in findings other than that column 4 shows that box office revenues decreased faster when theaters were in fact integrated than before changing to independent. Although not showed here, I repeated the same exercise with theater/week level data and find the exact same results.

4.2.3 Alternative Explanations

A potential alternative explanation driving the results described above could be that independent theaters were screening different types of movies than integrated theaters before and after the 1948 Supreme Court ruling and that was reflected in price levels and evolution during the sample period examined in this paper. In this section, I argue that there are two reasons why this is a concern that does not affect my results.

The first reason why this may be a concern is that after block booking was banned competition for A-movies was opened to all theaters. This fact allowed second-run theaters (and other lower run theaters as well) to become first-run theaters increasing prices everywhere (De Vany and Eckert, 1991). Note that this explanation would mean that independent theater prices would go up faster after the ban of block booking (the second half of my sample period), but the results show otherwise, that is, theaters that were separated from their former parent studios and started showing more movies from independent studios increased prices faster than theaters that were independent all along.

A simpler second explanation is that these theaters were indeed showing different movies (different quality) during the whole period or that they were obtaining movies from different studios in different years and therefore setting different average prices for the movie schedules. This is again discardable for a number of reasons. Prior research has showed qualitatively (Kenney and Klein, 1983) or quantitatively (Hanssen, 2010) that all theaters showed movies from all studios and that blocks of movies rarely ever fill the full schedule of a theater. De vany and Eckert (1991) explicitly describe "season contracts" as containing a number lower than the entire studio production and approximately being well over half.

The use of year fixed effects in the empirical evidence in this paper plays an important role here as the number and type of movies available changed from year to year. These fixed effects allows to control for differences in quality across movies available in different years. As argued earlier, after 1950 all theaters competed for all movies and therefore prices should have followed similar increase rates in integrated and independent theaters. Instead, I find that previously integrated theaters increased prices faster. Another factor to consider is that the sample of theaters in my data is mainly composed by first-run theaters as Variety used these to report on the performance of the best available movies in the largest markets in the US. Therefore movie heterogeneity driving differences in prices across years does not seem to be a major concern in my sample as theaters within tiers obtained movies of similar quality from a given number of studios.

A final third explanation consistent with organizational form driving theater costs (rather than

pricing) would be one where vertical integration insulated local managers from market competition while allowing the sharing of management practices across theaters. It is important to remember here that the big five studios divested their theater branches in big blocks. Therefore, local theater managers did not experience a change in the number of managers that they could share practices with or differences in career corncerns due to the divesture. Moreover, if these practices were lowering costs it would be difficult to argue that the newly independent theatrical firms disposed of them.

5 Demand Estimation

To estimate the impact of the Paramount antitrust case resolution on attendance, I must first estimate movie demand. Let me assume that a given consumer i obtains utility U_{imjcwt} if watching movie m in theater j located in city c during week w of year t. This utility then can be written down as

$$U_{imjcwt} = \alpha_m + \delta_{jc} + \beta p_{mjcwt} + \gamma_{wt} + \xi_{mc} + \epsilon_{imjcwt}$$

where α_m is the utility derived from consuming movie m, δ_{jc} is the utility derived from consuming any movie in theater j located in city c, β is the disutility associated with every dollar paid in price p_{mjcwt}, γ_{wt} is a seasonal component of demand, ξ_{mc} is the unobserved market specific demand shock for movie m in city c, and ϵ_{imjcwt} is the traditional logit error specific to consumer i and movie m in a given theater jc and period wt. For simplicity, I can rewrite this expression in terms of the mean utility of movie m in theater c in week wt such that

$$U_{imjcwt} = \theta_{mjcwt} + \epsilon_{imjcwt}.$$

The outside option here would be not watching any movie and therefore derive utility

$$U_{i0cwt} = \theta_{0cwt} + \epsilon_{i0cwt}$$

where θ_{0cwt} is the mean utility of not watching a movie in city c and week wt, and ϵ_{i0cwt} is a random logit error specific to the outside option in city c and week wt.

Following standard results after integrating over the logit errors, the share of attendance for

movie m in theater jc in week wt will be

$$s_{mjcwt} = \frac{e^{\theta_{mjcwt}}}{1 + \sum_{k=1}^{K_{cwt}} e^{\theta_{kjcwt}}}$$

and the share of people that chose the outside option would be

$$s_{0cwt} = \frac{1}{1 + \sum_{k=1}^{K_{cwt}} e^{\theta_{kjcwt}}}.$$

Applying logs as in Berry (1994),we have that

$$\ln(s_{mjcwt}) - \ln(s_{0cwt}) = \alpha_m + \delta_{jc} + \beta p_{mjcwt} + \gamma_{wt} + \xi_{mc}.$$

Then if I had attendance for all theaters in all the observed cities, I could simply run OLS on this specification implementing movie-city fixed effects or using an instrument for price that was correlated with price and uncorrelated with movie-market specific demand shocks.

Unfortunately, I only observe a subset of theaters within a city for any given week. This prevents me from both observing weekly total movie theater attendance and potentially the size of the outside option. To solve this, I assume that each inhabitant in a given city is going to the movies at most once a week and therefore the maximum attendance in a given week and city is its population. This allows me right away to compute the market share of each one of the observed theaters. To address the fact that I do not observe the complete set of choices available to consumers, I rely on the use of city/week fixed effects (to proxy for $ln(s_{0cwt})$) following the spirit of the matching estimator proposed by Fox (2007) and its applications.[16]

In the end, I run OLS regressions such as

$$\ln(s_{mjcwt}) = \alpha + \beta p_{mjcwt} + \sigma X_{jcwt} + \xi_{mc} + u_{mjcwt}, \tag{3}$$

where X_{jcwt} are variables that vary across theaters and cities and that I eventually substitute for city/year/week fixed effects. This fixed effect is specially important to control for $\ln(s_{0cwt})$ as this varies across cities but does not within a city and a specific week. Specifications also introduce movie and theater fixed effects to control for unobservables that may be correlated with prices and

[16] See Bajari, Fox and Ryan (2008) for an application to cellular demand estimation. Conlon and Mortimer (2011) are also concerned with this issue, even though here I follow more closely the approach in Fox (2007).

therefore bias my estimates of β.

On that note, the main source of concern is the unobservable ξ_{mc}, a demand shock specific to a movie and market match. One would think that theaters would change prices accordingly to these movie/market specific shocks and therefore standard OLS regressions would yield biased estimates. This is not an issue here precisely because of the uniform pricing practice that kept prices constant regardless of the movies played in a theater. Despite that, I address this issue by introducing movie/city/year/week fixed effects and also by instrumenting Evening Price with Matinee Price. The fixed effect controls for the specific shock in demand for a movie in a determinate city and therefore takes account of that correlation. The instrument is correlated with Evening Price and more importantly is a good proxy for cost per ticket at the theater level as discounted prices tend to be closer to average cost.

Table 15 displays results of estimating specification (3) above. Column 1 reports results of a specification that includes city and week fixed effects with a price coefficient of -0.43. Columns 2 to 5 include theater, city, year/week and movie fixed effects yielding very similar coefficients that range between -0.42 and -0.56. Finally, columns 6 and 7 introduce movie/city/year/week fixed effects to control for movie/city demand differences and find estimates that are much higher of -0.61 and -0.79. Statistical significance is at 10% at best in these last two specifications which is explained by the fact that Variety barely ever reported on the performance of a movie in more than one theater within one city (no variation) or, when it did in the last few years, it reported jointly (measurement error) without variation.

The last three columns in Table 15 (columns 8 to 10) report estimates of instrumenting Evening Price with Matinee Price. Column 8 includes no fixed effects and provides a large price coefficient estimate of -1.43 while columns 9 and 10 introduce city, theater and year/week fixed effects and provide much similar estimates with previous columns of -0.56 and -0.33. Other results in this table suggest that larger theaters had larger market shares and that theaters located in early TV adopting markets and less concentrated markets had higher market shares.

In summary, the price coefficient estimates range between -0.33 and -0.79 which are similar estimates to those in Davis (2006). The difference here with that study is that implied elasticities in this sample are around -0.32 and -0.75 due to the fact that the average Evening Price in the data is \$1 while prices in Davis (2006) are substantially higher. If anything, the implied elasticities range between -0.03 and -3 across all weekly theater observations and they grew over time on average, larger theaters being more elastic than smaller theaters. With these numbers in mind and taking into account (Tables 6, 7 and 8) that in a period of 5 years after vertical separation once integrated theaters increased prices 10% faster than otherwise, this means that theater attendance

in theaters previously owned by studios decreased by between 3.2% and 7.5% faster than otherwise due to the increase in prices caused by the aftermath of the paramount decree.

Given this back-of-the-envelope calculation and taking into account that on average theaters that were ever integrated collected close to $16,600 a week, the impact on welfare of the vertical separation for a theater owned by a studio before 1948 and five years down the road is approximately between $500 and $1,200 per week and therefore between $26,000 and $60,000 a year. This is indicative of a lower bound of the impact of the antitrust case sentence on consumer surplus and welfare in an individual theater basis. Given that De Vany (2004) and coauthors find no effect on studio profits (no effect in stock market prices), it must be then that all effect was concentrated in a decrease in consumer surplus of at least $26,000 a year per theater affected. This local impact turns out to be sizable in the aggregate if we take into account that the five major studios affected by the case owned 70% of market share in the 92 largest cities in the US and over 3000 theaters in the US before the Supreme Court resolution announced in May of 1948.

6 Concluding Remarks

This paper empirically estimates the impact of the 1948 Supreme Court decree in the US vs. Paramount antitrust case on movie ticket prices, admissions and box office revenues. After several years of litigation and appeals, the Supreme Court mandated the eight largest studios in the US to stop bundling practices and to sell the bulk of their theatrical divisions. As a result, an econometric study of the impact of such judiciary resolution represents a unique opportunity to study the effect of vertical integration on performance measures such as prices, sales and revenues.

Aside from the intellectual value of the research question, this study is also valuable in that the Paramount case is one of the largest and most important cases in US antitrust history and therefore understanding the ultimate consequences of its resolution at the outlet level is key for future antitrust policy design. In particular, this case is among the few (together with the Standard Oil case of 1911 and the AT&T case of 1982) where antitrust authorities requested to break up firms under scrutiny. This type of sentence is not free of huge transaction and reorganization costs on the firm's side and it is therefore important to know their consequences on outcomes to evaluate the benefits and costs of such policies. This paper attempts to do so by exploring the impact of mandated vertical separation at the theater level in the 1948 Paramount antitrust case.

My empirical findings show that integrated theaters charged 4 cents less for evening shows on average than independent theaters and that these charged, statistically speaking, the same prices after studio separation. I also find that theaters that were ever owned by a studio charged 6

cents lower prices for matinee shows regardless of whether they were in fact integrated at the time. More importantly, integrated theaters increased their prices (both evening and matinee prices) over time at slower rates than independent theaters and increased prices much faster after separation from their parent studios. Other results suggest that even though integrated theaters sold more admission tickets and collected more revenues than independent theaters, there was no difference in the rate at which sales and revenues decreased across theaters of different organizational forms. These findings are robust to different specifications and checks implemented in the paper.

Finally, I estimate demand using the fact that, even though theaters charged uniform prices across movies, different theaters charged different prices within a city. The estimates of price sensitivity parameters are consistent with those in the literature although implied elasticities are lower than those reported in previous studies. These estimates show that five years down the road the lower bound of the loss in welfare due to vertical separation and the faster increase in prices is quite sizable, between 3.2% and 7.5% of movie attendance. These estimates speak again about the importance of antitrust policy and the need for careful decision making when assessing cases of abuse of market power as in some occasions sentences might make matters worse.

In future research I will investigate the impact of the Paramount case sentence on other dimensions that are important to determine its final impact on consumer surplus. On one hand, the vertical disintegration that took place in the US movie industry had an effect on the type of movies that were showing in theaters and the length of their runs in theaters. On the other hand, the loss of their theatrical divisions shaped the profitability of movie production and changed the types of movies that were produced. Therefore, future work should examine the relation between vertical integration and product development along with product placement using as framework this antitrust case. These are important sources of consumer surplus and welfare and therefore it is important to know how vertical integration shapes those channels of firm decision making. The completion of this research agenda will contribute to the literature that studies the reasons and consequences for vertical integration and our understanding of how and why the organization of production within firm boundaries matters.

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Figure 1A

Wednesday, May 21, 1947 VARIETY PICTURE GROSSES 13

Pitt in Doldrums; 'Dishonored' Slow $12,500, 'Quentin' 11G, 'Framed' 9½G

Pittsburgh, May 20.

Doldrums prevail again this week at the Golden Triangle here. Biz is off in all first runs. "Calcutta" is slow at the Stanley in its second week after great opener. Penn's "Dishonored Lady" looks mild. "Framed" shapes as only fair at the Fulton.

Estimates for This Week

Fulton (Shea) (1,700; 43-70)—"Stairway to Heaven" (U). Swell notices but only mild $8,000. Last week, "Miss Pilgrim" (20th) (2d wk), slim $2,300 in 4 days.

Harris (Harris) (2,200; 40-70)—"Framed" (Col). Fair $9,500. Last week, "George Apley" (20th), $10,000.

Penn (Loew's-UA) (3,300; 40-70)—"Dishonored Lady" (UA). Slow $12,500. Last week, "High Barbaree" (M-G), $14,500.

Ritz (Loew's) (800; 40-70)—"High Barbaree" (M-G) (m.o.). Just $3,400. Last week, "Boom Town" (M-G) (reissue), $2,500.

Senator (Harris) (1,750; 40-70)—"Swell Guy" (U) and "Michigan Kid" (U). Will be lucky to get $3,500. Last week, "Kit Carson" (PRC) and "Last of Mohicans" (PRC) (reissues), $4,000.

Stanley (WB) (3,800; 40-70)—"Calcutta" (Par) (2d wk). Down to $11,400 after great first week at $22,000.

Warner (WB) (2,000; 40-70)—"San Quentin" (RKO). Bad notices no help and modest $11,000 looks all. Last week, "Farmer's Daughter" (RKO) (3d wk), big $12,500 and could have stayed around for another week except that "Quentin" preem had been set.

Key City Grosses

Estimated Total Gross
This Week $2,886,000
(Based on 20 cities, 200 theatres, chiefly first runs, including N. Y.)
Total Gross Same Week
Last Year $2,884,000
(Based on 21 cities, 182 theatres)

Indpls. Slow But Rogue'-Kaye 22G

Indianapolis, May 20.

Film trade remains generally sluggish here this stanza, although "Magnificent Rogue" and Sammy Kaye band are in the blue chips at

Prov. Trim; 'Brunette' Brisk 15G, 'Daughter' Hot 18G, 2d; 'Road' 10G

Providence, May 20.

"Duel in Sun" is still big via upped scale at Loew's State, though slightly off from expected biz. Nice first week looms for "My Favorite Brunette." RKO Albee's second seah of "Farmer's Daughter" is remarkably nice. Strong, well-ballyhooed pix are doing well here.

Estimates for This Week

Albee (RKO) (2,200; 44-65)—"Farmer's Daughter" (RKO) and "Devil Thumbs Ride" (2d wk). Neat $18,000. First was great $22,000.

Carlton (Fay-Loew) (1,400; 44-65)—"Boomerang" (20th) (2d run). Peppy $5,500. Last week, "Song Scheherazade" (U) and "Blondie's Big Moment" (WB) (2d wk), big $7,000.

Fay's (Fay) (1,400; 44-65)—"Tarzan and Leopard Woman" (RKO) and vaude on stage. Fair $6,500. Last week, "Brasher Doubloon" (20th) and vaude on stage, good $7,000.

Majestic (Fay) (2,200; 44-65)—"Stallion Road" (WB) and "Three On Ticket" (WB). Dull $10,000. Last week, "Boomerang" (20th), neat $16,000.

Metropolitan (Snider) (3,100; 44-65)—"Alexander's Ragtime Band" (20th) (reissue) and "San Demetrio London" (20th). So-so $8,900. Last week, "Carnival Costa Rica" (20th) and "Spoilers of North" (Mono), $10,000.

State (Loew) ($3,200; 50-85)—

Frisco Mostly on H.O.; 'Odd Man' Lusty 20½G

San Francisco, May 20.

Despite surplus of pictures on holdover and extended run here, biz shapes up nice currently. Top newcomer is "Odd Man Out," with big week in prospect at small St. Francis theatre. "Dishonored Lady" also shapes nicely at United Artists. "Duel in Sun" is way off in two spots in second stanza. "Egg and I" still is stout even if in third frame at the Orpheum.

Estimates for This Week

Clay (Roesner) (400; 65-85)—"This Happy Breed" (U) (4th wk). Nice $1,300. Last week, $2,700.

Fox (FWC) (4,651; 90-$1.20)—"Duel in Sun" (SRO) (2d wk). Strong $33,000. Last week, great $60,000.

Golden Gate (RKO) (2,844; 65-$1)—"Farmer's Daughter" (RKO) (2d wk) plus vaude headed by Grace McDonald and Lester Cole Debutantes. Fine $23,000. Last week, $27,000.

Larkin (Roesner) (400; 65-85)—"Man's Hope" (Indie). Okay $2,000. Last week, "Bel Ami" (Indie) (2d wk), $1,700.

Orpheum (Blumenfeld) (2,448; 55-85)—"Egg and I" (U) (3d wk). Oke $18,000. Last week, $25,400.

Paramount (Par) (2,648; 60-85)—"Love and Learn" (WB) and "Lost Honeymoon" (E-L). Fair $14,000. Last week, "Bedella" (E-L), about same.

Stagedoor (Ackerman) (350; $1.80-$2.40)—"Henry V" (UA) (34th wk). Surprisingly big $5,000 for final week. Last week, $3,500.

St. Francis (FWC) (1,400; 55-85)—"Odd Man Out" (U). Big $20,500. Last week, "Calcutta" (Par) (4th wk), oke $9,000.

United Artists (Blumenfeld) (1,207; 55-85)—"Dishonored Lady" (UA). Pleasing $15,000. Last week, "Fun on Weekend" (UA), $8,200.

United Nations (WC) (1,149; 90-$1.20)—"Duel in Sun" (SRO) (2d wk). Down to $7,500. Last week, fancy $15,000.

Warfield (FWC) (2,656; 60-85)—"Sea Hawk" (WB) and "Sea Wolf" (WB) (reissues) (2d wk). Only $11,500. Last week, good $17,500.

'Egg' Record $27,500 In N.G. Cleve.; 'Dishonored'

Holdovers Slow L.A. Pace; 'Barbaree' $55,000 in 3 Spots, '5th Ave.' 51½G For 4; 'Daughter' Big 43G, 2 on H.O.

Los Angeles, May 20.

With only two new major film bills in town, biz is far from startling this week. "High Barbaree," new Van Johnson starrer, looks to command the most attention, being nice $55,000 in three theatres. "Happened on Fifth Avenue" also shapes as good $51,500 in four houses. "Ivan the Terrible," Soviet opus, looks big $5,000 in small-seater Laurel.

Holdovers are being paced by "Farmer's Daughter," which will be strong $43,000 in two situations, second week. "Duel in Sun," in four spots, is dropping off to $40,500 or near in second week, with biz rated big in only one of theatres. Second week of "Two Mrs. Carrolls" looks to be good $39,000 in three houses while "Odd Man Out" will be near $33,500 in second week, six spots.

Estimates for This Week

Belmont (FWC) (1,532; 50-$1.50)—"Duel in Sun" (SRO) (2d wk). Good $5,000. Last week, $9,500.

Beverly (FWC) (1,352; 50-$1.50)—Back to subsequent-run after disappointing $3,800 week with "Duel in Sun" (SRO) at upped scale.

Beverly Hills Music Hall (G&S-Blumenfeld) (824; 85-$1)—"Macomber Affair" (UA) (3d wk). Bettering $3,000. Last week, $5,800.

Carthay Circle (FWC) (1,518; 50-$1)—"Odd Man Out" (U) (2d wk). Solid $7,000. Last week, $9,000.

Chinese (Grauman-WC) (2,048; 50-$1)—"Happened On Fifth Ave." (Mono). Good $12,000. Last week, "Homestretch" (20th) (2d wk-9 days), fair $8,500.

Downtown (WB) (1,800; 50-$1)—"Two Carrolls" (WB) (2d wk). Smooth $17,000. Last week, $24,000.

Downtown Music Hall (Blumenfeld) (872; 85-$1)—"Macomber Affair" (UA) (3d wk). Neat $7,500. Last week, $9,500.

Egyptian (FWC) (1,538; 50-$1)—"High Barbaree" (M-G). Pleasing $15,000. Last week, "Yearling" (M-G) (3d wk), light $7,400.

El Rey (FWC) (861; 90-$1.50)—"Duel" (SRO) (2d wk). Okay $3,500. Last week, $5,900.

Esquire (Rosener) (685; $1.20)—"Stairway to Heaven" (20th) (3d wk-10 days), mild $6,500.

Vogue (FWC) (885; 90-$1.50)—"Duel" (SRO) (20th wk). Trim $4,000. Last week, oke $5,400.

Wilshire (FWC) (2,296; 50-$1)—"High Barbaree" (M-Co). Fine $15,000. Last week, "Yearling" (M-G) (3d wk), light $5,800.

Wilsera (WB) (2,300; 50-$1)—"Carrolls" (WB) (2d wk). Going over $16,000. Last week, $18,400.

'Bedelia'-Bowes' Grads 15G, Balto

Baltimore, May 20.

Business here continues at a mildly steady pace but only fairish figures loom for the leaders. Good response looms for "Dishonored Lady," given a good bally at Loew's Century. Rest of list is mainly in holdover.

Estimates for This Week

Century (Loew's-UA) (3,000; 20-60)—"Dishonored Lady" (UA). One of few newcomers here this week. Getting some trade at $13,000. Last week, second of "The Yearling" (M-G), held well at $11,800.

Hippodrome (Rappaport) (2,240; 25-70)—"Bedelia" (E-L) plus Major Bowes' Graduates Revue. Nice combo doing pleasing $15,000. Last week, "Tarzan and Huntress" (RKO) and vaude, $13,300.

Keith's (Schanberger) (2,460; 20-60)—"Egg and I" (U). Starts today (Tues.). In ahead, "Imperfect Lady" (Par), built to $9,200.

Mayfair (Hicks) (980; 25-55)—"Hit Parade 1947" (Rep). About house average at $5,500. Last week, "Last of Mohicans" (PRC) (reissue), $4,200.

New (Mechanic) (1,800; 20-[illegible])—"Homestretch" (20th) (2d wk). Maintaining good pace at $9,000 after nice $11,900 in first week.

Figure 1B

Publication Date

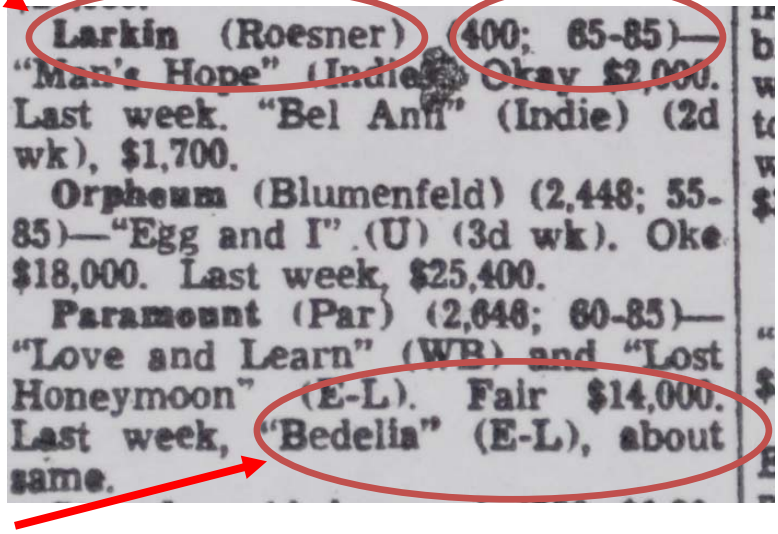
City

PICTURE GROSSES

Key City Grosses

Theater name (Theater's Owner)

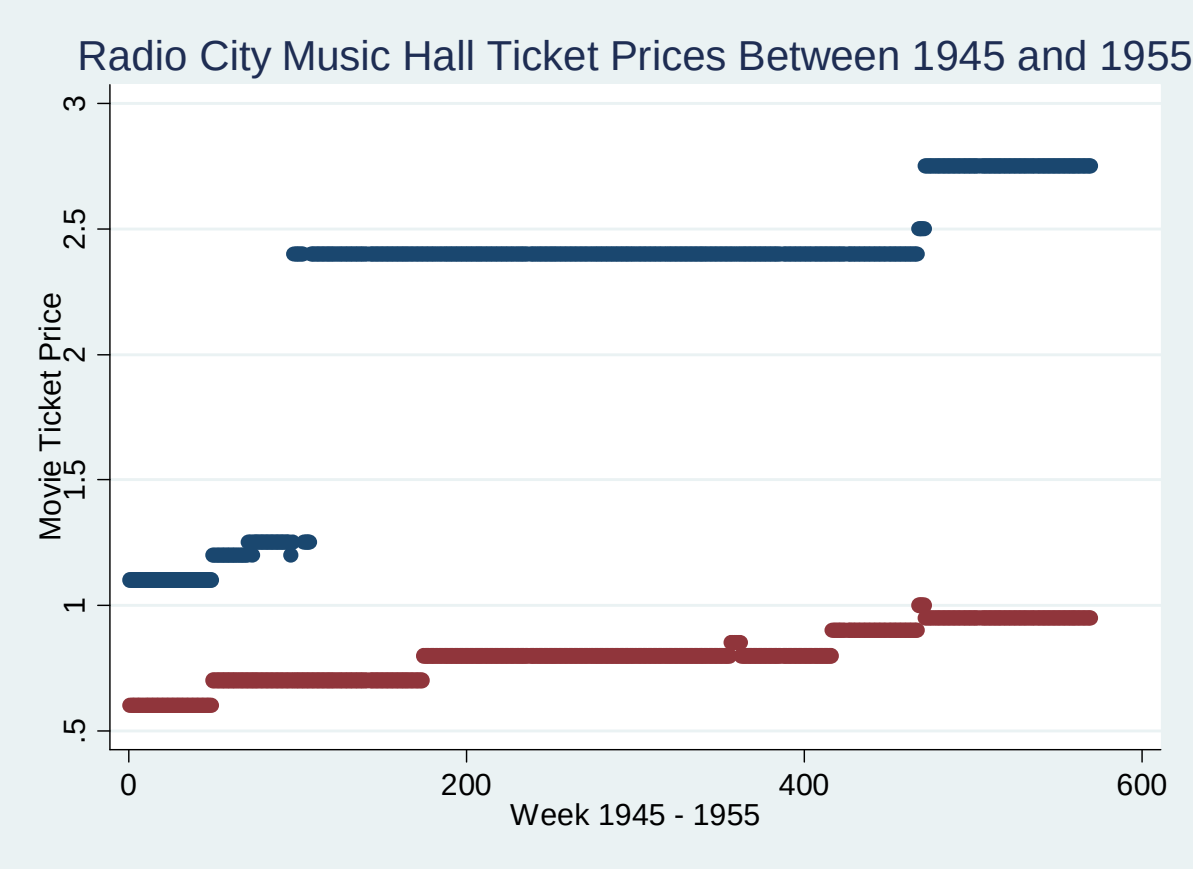
(Seat Capacity; Price Range)



Larkin (Roesner) (400; 65-85)—
"Man's Hope" (Indie) Okay $2,000.
Last week, "Bel Ami" (Indie) (2d wk), $1,700.
Orpheum (Blumenfeld) (2,448; 55-85)—"Egg and I" (U) (3d wk). Oke $18,000. Last week, $25,400.
Paramount (Par) (2,646; 60-85)—"Love and Learn" (WB) and "Lost Honeymoon" (E-L). Fair $14,000. Last week, "Bedelia" (E-L), about same.

"Movie" (Distributor), $ Box Office Revenue

Figure 2



Note: Uniform Pricing was the norm during this period of time as theaters charged the same prices for different movies released across weeks and even years.

Figure 3

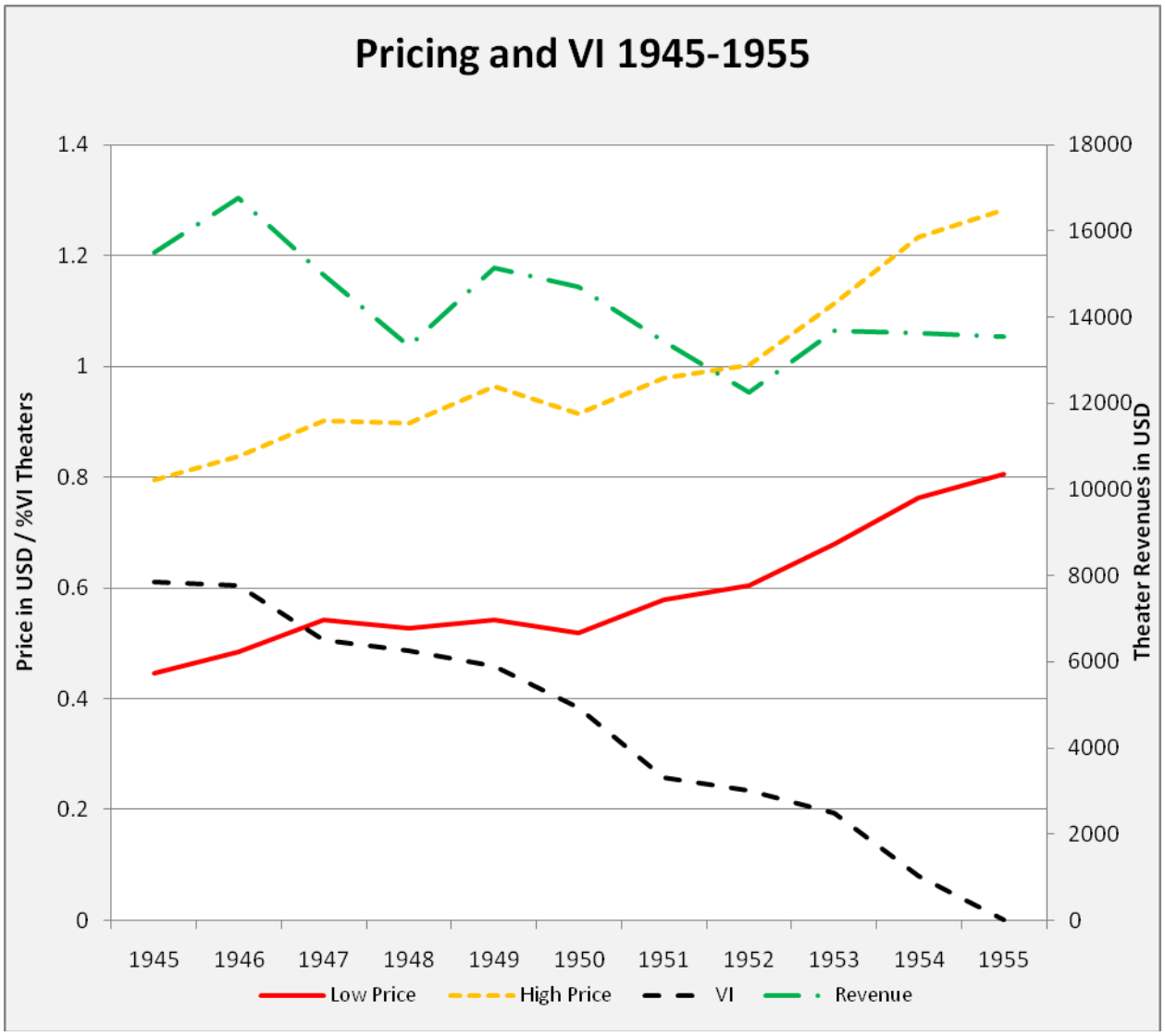

Pricing and VI 1945-1955
Price in USD / %VI Theaters
Theater Revenues in USD
1.4
1.2
1
0.8
0.6
0.4
0.2
0
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1945
1946
1947
1948
1949
1950
1951
1952
1953
1954
1955
Low Price
High Price
VI
Revenue

Figure 4

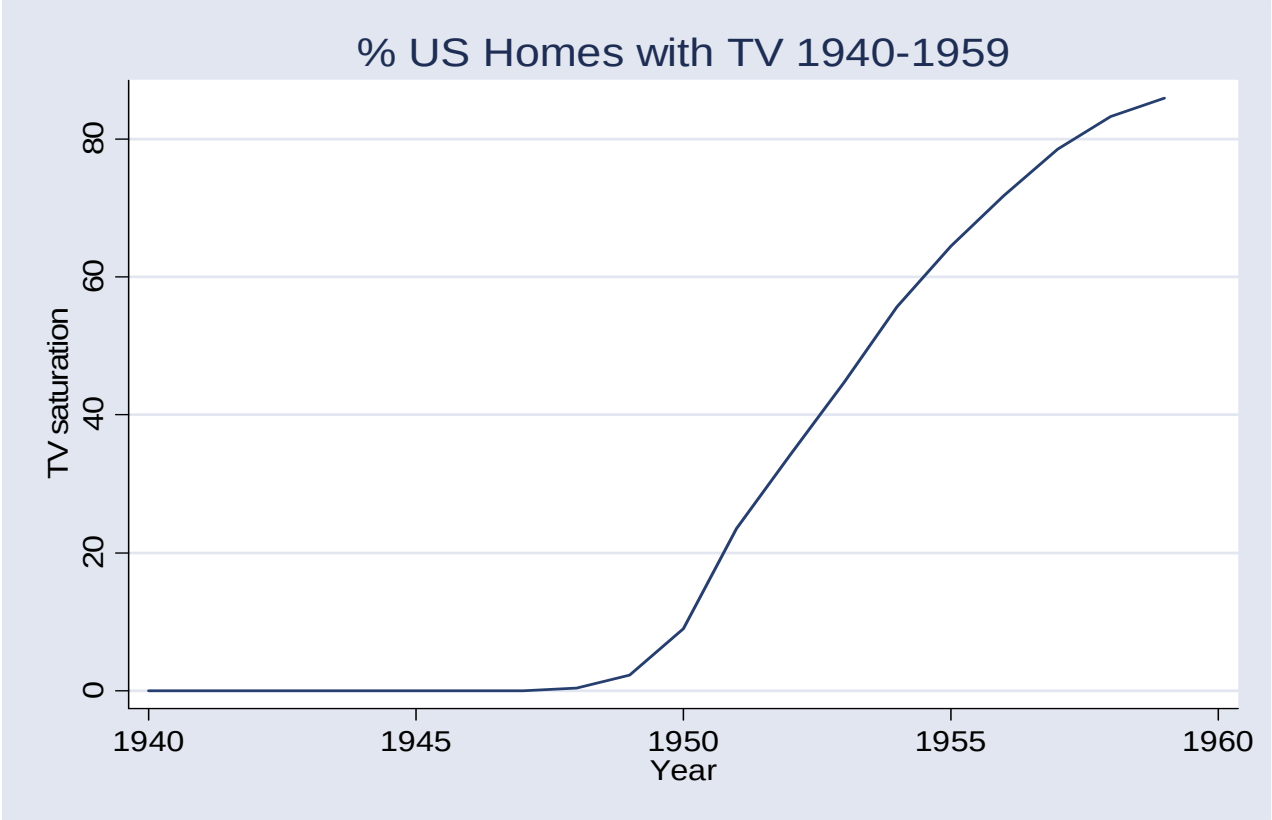

% US Homes with TV 1940-1959
TV saturation
0
20
40
60
80
1940
1945
1950
1955
1960
Year

Table 1. City and Year Structure of Data Set

City	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	Theaters Total
Baltimore, MD	8	9	8	8	8	7	8	9	9	10	10	12
Birmingham, AL	0	0	0	0	0	0	5	0	0	0	0	5
Boston, MA	12	15	17	15	13	12	12	12	14	13	13	22
Buffalo, NY	5	6	6	6	6	5	5	5	7	6	6	7
Chicago, IL	11	11	13	14	15	14	12	12	16	16	16	21
Cincinnati, OH	9	8	8	7	8	7	8	6	6	6	5	13
Cleveland, OH	7	7	9	8	7	8	10	8	8	8	7	11
Columbus, OH	4	0	0	0	0	0	0	0	0	0	0	4
Denver, CO	9	9	11	10	14	11	11	12	12	11	14	23
Detroit, MI	8	8	9	9	7	7	8	6	9	9	9	12
Indianapolis, IN	5	5	5	5	5	5	5	5	5	5	5	5
Kansas City, MO	7	7	11	9	11	10	12	14	13	13	12	18
Lincoln, NE	0	5	0	0	0	0	0	0	0	0	0	5
Los Angeles, CA	27	31	38	36	39	33	33	28	33	34	32	55
Louisville, KY	7	7	8	8	8	4	5	5	4	4	4	8
Minneapolis, MN	9	10	12	12	11	10	9	10	9	8	8	12
New York, NY	18	21	26	25	21	21	24	26	27	28	24	42
Omaha, NE	5	5	5	5	6	5	5	5	4	4	7	8
Philadelphia, PA	11	11	13	13	14	13	12	13	13	12	13	17
Pittsburgh, PA	8	7	8	7	7	8	6	6	6	6	7	12
Portland, OR	8	8	9	9	9	6	7	9	9	8	6	11
Providence, RI	8	7	7	7	7	7	6	5	5	5	4	8
Saint Louis, MO	6	6	10	8	9	6	8	9	8	9	10	13
San Francisco, CA	8	10	15	16	13	14	11	11	13	14	13	19
Seattle, WA	11	10	11	11	10	9	9	10	9	9	8	12
Washington, DC	6	8	10	11	11	11	9	10	10	10	11	18
Theaters/Year	217	231	269	259	259	233	240	236	249	248	244	393
Cities/Year	24	24	23	23	23	23	24	23	23	23	23	26

Note: This table indicates the number of theaters per city and year for which the data set used in this paper has information.

Table 2. Boston Panel Data Set with Vertical integration in Yellow

Theaters	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	Total # Weeks
Astor	-	-	5	52	38	49	52	51	51	51	50	349
Beacon Hill	-	-	-	3	-	16	18	41	17	44	49	188
Boston	51	50	50	52	51	46	52	52	45	51	26	526
Cinerama	-	-	-	-	-	-	-	-	-	-	21	21
Center	-	-	4	-	-	-	-	-	-	-	-	4
Esquire	-	34	33	6	12	1	-	-	4	-	-	90
Exeter	-	1	27	50	15	-	16	49	51	51	47	307
Fenway	51	50	50	51	50	52	52	53	51	45	49	554
Kenmore	-	-	18	16	-	-	-	-	-	-	28	62
Majestic	43	37	25	5	11	-	19	1	6	8	-	155
Mayflower	-	-	-	-	26	8	-	-	3	-	12	49
Memorial	51	48	48	52	50	52	52	53	51	51	49	11
Modern	-	-	11	-	-	-	-	-	-	-	-	557
Metropolitan	50	50	49	51	51	51	52	53	51	51	50	559
Normandi	1	-	-	-	-	-	-	-	-	-	-	1
Old South	8	12	11	3	-	-	-	-	-	-	-	34
Olympia	-	1	-	-	-	-	-	-	-	-	-	1
Pilgrim	-	-	-	-	19	12	-	6	12	36	18	103
Orpheum	51	49	50	52	51	49	52	52	51	51	47	555
Paramount	50	49	50	52	51	52	52	53	51	50	45	555
Scoltay	-	1	-	-	-	-	-	-	-	-	-	1
State	50	50	50	52	51	50	52	52	50	51	49	557
Tremont	18	41	5	-	-	-	-	-	-	-	-	64
Translux	50	49	46	6	-	-	1	-	-	2	-	154

Note: Every cell contains the number of weeks for which information on givent theater was reported.
Yellow color indicates vertically integrated theater, white color otherwise.
Green color indicates different names to a same theater (according to Cinematreasures.com).

Table 3. Year of TV Introduction Across Cities in Sample

Year of TV Introduction	Cities	Cum Cities	Cum Pop (as of 1950)
1945	-	0	0
1946	New York City, Chicago, Philadelphia, Los Angeles, Washington DC	5	16357060
1947	Detroit, Saint Louis	7	19063424
1948	Baltimore, Cleveland, Boston, Buffalo, Minneapolis, Cincinnati	13	23335232
1949	San Francisco, Pittsburgh, Seattle, Indianapolis, Louisville, Omaha, Providence, Columbus, Birmingham	22	27579054
1950	Kansas City	23	28035676
1951	-	23	28035676
1952	Denver	24	28451462
1953	Portland, Lincoln	26	28923974
1954	-	26	28923974
1955	-	26	28923974

Table 4. General Summary Statistics and by Organizational Form

Variable	Obs	Mean	Std. Dev.	Min	Max	Theater Ever Integ? ==1	Theater Ever Integ? ==0	Difference (==0) - (==1)
Theater/Year Level Data								
Evening Price	2685	1.00	0.40	0.28	3.6	0.993	1.019	0.026
						0.010	0.012	0.016
Matinee Price	2685	0.60	0.23	0.09	2.4	0.580	0.629	0.049
						0.005	0.008	0.009
Theater Integ?	2685	0.32	0.46	0	1	0.581	0	-0.581
						0.013	0	0.014
Theater Ever Integ?	2685	0.56	0.50	0	1	-	-	-
						-	-	-
Box Office Revenues	2685	12961.67	12465.38	677.50	154196.10	15687.280	9547.798	-6139.483
						383.795	212.251	469.544
Tickets Sold	2685	13114.16	9132.09	783.88	104754.80	15514.000	10108.320	-5405.682
						248.222	217.591	339.080
Years Since TV Intro	2685	2.84	2.83	0	9	2.821	2.864	0.043
						0.073	0.082	0.110
HHI (by theater number)	2685	990.29	1116.50	89.4438	10000	834.173	1185.834	351.662
						19.503	41.258	42.841
Theater/Week Level Data								
Evening Price	106702	1.00	0.40	0.25	3.6	0.999	0.991	-0.007
						0.002	0.002	0.003
Matinee Price	106702	0.59	0.23	0.09	2.4	0.579	0.613	0.034
						0.001	0.001	0.001
Theater Integ?	106702	0.34	0.48	0	1	0.568	0	-0.568
						0.002	0	0.002
Theater Ever Integ?	106702	0.61	0.49	0	1	-	-	-
						-	-	-
Box Office Revenues	106665	14232.33	15616.90	300	850000	16622.10	10559.57	-6062.53
						69.37	53.09	96.07
Tickets Sold	106665	14349.25	11981.30	300	894736.9	16304.99	11343.54	-4961.45
						47.69	54.18	73.52
Years Since TV Intro	106702	2.90	2.86	0	9	2.87	2.95	0.08
						0.01	0.01	0.02
HHI (by theater number)	106702	989.70	1114.55	89.44	10000	837.51	1223.55	386.03
						3.05	7.13	6.88
Theater Characteristics								
No. Screens	393	1.03	0.23	1	3	1.03	1.04	0.01
						0.02	0.02	0.02
Capacity per Screen	393	1575.08	1053.15	115	5945	2049.98	1209.28	-840.70
						83.47	57.81	98.51

Note: This table presents summary statistics of all variables used in this paper. See that variables that do not vary across time (number of screens and capacity per screen) have summary statistics at the theater level.
The second part of the table provides summary statistics by whether the theater was EVER vertically integrated and the last column. calculates differences across the two groups of theaters.
Numbers in smaller font size are standard errors for the averages at the group level and differences.

Table 5. Summary Statistics at the Theater/Movie Level

Variable	Obs	Mean	Std. Dev.	Min	Max	Theater Ever Integ? ==0	Theater Ever Integ? ==1	Difference (==0) - (==1)	Theater Integ?/Ever Integ?==1 ==0	Theater Integ?/Ever Integ?==1 ==1	Difference (==0) - (==1)
Theater Ever Integ?	143200	0.616	0.486	0	1						
Theater Integ?	143200	0.347	0.476	0	1						
Movie Big Five Playing in Theater Ever Integ?	143200	0.187	0.390	0	1						
Movie and Theater Owned By Same Studio?	143200	0.155	0.362	0	1						
Movie Big Five?	143200	0.525	0.499	0	1	0.459	0.566	-0.108***	0.528	0.596	-0.069***
						0.002	0.002	0.003	0.003	0.002	0.003
Movie Little Three?	143200	0.306	0.461	0	1	0.341	0.284	0.056***	0.296	0.275	0.021***
						0.002	0.002	0.002	0.002	0.002	0.003

Note: This table provides summary statistics of vertical integration related variables at the theater/movie level. The second part of the table shows differences in propensity to show movies from big five studios (MGM, WB, Paramount, RKO and Fox) and little three studios (Universal, Columbia and United Artists) conditional on being a theater that was ever integrated, and conditional on being integrated if the theater had ever been integrated.

Table 6. Vertical Integration and Economic Outcomes with Theater/Year Level Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep Var	**Eve P**	**ln [Eve P]**	**Mat P**	**ln [Mat P]**	**Adm**	**ln [Adm]**	**BOR**	**ln [BOR]**
Theater Ever Integ?	-0.0139		-0.0594***		135.9378		596.5586	
	(0.0320)		(0.0170)		(640.9970)		(858.0810)	
Theater Integ?	-0.0523**	0.1338***	0.0031	0.2064***	1,465.7268**	-0.0095	405.4970	0.1242*
	(0.0200)	(0.0490)	(0.0110)	(0.0450)	(510.7500)	(0.0670)	(658.9300)	(0.0690)
No Screens	0.0223		0.0271		4,064.2589***		5,273.9265***	
	(0.0520)		(0.0440)		(1104.1420)		(1499.4660)	
Capacity per Screen	0.0000		-0.00002***		5.8347***		7.1805***	
	0.0000		0.0000		(0.4760)		(1.3460)	
Years TV Intro	0.0237***	0.0095*	-0.0061	-0.0051	-301.8391	0.0221**	-64.6977	0.0316***
	(0.0070)	(0.0050)	(0.0040)	(0.0060)	(229.1470)	(0.0110)	(207.2930)	(0.0110)
HHI	-0.00001	-0.000002	0.00001	0.00001	-0.06649	-0.00001*	-0.217**	-0.00001*
	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.0900)	(0.00001)	(0.1060)	(0.00001)
Theater Ever Integ?*Year		0.0222***		0.0192***		-0.0086		0.0136
		(0.0070)		(0.0070)		(0.0090)		(0.0090)
Theater Integ?*Year		-0.0188***		-0.0304*		0.0163		-0.0025
		(0.0060)		(0.0050)		(0.0100)		(0.0100)
Year		0.0227***		0.0498***		-0.0595***		-0.0368***
		(0.0040)		(0.0060)		(0.0090)		(0.0090)
Constant	0.8289***	-0.3067***	0.4913***	-0.9544***	456.1989	9.5809***	-5966.59*	9.2743***
	(0.0700)	(0.0280)	(0.0500)	(0.0280)	(1479.0500)	(0.0390)	(3447.0840)	(0.0400)
City FE	Yes	No	Yes	No	Yes	No	Yes	No
Year FE	Yes	No	Yes	No	Yes	No	Yes	No
Theater FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	2685	2685	2685	2685	2685	2685	2685	2685
R-squared	0.48	0.80	0.50	0.81	0.64	0.88	0.59	0.88

Note: This table runs OLS regressions for specifications (1) and (2) in the text. Columns (1) and (2) are for Evening Price and its natural log, (3) and (4) for Matinee Price and its log, (5) and (6) for Admissions and its log, and (7) and (8) for Box Office Revenue and its log.
Standard errors clustered by theater in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 7. Before and After Vertical Separation with Theater, Year and City/Year Fixed Effects with Theater/Year Level Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dep Var	**Evening Price**			**Matinee Price**			**Admissions**			**Box Office Revenue**		
4 plus Years Prior	-0.042	-0.046	-0.064	-0.014	-0.012	-0.004	2,206.654***	1,355.663*	3,980.763***	550.303	17.957	1,948.158**
	(0.030)	(0.035)	(0.039)	(0.017)	(0.019)	(0.021)	(785.756)	(819.056)	(894.428)	(638.089)	(683.695)	(766.787)
1 to 3 Years Prior	-0.030	-0.025	-0.033	-0.008	-0.004	0.002	993.262**	940.527**	1,483.807***	520.172	638.485	948.602**
	(0.019)	(0.020)	(0.022)	(0.011)	(0.011)	(0.014)	(433.903)	(460.698)	(447.635)	(443.333)	(459.000)	(470.920)
1 to 3 Years After	-0.003	-0.003	-0.007	-0.003	-0.010	-0.004	-1092.439***	-823.459*	-579.800	-924.357**	-596.920	-193.890
	(0.018)	(0.019)	(0.021)	(0.012)	(0.011)	(0.013)	(337.661)	(351.067)	(402.078)	(378.128)	(399.913)	(508.486)
4 plus Years After	0.136***	0.119**	0.116*	0.063***	0.029	0.029	-1360.607*	-986.587	-1576.435**	-110.677	78.068	-48.436
	(0.047)	(0.049)	(0.061)	(0.023)	(0.023)	(0.027)	(715.238)	(717.307)	(760.816)	(745.280)	(754.786)	(963.871)
Constant	0.896***	0.866***	0.921***	0.512***	0.479***	0.548***	15064.822***	15943.231***	13305.982***	13509.132***	13676.246***	12010.690***
	(0.018)	(0.021)	(0.019)	(0.011)	(0.013)	(0.012)	(320.837)	(505.043)	(452.470)	(289.208)	(423.420)	(415.553)
Theater FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Year/City FE	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Other Controls	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No
Observations	2,685	2,685	2,685	2,685	2,685	2,685	2,685	2,685	2,685	2,685	2,685	2,685
R-squared	0.72	0.73	0.76	0.70	0.73	0.77	0.83	0.84	0.89	0.92	0.92	0.94

Note: This table shows results of specifications only with dummies for 1 to 3 years before and after separation, and 4 or more years before and after separation. When appropriate Years Since TV was introduced and HHI controls are also included, essentially City/Year FE eat the variation of those two variables. Standard errors clustered at the theater level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 8. Vertical Integration and Evening Prices with Theater/Weel Level Data

	(1)	(2)	(3)	(4)	(5)	(6)
Dep Var	**Evening Price**			**ln [Evening Price]**		
Theater Ever Integ?	-0.010	0.009	0.009			
	(0.038)	(0.032)	(0.031)			
Theater Integ?	0.000	-0.042**	-0.038**	0.006	0.133***	0.140***
	(0.029)	(0.018)	(0.018)	(0.015)	(0.039)	(0.041)
No Screens	-0.027	-0.024	-0.021			
	(0.032)	(0.028)	(0.028)			
Capacity per Screen	0.00001	0.00001	0.00001			
	(0.00001)	(0.00001)	(0.00001)			
Years TV Intro	0.072***	0.052***	0.031***	0.006	0.014***	0.015***
	(0.005)	(0.004)	(0.007)	(0.004)	(0.004)	(0.004)
HHI	-0.00005***	-0.00001	-0.00001	-0.000002	-0.000001	-0.000001
	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)
Theater Ever Integ?*YearWeek				0.0007***		
				(0.0001)		
Theater Integ?*YearWeek				-0.0004**		
				(0.0001)		
YearWeek				0.0004***		
				(0.0001)		
Theater Ever Integ?*YearMonth					0.0015***	
					(0.0001)	
Theater Integ?*YearMonth					-0.0018***	
					(0.0001)	
YearMonth					0.0021***	
					(0.0001)	
Theater Ever Integ?*Year						0.0169***
						(0.006)
Theater Integ?*Year						-0.0211***
						(0.005)
Year						0.0243***
						(0.004)
Constant	0.849***	0.864***	0.827***	-0.251***	-0.317***	-0.330***
	(0.076)	(0.051)	(0.053)	(0.012)	(0.024)	(0.025)
City FE	No	Yes	Yes	No	No	No
Year FE	No	No	Yes	Yes	No	No
Theater FE	No	No	No	Yes	Yes	Yes
Observations	106,702	106,702	106,702	106,702	106,702	106,702
R-squared	0.26	0.51	0.53	0.77	0.77	0.77

Note: This table regress Evening Price and its natural logarithm on vertical integration variables.
Robust standard errors in parentheses, clustered at the theater level. *** p<0.01, ** p<0.05, * p<0.1

Table 9. Vertical Integration and Matinee Prices with Theater/Week Level Data

	(1)	(2)	(3)	(4)	(5)	(6)
Dep Var	**Matinee Price**			**ln [Matinee Price]**		
Theater Ever Integ?	-0.016	-0.041***	-0.043***			
	(0.020)	(0.015)	(0.015)			
Theater Integ?	0.001	-0.002	0.007	0.031*	0.181***	0.192***
	(0.013)	(0.010)	(0.009)	(0.017)	(0.035)	(0.037)
No Screens	-0.051**	-0.027	-0.025			
	(0.021)	(0.017)	(0.016)			
Capacity per Screen	-0.00002**	-0.00001***	-0.00001***			
	(0.00001)	(0.00001)	(0.00001)			
Years TV Intro	0.041***	0.036***	0.0002	-0.020***	0.003	0.003
	(0.002)	(0.002)	(0.004)	(0.005)	(0.005)	(0.005)
HHI	0.00001	0.00001*	0.000006*	0.00001**	0.00001	0.00001
	(0.00001)	(0.00001)	(0.00004)	(0.000001)	(0.00001)	(0.00001)
Theater Ever Integ?*YearWeek				0.0006***		
				(0.0001)		
Theater Integ?*YearWeek				-0.0006***		
				(0.0001)		
YearWeek				0.0007***		
				(0.0001)		
Theater Ever Integ?*YearMonth					0.001**	
					(0.001)	
Theater Integ?*YearMonth					-0.003***	
					(0.001)	
YearMonth					0.004***	
					(0.001)	
Theater Ever Integ?*Year						0.014**
						(0.007)
Theater Integ?*Year						-0.029***
						(0.005)
Year						0.047***
						(0.005)
Constant	0.567***	0.561***	0.528***	-0.847***	-0.941***	-0.964***
	(0.037)	(0.027)	(0.025)	(0.016)	(0.023)	(0.025)
City FE	No	Yes	Yes	No	No	No
Year FE	No	No	Yes	Yes	No	No
Theater FE	No	No	No	Yes	Yes	Yes
Observations	106,702	106,702	106,702	106,702	106,702	106,702
R-squared	0.28	0.51	0.54	0.78	0.76	0.76

Note: This table regress Matinee Price and its natural logarithm on vertical integration variables.
Robust standard errors in parentheses, clustered at the theater level. *** p<0.01, ** p<0.05, * p<0.1

Table 10. Vertical Integration and Admission Sales with Theater/Week Level Data

	(1)	(2)	(3)	(4)	(5)	(6)
Dep Var		**Admissions**			**ln [Admissions]**	
Theater Ever Integ?	-1331.346	-93.306	-64.625			
	(884.360)	(718.706)	(717.988)			
Theater Integ?	3,335.196***	1,646.907***	1,444.649**	0.089***	0.022	0.025
	(581.331)	(572.684)	(566.936)	(0.026)	(0.055)	(0.059)
No Screens	3,859.929***	4,764.535***	4,770.204***			
	(1431.242)	(1203.189)	(1201.927)			
Capacity per Screen	5.693***	5.926***	5.936***			
	(0.656)	(0.538)	(0.536)			
Years TV Intro	-225.605***	-808.541***	-341.069	0.023	0.019*	0.014
	(79.394)	(100.962)	(280.640)	(0.015)	(0.011)	(0.011)
HHI	-1.027***	-0.156*	-0.048	-0.00001**	-0.00001*	-0.00001**
	(0.188)	(0.081)	(0.096)	(0.00001)	(0.00001)	(0.00001)
Theater Ever Integ?*YearWeek				-0.00039		
				(0.001)		
Theater Integ?*YearWeek				0.00004		
				(0.0001)		
YearWeek				-0.0019***		
				(0.0001)		
Theater Ever Integ?*YearMonth					-0.001	
					(0.001)	
Theater Integ?*YearMonth					0.001	
					(0.001)	
YearMonth					-0.005***	
					(0.001)	
Theater Ever Integ?*Year						-0.007
						(0.008)
Theater Integ?*Year						0.011
						(0.009)
Year						-0.0584***
						(0.009)
Constant	144.803	-598.942	154.835	9.539***	9.609***	9.625***
	(1954.049)	(1711.332)	(1672.066)	(0.028)	(0.034)	(0.038)
City FE	No	Yes	Yes	No	No	No
Year FE	No	No	Yes	Yes	No	No
Theater FE	No	No	No	Yes	Yes	Yes
Observations	106,665	106,665	106,665	106,665	106,665	106,665
R-squared	0.32	0.40	0.41	0.66	0.66	0.66

Note: This table regress Admission Sales and its natural logarithm on vertical integration variables.
Robust standard errors in parentheses, clustered at the theater level. *** p<0.01, ** p<0.05, * p<0.1

Table 11. Vertical Integration and Box Office Revenues with Theater/Week Level Data

	(1)	(2)	(3)	(4)	(5)	(6)
Dep Var	**Box Office Revenues**			**ln [Box Office Revenues]**		
Theater Ever Integ?	-1263.64	424.11	450.08			
	(1220.86)	(1008.56)	(1006.50)			
Theater Integ?	2,921.71***	565.24	455.85	0.094***	0.155***	0.165***
	(848.05)	(779.37)	(785.64)	(0.03)	(0.06)	(0.06)
No Screens	4,676.69**	6,197.46***	6,231.92***			
	(1825.51)	(1846.27)	(1856.40)			
Capacity per Screen	7.16***	7.62***	7.63***			
	(1.79)	(1.50)	(1.50)			
Years TV Intro	780.06***	-163.66	-22.81	0.029*	0.032***	0.029***
	(155.98)	(106.17)	(257.27)	(0.02)	(0.01)	(0.01)
HHI	-1.87***	-0.17*	-0.19*	-0.00002**	-0.00001*	-0.00001**
	(0.46)	(0.09)	(0.11)	(0.00001)	(0.00001)	(0.00001)
Theater Ever Integ?*YearWeek				0.000256		
				(0.001)		
Theater Integ?*YearWeek				-0.00037		
				(0.001)		
YearWeek				-0.0015***		
				(0.0001)		
Theater Ever Integ?*YearMonth					0.000811	
					(0.001)	
Theater Integ?*YearMonth					-0.000797	
					(0.001)	
YearMonth					-0.0031***	
					(0.001)	
Theater Ever Integ?*Year						0.010
						(0.008)
Theater Integ?*Year						-0.010
						(0.009)
Year						-0.034***
						(0.009)
Constant	-5769.790072	-7415.93*	-7590.68*	9.289***	9.292***	9.294***
	(4,352.24)	(4,028.56)	(4,136.70)	(0.029)	(0.035)	(0.039)
City FE	No	Yes	Yes	No	No	No
Year FE	No	No	Yes	Yes	No	No
Theater FE	No	No	No	Yes	Yes	Yes
Observations	106,665	106,665	106,665	106,665	106,665	106,665
R-squared	0.28	0.46	0.46	0.68	0.68	0.68

Note: This table regress Box Office Revenues and its natural logarithm on vertical integration variables.
Robust standard errors in parentheses, clustered at the theater level. *** p<0.01, ** p<0.05, * p<0.1

Table 12. Running Cross-Sectional Specifications with City/Year FE

	(1)	(2)	(3)	(4)
Dep Var	**Eve P**	**Mat P**	**Adm**	**BOR**
Theater Ever Integ?	-0.016	-0.062***	71.431	650.776
	(0.036)	(0.018)	(686.596)	(894.321)
Theater Integ?	-0.044*	0.007	1,377.407**	163.375
	(0.026)	(0.012)	(602.884)	(831.372)
No Screens	0.018	0.029	4,188.757***	5,427.236***
	(0.052)	(0.044)	(1136.371)	(1574.572)
Capacity per Screen	0.000003	-0.00002***	5.807***	7.195***
	(0.00001)	(0.00001)	(0.497)	(1.425)
Constant	1.003***	0.637***	-2631.432*	-6605.072*
	(0.070)	(0.050)	(1572.231)	(3507.163)
City/Year FE	Yes	Yes	Yes	Yes
Observations	2685	2685	2685	2685
R-squared	0.511	0.550	0.692	0.615

Note: This table repeats specifications (1), (3), (5) and (7) from Table 6 with data collapsed at the theater year level and city/year fixed effects.
Standard errors clustered by theater in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 13. Cross-Sectional Analysis with Theater-Movie-Week Level Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Dep Var	**Evening Price**			**Matinee Price**			**Admissions per Movie**			**Box Office per Movie**		
Theater Ever Integ?	-0.003	0.016	0.013	-0.010	-0.028*	-0.033**	-1219.64*	-203.261	-142.916	-1026.810	359.275	388.192
	(0.034)	(0.028)	(0.027)	(0.020)	(0.014)	(0.014)	(726.686)	(653.676)	(651.316)	(1006.203)	(897.167)	(895.562)
Theater Integ?	0.009	-0.029*	-0.023	-0.001	-0.007	0.005	3206.71***	1553.77***	1313.98**	3164.59***	968.427	847.772
	(0.025)	(0.016)	(0.015)	(0.013)	(0.010)	(0.009)	(542.885)	(544.954)	(529.389)	(750.869)	(622.640)	(615.470)
Theater Integ, Studio Movie?	-0.003	0.005	-0.001	0.022	0.017	0.006	761.163	1475.09*	1505.85*	506.235	1255.010	1249.440
	(0.041)	(0.025)	(0.024)	(0.017)	(0.011)	(0.011)	(980.393)	(834.369)	(817.554)	(1375.871)	(841.628)	(834.366)
Theater Ever Integ, Studio Movie?	0.009	-0.022	-0.017	-0.015	-0.012	-0.005	931.188	-273.211	-252.466	636.194	-1025.110	-987.896
	(0.047)	(0.028)	(0.027)	(0.015)	(0.010)	(0.010)	(844.987)	(759.488)	(740.360)	(2027.442)	(1695.664)	(1696.225)
Movie Big Five?	-0.047**	-0.043**	-0.042**	-0.027***	-0.018**	-0.018**	1417.48***	1356.25***	1288.57***	1562.46**	1454.55***	1414.80***
	(0.023)	(0.021)	(0.020)	(0.010)	(0.008)	(0.008)	(337.356)	(252.199)	(243.120)	(713.210)	(545.312)	(543.836)
Movie Little Three?	-0.034	-0.035*	-0.036*	-0.019**	-0.014	-0.017**	372.42*	197.959	172.424	61.325	-173.735	-200.725
	(0.022)	(0.020)	(0.020)	(0.010)	(0.009)	(0.008)	(223.858)	(205.280)	(203.095)	(309.081)	(262.651)	(261.505)
No Screens	-0.030	-0.016	-0.012	-0.055***	-0.021*	-0.019	3949.12***	4683.43***	4691.31***	4379.75***	5834.92***	5874.63***
	(0.028)	(0.021)	(0.022)	(0.018)	(0.013)	(0.013)	(1354.488)	(1162.339)	(1154.735)	(1489.576)	(1531.525)	(1535.363)
Capacity per Screen	0.000002	0.00001	0.00001	-0.00001*	-0.00001**	-0.00001**	5.076***	5.411***	5.422***	5.998***	6.694***	6.710***
	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.562)	(0.495)	(0.495)	(1.491)	(1.307)	(1.312)
Years TV Intro	0.068***	0.047***	0.024***	0.040***	0.035***	-0.002	-132.177	-711.120***	-147.877	774.845***	-131.174	98.141
	(0.004)	(0.003)	(0.005)	(0.002)	(0.002)	(0.003)	(82.222)	(95.891)	(259.604)	(147.899)	(97.802)	(233.769)
HHI	-0.00004***	-0.00001	-0.00001	0.000004	0.000005*	0.00001*	-0.931***	-0.191**	-0.10130	-1.632***	-0.191**	-0.187**
	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.00001)	(0.17300)	(0.07500)	(0.09100)	(0.39500)	(0.07700)	(0.08800)
Constant	0.875***	0.865***	0.829***	0.574***	0.553***	0.521***	-791.944	-1248.250	-357.986	-5533.980	-7213.73*	-7258.75*
	(0.069)	(0.047)	(0.050)	(0.034)	(0.023)	(0.023)	(1846.880)	(1666.569)	(1643.739)	(3925.042)	(3752.427)	(3848.247)
City FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Year FE	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Observations	143,200	143,200	143,200	143,200	143,200	143,200	143,153	143,153	143,153	143,153	143,153	143,153
R-squared	0.27	0.53	0.54	0.29	0.53	0.56	0.31	0.39	0.39	0.27	0.44	0.44

Note: This table shows cross-sectional OLS regressions for all four outcome variables using data at the theater-movie level. There are four new variables in this table that have not appeared before in the empirical analysis:
i) "Theater Integ, Studio Movie?" equals 1 if integrated theater at a given point in time shows a movie of that same studio, and 0 otherwise.
ii) "Theater Ever Integ, Studio Movie?" equals 1 if integrated theater ever shows a movie of the same studio that at some point owned that theater, and 0 otherwise.
iii) "Movie Big Five?" equals 1 if movie was produced by one of the big five studios, RKO, Paramount, Fox, MGM or Warner Brothers, and 0 otherwise.
iv) "Movie Little Three?" equals 1 if movie was produced by Columbia, Universal or United Artists, and 0 otherwise.
Robust standard errors in parentheses, clustered at the theater level. *** p<0.01, ** p<0.05, * p<0.1.

Table 14. Vertical Integration, Admissions and Box Office After Dropping Obs with Joint Reporting

	(1)	(2)	(3)	(4)
Dep Var	**Adm**	**ln [Adm]**	**Box Office**	**ln [Box Office]**
Theater Ever Integ?	-328.901		103.385	
	(674.318)		(914.640)	
Theater Integ?	1,042.859*	0.028	-143.190	0.171***
	(555.681)	(0.054)	(776.269)	(0.064)
No Screens	4,082.231***		5,446.963***	
	(1183.123)		(1538.839)	
Capacity per Screen	6.084***		7.472124***	
	(0.488)		(1.426)	
Years TV Intro	-794.299***	-0.003	-515.677**	0.007
	(227.028)	(0.009)	(209.848)	(0.009)
HHI	-0.067	-0.00001*	-0.202*	-0.00001*
	(0.092)	(0.00001)	(0.115)	(0.00001)
Theater Ever Integ?*Year		-0.015*		0.008
		(0.008)		(0.009)
Theater Integ?*Year		-0.001		-0.019**
		(0.008)		(0.008)
Year		-0.043***		-0.021**
		(0.008)		(0.008)
Constant	371.158	9.546***	-6286.363*	9.234***
	(1552.046)	(0.034)	(3627.375)	(0.038)
City FE	Yes	No	Yes	No
Year FE	Yes	No	Yes	No
Theater FE	No	Yes	No	Yes
Observations	2,442	2,442	2,442	2,442
R-squared	0.69	0.91	0.62	0.91

Note: This table regresses Admissions Sales and Box Office Revenues (and their) natural logarithm on vertical integration variables. I drop observations from cities and years with joint reporting.
Robust standard errors in parentheses, clustered at the theater level. *** p<0.01, ** p<0.05, * p<0.1

Table 15. Demand Estimation for Movies

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	OLS	OLS	OLS	OLS	OLS	OLS	OLS	2SLS	2SLS	2SLS
Evening Price	-0.425***	-0.415***	-0.423***	-0.559***	-0.524***	-0.609	-0.798*	-1.434***	-0.557***	-0.332***
	(0.047)	(0.034)	(0.035)	(0.056)	(0.038)	(0.665)	(0.496)	(0.163)	(0.063)	(0.044)
No. Screens	0.341***			0.289**		0.366		0.355***	0.339***	
	(0.131)			(0.116)		(0.332)		(0.112)	(0.129)	
Capacity per Screen	0.0004***			0.0003***		0.0003		0.0004***	0.0004***	
	(0.0001)			(0.0001)		(0.001)		(0.0001)	(0.0001)	
Years TV Intro	0.042**	0.047***		0.037**	0.047***			-0.077***	0.044***	
	(0.016)	(0.015)		(0.015)	(0.014)			(0.012)	(0.016)	
HHI	-0.00003***	-0.00002***		-0.00002***	-0.00002***			0.00003*	-0.00003*	
	(0.00001)	(0.00001)		(0.00001)	(0.00001)			(0.00001)	(0.00001)	
Constant	-5.429***	-3.878***	-4.655***	-4.429***	-3.281***	-5.007***	-4.104***	-4.149***	-5.028***	-3.650***
	(0.174)	(0.047)	(0.040)	(0.172)	(0.057)	(0.809)	(0.514)	(0.223)	(0.175)	(0.051)
Theater FE	No	Yes	Yes	No	Yes	No	Yes	No	No	Yes
City FE	Yes	No	No	Yes	No	No	No	No	Yes	No
Year/Week FE	Yes	Yes	No	Yes	Yes	No	No	No	Yes	Yes
City/Year/Week FE	No	No	Yes	No	No	No	No	No	No	No
Movie FE	No	No	No	Yes	Yes	No	No	No	No	No
Movie/City/Year/Week FE	No	No	No	No	No	Yes	Yes	No	No	No
Observations	138,465	138,465	138,465	138,465	138,465	138,465	138,465	138,465	138,465	138,465
R-squared	0.78	0.85	0.88	0.82	0.88	0.99	0.99	0.50	0.77	0.85

Note: The dependent variable is natural logarithm of market share of a movie in a given city and week, that is, admission sales divided by city population.
The last three columns show 2SLS regressions where I use Matinee Price as an instrument for Evening Price.
Robust standard errors in parentheses, clustered at the theater level. *** p<0.01, ** p<0.05, * p<0.1.