

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

By RICARD GIL*

I empirically examine the impact of the 1948 Paramount antitrust case on ticket prices using a unique dataset collected from Variety magazine issues between 1945 and 1955. With information on prices, revenues, and theater ownership for an unbalanced panel of 393 theaters in 26 cities, I find that vertically integrated theaters charged lower prices and sold more admission tickets than nonintegrated theaters. I also find that the rate at which prices increased in theaters was slower while integrated than after vertical divestiture. These findings together with institutional details are consistent with the prediction that vertical integration lowers prices through the elimination of double marginalization. (JEL G34, K21, L11, L22, L42, L82)

Understanding the impact of the organization of production has been a central topic in economics since Coase (1937). Others followed who highlighted the role of transaction costs (Williamson 1975; Klein, Crawford, and Alchian 1978), property rights (Grossman and Hart 1986; Hart and Moore 1990; Hart 1995), incentives (Holmstrom and Milgrom 1991 and 1994), and adaptation (Simon 1951; Baker, Gibbons, and Murphy 2002). Despite this wide range of theories, the empirical literature in this field has been sparse and fails to support and test the existing theoretical predictions (Shelanski and Klein 1995; Whinston 2003; Gibbons 2005; Lafontaine and Slade 2007). Therefore, this paper aims to contribute to the understanding of the impact of vertical integration by documenting behavioral differences between integrated and nonintegrated theaters in the United States from 1945 to 1955.

This exercise should be of interest to all economists, but particularly those interested in organizational economics, industrial organization, and antitrust policy for three reasons. First, the US Supreme Court determined in the 1948 antitrust case of the United States versus Paramount that Paramount and four other studios (RKO,

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Warner, Fox, and MGM) had to sell their theatrical divisions. This ruling is an opportunity to examine changes in economic performance due to a quasi-exogenous change in organizational form, because the empirical literature in organizational economics suffers from pervasive problems of endogeneity, spurious correlations, and reverse causality.

Second, the empirical findings in this paper have significant implications for antitrust policy design. The Federal Trade Commission (FTC) and Department of Justice have previously recommended breaking up firms charged with abuse of market power into smaller units.¹ This paper provides micro evidence (at the theater level) of how this type of recommendation affects economic performance, helping policymakers design and apply better policies in similar future antitrust cases. Spengler's (1950) seminal paper in industrial economics has its origin in the empirical setting studied here. Spengler argued that whereas horizontal integration may increase prices and lower welfare, vertical integration may decrease prices and increase welfare through the elimination of double marginalization. Therefore, antitrust policy should not rule against all types of integration and should focus on discouraging horizontal integration. Although this recommendation applies to many industries, Spengler was inspired by the United States versus 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 through double marginalization.

Finally, because I examine price changes in an industry during an entire 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, 2013). My observations here may indicate the need to pay closer attention to changes in the organization of production to understand changes in prices over time.

In summary, this paper empirically examines the impact of the US Supreme Court ruling in the United States versus Paramount antitrust case on movie theater ticket prices. In this case, Paramount and seven other studios were accused of using their market power to prevent entry into movie production and distribution through movie bundling and vertical integration in movie exhibition. After a number of appeals at lower-level courts, the US Supreme Court mandated in 1948 that the studios sell their theater divisions in the United States and stop movie bundling. In this paper, I use this quasi-exogenous vertical separation of movie theaters from studios to investigate the impact of vertical integration on movie ticket prices, admissions, and box office revenues before and after the US Supreme Court sentence in 1948.

For this purpose, I use a new and unique dataset collected from issues of *Variety* magazine between January 3, 1945, and December 28, 1955. This dataset 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 United States. The resulting panel dataset allows me to use city, year, and theater fixed effects while focusing on changes in price, movie receipts, and admissions before and after the change in theater ownership due to the Paramount decree. I complement these

¹ Examples of other cases 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 case in 2000.

data with information from other sources, such as the introduction year of television (Gentzkow 2006) and city-level theater market concentration (*Movie Yearbook* issues between 1945 and 1955).

The resulting dataset contains 143,200 weekly movie theater observations. Because I find that theaters charged uniform prices across movies and weeks, I collapse the data at the theater/year level for most of the empirical work below, using 2,685 observations. Taking the limitations of the data into account, I offer both cross-sectional, time-trend, and difference-in-differences evidence of the impact of vertical disintegration on movie ticket prices, admissions, and theater revenues.

The cross-sectional evidence suggests integrated theaters sold their tickets at lower prices than nonintegrated theaters. Consequently, integrated theaters sold more tickets but did not collect statistically higher revenues. The time-trend and difference-in-differences evidence that exploits variation in prices within theaters shows that integrated theaters did not experience an immediate increase in prices after vertical divestiture. Instead, I find that integrated theaters increased prices at slower rates while integrated, but they increased prices at faster rates after separation from their parent studios. In the difference-in-differences analysis, I show the effect on prices only shows up four or more years after divestiture. Figure 1 (using information for the 148 theaters observed yearly in the sample) shows that prices of integrated and nonintegrated theaters increased at similar rates from 1945 to 1950, and only after 1950 did prices of formerly integrated theaters increase at faster rates.² This finding is consistent with the fact that ownership and management of theatrical firms took several years to change after their studio divestiture.

Using data at the movie, theater, and week level, I also find that integrated theaters set lower ticket prices and that their prices do not change when they show a movie distributed by other studios. In fact, I find that movies distributed by integrated studios sell at lower ticket prices regardless of who owns the movie theater where they are showing. This finding suggests that even after vertical separation, major studios would seek to place their movies in theaters charging low prices.

Given the importance of the Paramount case, this empirical study is obviously not the first on the aftermath of this case. Whitney (1955) first analyzed the aftermath and impact of the Paramount case through a number of interviews with industry practitioners. Whitney (1955) notes the impact in supply may have increased quality but also increased prices, leaving the net effect on consumers ambiguous. This case also inspired several studies on the consequences of bundling, such as Kenney and Klein (1983 and 2000) or Hanssen (2000). More recently, De Vany and Eckert (1991) have investigated the effect of the case on market stock values and found it had no impact on firms' profits. While researching the uniform pricing practices in movie exhibition, Orbach and Einav (2007) argue the resolution of the case restrained pricing practices in this industry. Finally, the two papers that are closer to my paper are Hanssen (2010) and Silver (2010). Whereas the former argues that vertical integration into exhibition allowed studios to enhance efficiency

²Note that to construct Figure 1, I divided all prices of the 148 theaters in my final sample that I observe in every year between 1945 and 1955 by their own price in 1945. Because all prices are normalized to 1 in 1945, Figure 1 is only informative of differences in changes over time and not differences in levels across theaters.

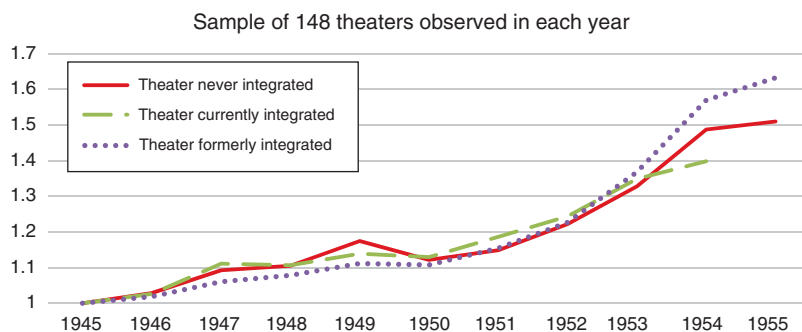


FIGURE 1. PRICE EVOLUTION BY INTEGRATION STATUS

in movie screening decisions, the latter explores the impact of the vertical separation of theaters on movie production, using historical data to argue the Paramount case did not affect ticket prices. This paper contributes to this literature by exploring a long unbalanced panel dataset at the theater level and therefore addressing previously unanswered questions.

The empirical contribution of this paper differs from those of others studying vertical integration, and from my previous work in two ways. On one hand, many others have studied the impact of vertical integration on prices. Recent examples of this literature are Hastings and Gilbert (2005) and Hortacsu and Syverson (2007). Whereas the former examines the effect of vertical integration on gasoline pricing in California and finds a positive correlation between vertical integration and wholesale pricing, the latter 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 double marginalization as in Spengler (1950). Most similar to this paper are Slade (1998) and Barron and Umbeck (1984) because 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 increased after vertical separation.

On the other hand, my 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 and finds the Paramount case decreased the number of movies produced by studios, increased the duration of movies, and increased the number of coproductions. Gil (2009) explores the impact of vertical integration in the Spanish movie industry and finds that integrated theaters show their movies longer than nonintegrated 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 directly the question of how vertical integration affects consumer surplus, because the data allow 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. Section I examines the relationship between vertical integration and prices in the literature. Section II describes the institutional details and contracting practices surrounding the Paramount anti-trust case and describes the data used in the paper. Section III shows cross-sectional, time-trends, and difference-in-differences results of the impact of vertical integration on ticket prices, admissions, and box office revenues using theater-year-level data. Section IV provides robustness checks using variation in movie scheduling at the movie-theater-week level. Section V discusses the results and potential alternative explanations. Finally, Section VI concludes.

I. Vertical Integration and Prices

This section highlights the main factors through which vertical integration may affect prices. These factors may decrease or increase prices. This section is also useful because it places the contribution of this paper within a well-established literature.

A. Vertical Integration Decreases Prices

Two main streams of papers associate vertical integration with lower prices. First, vertical integration may decrease prices due to the elimination of double marginalization. Spengler (1950) shows that final prices are higher under nonintegration than under vertical integration when upstream and downstream firms have market power, because each firm imposes a positive markup (stacked on top of each other) on the production cost of the good. Because the vertically integrated firm internalizes the negative externality on input demand of imposing higher prices that decrease overall profits, it sells the good in the input market to its own downstream division at zero profit, setting lower final consumer prices.

A factor one should consider when applying the original model in Spengler (1950) to the movie industry is the pervasive use of revenue sharing between upstream (movie studios and distributors) and downstream (exhibitors) firms, as well as other vertical restraints. Under revenue-sharing contracts, vertical integration is only associated with lower prices when the downstream firm has an additional marginal cost of production (beyond the wholesale input price implied by the sharing term).³ Prior research has found evidence of vertical integration lowering prices associated with the attenuation of double marginalization. For example, Villas-Boas (2007) finds that integrated yogurt retailing is associated with 2.2 percent to 3.2 percent lower prices, whereas Ito and Lee (2007) find that “fully integrated” air tickets are 6.4 percent cheaper than code-sharing tickets and 11.6 percent cheaper than independent tickets.

³Note the presence of large fixed costs in production and relatively low (almost negligible) costs of distribution characterize this industry. Moreover, one may argue that given the growing importance of concession revenues, this downstream marginal cost is now close to zero if not negative. As a result, vertical integration would either increase prices or leave them unaffected.

A second reason vertical integration may lower prices concerns technology spillovers. Through vertical integration, upstream and downstream firms may be able to increase their productivity due to the exploitation of economies of scale or scope in production and distribution. Hortacsu and Syverson (2007) show in their study of the cement industry that vertically integrated plants are more productive and as a result sell cement at lower prices. They also find this productivity advantage is associated with a better and more efficient use of technology and logistics.

B. Vertical Integration Increases Prices

A final part of this literature shows that vertical integration may increase prices by softening downstream competition when upstream firms are forward integrated into the downstream market, and it enjoys a nonnegligible degree of market power. The evidence on this particular channel spreads across different industries such as gas stations, video games, and hotels, among others. Hastings (2004) and Hastings and Gilbert (2005) investigate the relationship between vertical integration and prices in the Southern California gas retailing market using ownership changes due to a company acquisition, and find a positive empirical relation between integration and prices. Whereas the former shows this relationship may come from a resulting lower share of independent gas stations and the consequent decrease in downstream competition, the latter provides evidence that a larger presence of vertical integration may be associated with higher wholesale prices as part of a strategic move to increase rivals' costs.

In a different setting, Gil and Warzynski (forthcoming) show that vertically integrated video games are associated with higher average monthly prices and higher sales in the United States. They argue and provide suggestive evidence that these games outperform independent games because integrated publishers are able to soften competition at release.

Finally, Kosová, Lafontaine, and Perrigot (2013) find that franchised hotels charge lower prices than company-owned outlets. Because this difference becomes statistically insignificant after instrumenting integration with distance to headquarters and the share of company-owned outlets in the same geographic area, they argue that firms that change vertical-integration status reoptimize the use of their resources, leaving observable outcomes (mainly prices and performance) unchanged.

In summary, this section presents three potential channels through which vertical integration may affect final consumer prices, and evidence supporting each mechanism: double marginalization, productivity, and downstream competition. Because changes in vertical integration and organizational form may affect all three margins, whether vertical integration will be associated with lower or higher prices in different settings and industries becomes an empirical question. In the next section, I describe the institutional details and data examined in this paper.

II. Institutional Details and Data Description

This section describes the US movie industry around the 1948 Paramount anti-trust case. This industry is mainly composed of three types of agents: studios,

distributors, and exhibitors. Studios produce movies while coordinating all agents involved in production, from directors to producers, script writers, and acting casts. Movie distributors serve as intermediaries between studios and exhibitors as they deliver movies from the former to the latter. Finally, exhibitors own theaters that play movies, and sell admission tickets to viewers.

The incentives of studios and distributors have no conflict of interest, because they both benefit from higher box office revenues. However, theaters' incentives are in conflict with those of studios because theaters benefit from cutting short the run of a movie from a studio and show a new release from another studio to increase audience turnover and concessions revenues. Because ancillary markets did not exist at that time (television audiences were just developing in the 1940s), box office revenues were the only source of revenue for all three agents. This unique source of revenues made control over theater decisions more important than they are nowadays.

A. Contractual Environment

According to Kenney and Klein (1983) and Ornstein (1995), prior to the Paramount case, the eight largest studios controlled and had interests in 3,137 of the 18,075 theaters in the United States. As a matter of fact, these studios controlled over 70 percent of first-run theaters in the 92 largest cities in the United States. At that time, the exhibition market separated theaters into groups according to runs for which first-run theaters would obtain movies at release and hand those down to theaters in the second-run market, third-run, and so on.

Aside from owning theaters,⁴ studios also used block-booking contracts during that time when contracting with independent theaters for screen space. These contracts bundled movies in blocks to exhibitors and specified a revenue split for all movies in the bundle. Even though at first these contracts specified the exact movies the exhibitor would show, eventually they vaguely stated the number of movies to be shown in a given theater as those among the "best" films available from the distributor. These bundling contracts did not prevent exhibitors from sourcing movies from other distributors (Kenney and Klein 1983; Hanssen 2010) and even allowed exhibitors to refuse a given number of films within the bundle (Hanssen 2000).

Finally, among all the clauses included in these exhibition contracts to constrain downstream exhibitor behavior, the minimum price clause (RPM) has received the most attention because it prevented theaters from lowering their prices. Ultimately, Orbach (2004) affirms this concern was minor given the existence of double marginalization and therefore higher prices charged at independent theaters.⁵

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, MGM, RKO, Fox, Columbia, Universal, and United Artists). The decision

⁴Whereas De Vany and Eckert (1991) argue studios owned theaters to reduce costs and uncertainty associated with the exhibition of their own productions, Dewey (1955) claims theater ownership allowed studios to directly control prices in first-run theaters in major cities.

⁵Hanssen (2010) argues that attenuating double marginalization was not a reason for the studios to vertically integrate into theater ownership because their affiliated cinemas were showing movies from rival filmmakers as well.

to file suit came after the independent “Snow White” was the winner of the Academy Awards in 1938 and a feeling emerged that large studios were using their size and market power to cut quality while preserving their market share.⁶

The Department of Justice had two main reasons for accusing the studios of restraining trade. First, the studios used block booking and blind bidding⁷ to screen their movies and limit entry by independent studios. Second, they used their own theater branches to gain market power in the theater market while driving other studios and other exhibitors out of business. Because some studios owned theaters (Paramount, Warner, Fox, MGM, and RKO) and others did not (Columbia, Universal, and United Artists), the former were subject to both accusations, whereas the latter were only accused of block-booking and blind-bidding practices.

The studios could not hide behind the state of the economy, which was booming after the war, and in 1946, the District Court⁸ ruled against the studios and banned bundling, but allowed the studios to keep their theater branches. After appealing the decision, the US Supreme Court ruled against the studios in May of 1948 and decided to ban bundling and to force the vertical separation of theaters from their parent studios. The case then went back to the District Court for reexamination while the Department of Justice encouraged the eight defendants to sign a decree and save millions in legal fees. The District Court confirmed the sentence, and the defendants proceeded to sign the decree.

The Aftermath of the Paramount Case.—As a result of the ruling, exhibition contracts were now specific to the movie and theater, and specified movie-specific revenue-sharing terms.⁹ After the sentence was confirmed, Columbia and Universal abandoned block booking and blind bidding practices.¹⁰ The rest of the studios, however, decided to appeal the sentence to keep their theater branches. Different rounds of negotiations therefore started between the five major studios and the Department of Justice to save their asset holdings in the exhibition market. As part of this negotiation, studios voluntarily reduced the number of theater asset holdings prior to signing the decree in the hopes of keeping a share of their theaters.

Despite the fact that RKO was the first to sign the decree in 1948,¹¹ 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. As opposed to RKO, it immediately spun off its theater holdings from the Balaban and Katz

⁶Coincidentally, 1939 left one of the best vintages in motion picture history with movies such as “Gone with the Wind” and “Wuthering Heights.”

⁷See Mulligan and Wedzielewski (forthcoming) for a thorough description of blind-bidding practices in the US motion picture industry.

⁸US District Court for Southern District of New York.

⁹Even though the change in contractual form did not change the overall percentage split between theaters and studios, Conant (1960) argues the new contracts were more time consuming than bundling. Ornstein (1995) explains studios eventually implemented a system of tracking and splitting whereby the use of movie-specific contracts was restricted to exhibitors that were more likely to complain.

¹⁰United Artists never employed block booking (Kenney and Klein 1983; Hanssen 2000).

¹¹Howard Hughes (owner of RKO) saw through the decree a way to level competition with the other four majors. Therefore, by signing the Paramount decree immediately (December 31, 1948), Hughes was looking for a rapid institutionalization of the US Supreme Court ruling.

theater divisions, and grouped all other theaters into the United Paramount Theaters company.¹² Two years later, Warner and Fox signed the decree in 1951, but they did not separate from their theater branches until 1953. Warner named its theater division Stanley Warner Corporation and Fox named its Fox National Theaters. Finally, Loew's theaters signed the decree in 1952 and spun off the MGM studios in 1954. The vertical separation of MGM from its theaters was slightly more complex than other studios because MGM had developed a number of interlocking arrangements with other exhibition companies that took five years to undo.

In short, the Paramount case changed the organization of the distribution and exhibition in the motion picture industry in two ways. First, studios were now forced to distribute and contract their movies one by one, increasing transaction and search costs for everybody involved. Second, the number of market transactions increased because theater ownership by studios was prohibited. In the end, this case left a quasi-natural experiment whereby studios were forced to change the way they organized transactions. Although the change is not entirely exogenous (studios and theaters spun off at different times), this case is a unique opportunity to further our understanding of the effect of vertical integration on economic outcomes such as prices and sales.

B. Data Description

In this paper, I use a unique dataset comprised of movie theater information from old *Variety* magazine issues published between January 3, 1945, and December 28, 1955. The resulting dataset of this collection effort contains weekly movie theater information for a total of 393 theaters in 26 different cities. Because the number of theaters and cities changes weekly, the dataset is an unbalanced panel. Despite the theater turnover, there is a lot of theater repetition in the data, which allows me to use within-theater variation.

The magazine reported information on a sample of movie theaters within a sample of cities, with the aim of providing the big picture of the status of the movie industry and attendance in the United States. Let us remember television was only starting to develop in those years, and therefore *Variety* was the main source 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, and 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 the movie had been playing in that theater, as well as whether the movie was a rerun, and an estimate of the movie theater's weekly box office. Finally, *Variety* also provided the same information on the movies screened during the previous week. I use this information instead of the current-week information, because the revenue numbers are more accurate than the reported within-week projections.

¹² Paramount had already invested 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.

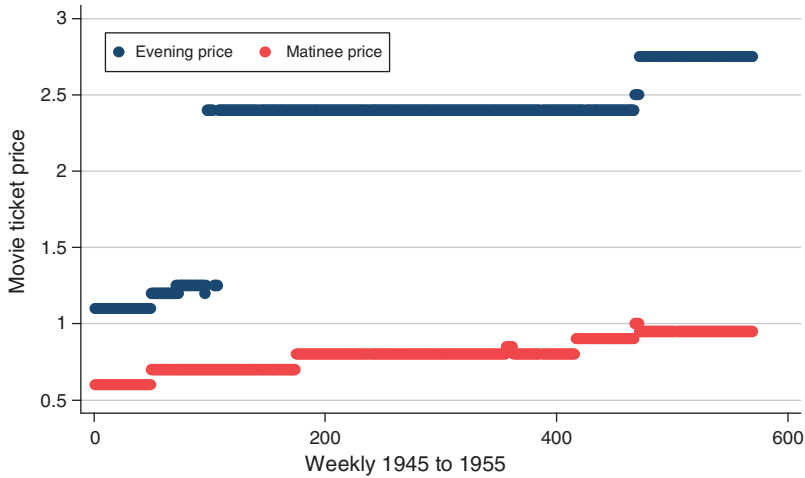


FIGURE 2. RADIO CITY MUSIC HALL TICKET PRICES BETWEEN 1945 AND 1955

Overall, I end up with 143,200 movie/theater/week observations. Theaters did not charge different prices for different movies, and therefore theaters showing several movies in a given week charged the same price for all movies and for different movies showing in different weeks. Figure 2 shows weekly admission prices for evening and matinee shows at Radio City Music Hall in New York City between January of 1945 and December of 1955. Despite the increase in prices over a span of 11 years, we see that theater prices remained constant for long periods of time.¹³ Given that uniform pricing was a widespread 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 level, leaving 2,685 observations for the main part of my empirical analysis without losing any true variation in the data.

I complemented the data with information from www.cinematreasures.com, which documents the existence and characteristics of old theaters. Because most of the theaters from the data no longer exist, the information on this site allowed me to check information on the number of seats during the period of time of my sample, as well as changes in theater name that may have occurred during the sample period.

Also note that during this time, television was introduced in the United States and spread quickly across cities and states to reach over 80 percent of US households by 1960. The quick spread of television provides a source of exogenous variation in competition faced by theaters, generally creating exit despite strategic considerations (Takahashi 2011). Before presenting summary statistics and proceeding with the empirical analysis, understanding the kind of variation in TV adoption as an exogenous source of theater competition is therefore useful. Using data from Gentzkow (2006), I find that, as expected, bigger cities were early adopters of television (New York City, Chicago, Los Angeles, and Washington, DC) and smaller cities were late adopters (Portland, OR, and Lincoln, NE). We can assume that cities

¹³I chose Radio City Music Hall in New York City because *Variety* reported prices for this theater for every week during the 11 years for which I collected data.

TABLE 1A—LIST OF VARIABLES, DEFINITIONS, AND SOURCES

Variable name	Definition	Data source
Evening and matinee price	Prices charged in the theater in week t	Weekly <i>Variety</i> issues from 1945 to 1955
Box office revenue	Revenues reported at the theater level in week t about week $t - 1$	Weekly <i>Variety</i> issues from 1945 to 1955
Admissions	Reported box office revenue divided by evening price	Weekly <i>Variety</i> issues from 1945 to 1955
VI ever?	Dummy variable = 1 if theater is owned by a studio at any point in time between 1945 and 1955; = 0 otherwise.	Weekly <i>Variety</i> issues from 1945 to 1955
VI?	Dummy variable = 1 if theater is owned by a studio at time t ; = 0 otherwise.	Weekly <i>Variety</i> issues from 1945 to 1955
Seats	Number of seats in the theater	Weekly <i>Variety</i> issues from 1945 to 1955, www.cinematreasures.org
TV	Number of years since TV was first introduced in the city	Data from Gentzkow (2006)
Pctg. integ. theater in city	Percentage of theaters owned by studios in the city at time t	<i>Movie Fact Yearbook</i> 1945 to 1955
HHI	Hirschman-Herfindhal Index using shares of the number of theaters by theater chain	<i>Movie Fact Yearbook</i> 1945 to 1955
Year	Yearly time trend that goes from 1 to 11 (1945 to 1955)	
VI, studio movie?	Dummy variable = 1 if movie is distributed by same studio that owns theater at time t ; = 0 otherwise.	Weekly <i>Variety</i> issues from 1945 to 1955, AFI Archive Data
VI ever, studio movie?	Dummy variable = 1 if movie is distributed by same studio that owned theater at any point in time between 1945 and 1955; = 0 otherwise.	Weekly <i>Variety</i> issues from 1945 to 1955, AFI Archive Data
Movie big five?	Dummy variable = 1 if movie is distributed by studios Warner, Paramount, RKO, Fox, or MGM; = 0 otherwise.	Weekly <i>Variety</i> issues from 1945 to 1955, AFI Archive Data
Movie little three?	Dummy variable = 1 if movie is distributed by studios Columbia, Universal, or United Artists; = 0 otherwise.	Weekly <i>Variety</i> issues from 1945 to 1955, AFI Archive Data

Note: This table defines all variables used in the empirical analysis and describes their sources.

in my sample follow a similar pattern to the United States as a whole in television adoption.

Table 1A describes each one of the variables I use in my empirical analysis and their source, whereas Table 1B reports summary statistics of the data at the theater/year level. First of all, note the percentage of observations belonging to theaters that at some point were owned by a studio is 56 percent, whereas the percentage of integrated theaters is 32 percent. This table shows that the average evening price is \$1, ranging from 0.25 to 3.6, and that integrated theaters charged on average (across cities and years) \$0.11 less than independent theaters and \$0.21 less than after studio separation. The average price for a matinee show is \$0.60 where integrated theaters charged less than after separation. On average, theaters collected around \$13,000 and sold 13,000 tickets per week. The average theater in the sample has 1,590 seats and all theaters in the sample have one screen. Theaters that were ever integrated collected higher box office revenues and sold more tickets than independent theaters

TABLE 1B—SUMMARY STATISTICS AT THE THEATER/YEAR AND THEATER/WEEK LEVEL

Variable	Mean	SD	VI Ever = 0	VI Ever = 1 and VI = 0	VI Ever = 1 and VI = 1	Difference		
			(1)	(2)	(3)	(2) – (1)	(3) – (1)	(3) – (2)
<i>Theater/year level data</i>								
Evening price	1.00	0.40	1.019 0.417	1.122 0.478	0.909 0.284	0.103*** (0.022)	–0.11*** (0.016)	–0.213*** (0.020)
Matinee price	0.60	0.23	0.629 0.275	0.657 0.207	0.530 0.155	0.028** (0.013)	–0.099 (0.010)	–0.127*** (0.009)
VI?	0.32	0.46	0 —	0 —	1 —	0 —	1 —	1 —
VI ever?	0.56	0.50	0 —	1 —	1 —	1 —	1 —	0 —
Box office revenues	12,961.67	12,465.38	9,547.798 7,328.036	14,784.230 14,680.950	16,277.320 14,904.430	5,236.427*** (521.3)	6,729.522*** (495.79)	1,493.09* (784.345)
Tickets sold	13,114.16	9,132.09	10,108.320 7,512.389	12,741.090 6,873.640	17,325.760 10,629.810	2,632.772*** (367.825)	7,217.44*** (396.59)	4,584.67*** (493.823)
TV	2.84	2.83	2.864 2.847	4.737 2.717	1.569 2.093	1.873*** (0.141)	–1.295*** (0.112)	–3.168*** (0.125)
Pctg. integ. theater in city	12.04	13.85	10.024 13.055	8.080 13.169	17.300 13.765	–1.945*** (0.659)	7.276*** (0.59)	9.220*** (0.716)
HHI (by theater number)	1,075.95	1,131.19	1,238.320 1,425.546	971.748 743.881	929.683 836.400	–266.577*** (62.524)	–308.638*** (53.268)	–42.066 (42.409)
<i>Theater characteristics</i>								
Seats	1,590.69	1,046.69	1,476.24 986.26	2,174.61 1,032.05	2,276.36 1,118.76	698.38*** (50.42)	800.13*** (46.12)	101.75* (57.45)

Notes: The first half of this table presents summary statistics of all variables used in this paper (2,685 theater/year observations for 393 theaters). The second part of the table provides summary statistics by whether the theater was never integrated (VI EVER = 0), formerly integrated (VI EVER = 1 and VI = 0) and currently integrated (VI EVER = 1 and VI = 1). The last three columns shows differences across all three groups of theaters in columns indicated as 1, 2, and 3. In total, the sample contains 2,685 observations of which 1,192 observations are from independent theaters (never integrated), 590 are of theaters formerly integrated, and 903 are of currently integrated theaters. Numbers in second row of headings are standard deviation for the averages in columns 1, 2, and 3. Standard errors are in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

due to larger sizes (more seats). Finally, the empirical analysis also includes variables that measure the local market structure. These variables are the number of years since TV was introduced in a market, the percentage of theaters owned by studios in a city, and the Hirschman-Herfindhal Index (HHI hereafter) using theater counts by theater circuit and city. I find that independent theaters were located in more concentrated markets and markets that adopted television earlier than theaters that were ever integrated. Not surprisingly, integrated theaters were located in cities with higher percentages of integrated theaters.

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

TABLE 2—SUMMARY STATISTICS AT THE THEATER/MOVIE LEVEL

Variable	Mean	SD	VI ever?		Difference (= 0) − (= 1)	VI?/VI ever? = 1		Difference (= 0) − (= 1)
			= 0	= 1		= 0	= 1	
VI ever?	0.616	0.486						
VI?	0.347	0.476						
VI ever, studio movie?	0.187	0.390						
VI, studio movie?	0.155	0.362						
Movie big five?	0.525	0.499	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?	0.306	0.461	0.341	0.284	0.056***	0.296	0.275	0.021***
			0.002	0.002	0.002	0.002	0.002	0.003

Notes: This table provides summary statistics of vertical-integration-related variables at the theater/movie level (143,200 observations). The second part of the table shows differences in propensity to show movies from the big five studios (MGM, WB, Paramount, RKO, and Fox) and the three smaller 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.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

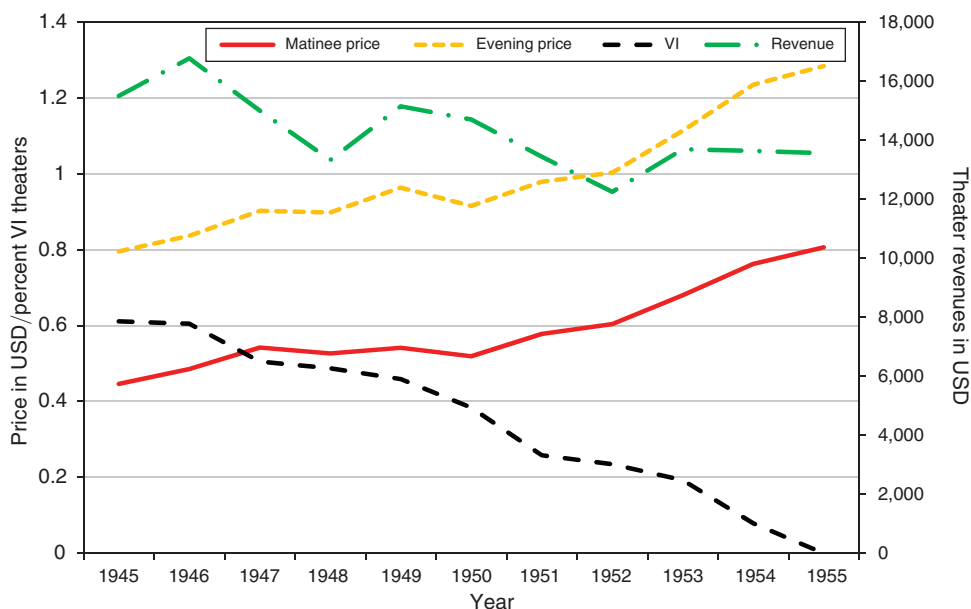


FIGURE 3. PRICING AND VI 1945–1955

Table 2 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 showed more movies from the big five studios and fewer movies from the three minors than independent theaters. Within the subsample of theaters ever owned by a studio, theaters showed more movies from the major five studios and fewer from the minor three studios when they were integrated than after separation.

Because time variation is relevant in this project, Figure 3 presents the evolution of the main variables of interest across years. This figure displays yearly averages for revenues and for evening and matinee prices, as well as the share of integrated

movie theaters in the sample. Evening and matinee prices increased 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 percent (because the sample is composed of large cities only) in 1945 and goes down to 0 percent in 1955. Finally, average reported yearly revenues go down from almost \$16,000 to \$14,000. Because I compute admission tickets as the ratio between revenues and evening-show prices, ticket sales go down faster than revenues given the relatively rapid increase in prices observed in the data. The empirical analysis below takes into account these patterns and relies on within-market and within-theater variation across years to estimate the relation between prices and vertical integration.

III. Empirical Evidence

In this section, I empirically test the relation between prices, admissions, and revenues and vertical integration at the theater level. I first provide cross-sectional evidence, followed by evidence in time trends before and after the theater divestiture, and finally evidence of a difference-in-differences estimation around the time of theater divestiture, controlling for nonlinear city-specific time trends. I leave robustness checks and the discussion of alternative explanations for the following section.

A. Cross-Sectional Evidence

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

$$(1) \quad y_{ijt} = \alpha_0 + \alpha_1 VI_Ever?_{ij} + \alpha_2 VI?_{ijt} + \alpha_3 X_{ijt} + \gamma_t + \rho_j + \epsilon_{ijt},$$

where y_{ijt} stands for the dependent variable (evening and matinee price, admissions, and box office revenues) in theater i , city j , and year t . I use the first specification above to estimate cross-sectional differences between studio-owned and independent theaters. Independent variables in this specification are a dummy variable $VI_Ever?_{ij}$ that takes the value of 1 if theater i in city j was ever integrated and 0 otherwise, a dummy variable $VI?_{ijt}$ 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 seats at theater i , the number of years since television was introduced in city j , the percentage of integrated theaters in city j in year t , and the theater market HHI in city j in year t . Including both dummies $VI_Ever?_{ij}$ and $VI?_{ijt}$ is important to differentiate price differences due to unobservable theater characteristics present before and after vertical divestiture from those differences due to vertical integration. This first specification also includes city and year fixed effects to capture city-specific and year-specific unobservables correlated with pricing decisions at the theater level.

The first column in Table 3 shows that integrated theaters charged 5 cents less than independent theaters. The second column introduces city $\times$ year fixed effects to perfectly control for differences in local market structure and television penetration

TABLE 3—CROSS-SECTIONAL RELATIONSHIP BETWEEN VERTICAL INTEGRATION AND ECONOMIC OUTCOMES WITH THEATER/YEAR LEVEL DATA

Dependent var.	Evening price		Matinee price		Admissions		Box office revenue	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VI Ever?	−0.015 (0.032)	−0.017 (0.036)	−0.059*** (0.017)	−0.062*** (0.018)	53.997 (642.144)	−44.491 (690.596)	491.824 (867.001)	507.547 (903.250)
VI?	−0.052** (0.020)	−0.044* (0.026)	0.002 (0.011)	0.007 (0.012)	1,467.529*** (515.365)	1,444.326** (604.195)	412.832 (662.743)	245.863 (828.022)
Seats	0.000002 (0.00001)	0.000003 (0.00001)	−0.00002*** (0.000001)	−0.00002*** (0.000001)	5.813*** (0.472)	5.783*** (0.493)	7.147*** (1.335)	7.159*** (1.413)
TV	0.023*** (0.007)		−0.006 (0.004)		−225.143 (216.645)		15.315 (197.584)	
Pctg. integ. theater in city	−0.0003 (0.001)		−0.00005 (0.0001)		24.304* (12.960)		23.241* (12.140)	
HHI	−0.000004 (0.00001)		0.000005 (0.0001)		−0.005 (0.088)		−0.032 (0.105)	
Constant	0.856*** (0.034)	1.021*** (0.031)	0.522*** (0.017)	0.669*** (0.016)	4,107.337*** (769.819)	1,690.756** (709.295)	−1,099.792 (2,167.922)	−993.125 (2,100.849)
City FE	Yes	No	Yes	No	Yes	No	Yes	No
Year FE	Yes	No	Yes	No	Yes	No	Yes	No
City/Year FE	No	Yes	No	Yes	No	Yes	No	Yes
Theater FE	No	No	No	No	No	No	No	No
Observations	2,685	2,685	2,685	2,685	2,685	2,685	2,685	2,685
R ²	0.48	0.51	0.50	0.55	0.64	0.69	0.59	0.62

Note: Standard errors clustered by theater in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

across markets and years. Results in column 2 show that integrated theaters charged 4.4 cents less for evening shows.

Table 3 also runs the same regression specification on matinee prices, admissions, and box office revenues. Columns 3 and 4 show that theaters that were ever integrated in my sample charged 60 cents less for their matinee shows and did not change (again) their prices after theater divestiture. Columns 5 to 8 provide evidence that theaters sold more admission tickets and collected higher revenues while integrated even after controlling for city, year, and city/year fixed effects.

B. Time-Trend Changes after Divestiture

Given the graphical evidence in Figure 2, we should not expect to find an immediate change in prices after theater divestiture. For this reason, I introduce a second specification to estimate differences in price changes over time such that

$$(2) \quad y_{ijt} = \alpha_0 + \alpha_1 VI_{ijt}^? + \alpha_2 Year_t + \alpha_3 VI_Ever_{ij}^? \times Year_t \\ + \alpha_5 VI_{ijt}^? \times Year_t + \alpha_6 X_{it} + \gamma_t + \rho_i + \epsilon_{ijt},$$

where I now include as independent variables a time trend $Time_t$ (years since 1944) and its corresponding interactions with the dummies $VI_Ever_{ij}^?$ and $VI_{ijt}^?$. This second specification also includes theater fixed effects and effectively compares the

TABLE 4—TIME-TREND RELATIONSHIP BETWEEN VERTICAL INTEGRATION AND ECONOMIC OUTCOMES

Dependent variable	Evening price (1)	Matinee price (2)	Admissions (3)	Box office revenue (4)
VI?	0.203*** (0.069)	0.146*** (0.034)	2,043.383* (1091.862)	2,387.336** (1192.539)
TV	0.024*** (0.007)	0.005 (0.004)	-107.422 (177.511)	185.243 (151.469)
Pctg. integ. theater in city	-0.0004 (0.001)	0.0005* (0.0003)	0.550 (11.459)	4.879 (11.128)
HHI	0.00001 (0.00001)	0.00001** (0.000003)	0.023 (0.077)	0.105 (0.082)
VI Ever? $\times$ year	0.036*** (0.010)	0.016*** (0.005)	-138.317 (133.386)	173.681 (139.650)
VI? $\times$ year	-0.028*** (0.008)	-0.022*** (0.004)	-145.419 (179.571)	-195.166 (174.317)
Year	0.008 (0.006)	0.022*** (0.004)	-542.515*** (139.854)	-351.674*** (119.993)
Constant	0.744*** (0.041)	0.372*** (0.021)	16,654.214*** (638.467)	13,317.737*** (643.566)
Theater FE	Yes	Yes	Yes	Yes
Observations	2,685	2,685	2,685	2,685
R^2	0.73	0.71	0.84	0.92

Note: Standard errors clustered by theater in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

evolution of the outcome variable before and after vertical separation within my sample period.^{14, 15}

Table 4 shows results of running specification (2) for all four outcome variables in this study. Columns 1 and 2 show that integrated theaters increased prices (evening and matinee, respectively) more quickly after separation from their studios and at the same rate as independent studios before separation. This finding is consistent with graphical evidence in Figure 1. Columns 3 and 4 examine the evolution of admission tickets and box office revenues. Contrary to prices, average weekly admission sales per year went down at statistically similar rates in integrated and independent theaters.

C. Difference-in-Differences Evidence Controlling for City-Specific Time Trends

One potential concern with results in Tables 3 and 4 is that they may be driven by differences in price trends across cities that cannot be captured by the time-varying

¹⁴ In the paper, I show results in levels for the sake of consistency across tables, but results do not change qualitatively if I use logs instead of levels.

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 $VI_{it}^?$ accounts for the fact that given the restriction imposed by the theater fixed effect, prices of integrated theaters grew more slowly while integrated than after divestiture.

controls (variables measuring TV penetration and market structure) and year fixed effects. For this reason, I run the following specification that focuses on the effect of divestiture on a theater's prices, admissions, and box office revenue right around the theater divestiture, controlling for theater-specific unobservable characteristics (theater fixed effects) as well as city-specific nonlinear time trends (city/year fixed effects). This new specification is as follows:

$$(3) \quad y_{ijt} = \alpha_0 + \alpha_1[+4YearsBefore]_{ijt} + \alpha_2[1to3YearsBefore]_{ijt} \\ + \alpha_3[1to3YearsAfter]_{ijt} + \alpha_4[+4YearsAfter]_{ijt} \\ + \alpha_6 X_{jt} + \gamma_{jt} + \rho_i + \epsilon_{ijt}.$$

These specifications include dummy variables that take the value of 1 if I observe an integrated theater four or more years before studio separation, one to three years before separation, one to three years after separation, and four or more years after separation, respectively, and 0 otherwise. These specifications also include theater fixed effects to control for differences in levels across theaters and city/year fixed effects to control for changes in prices in independent theaters that may be contemporary or simultaneous to changes in prices in integrated theaters. All coefficients are capturing effects relative to movements of outcome variables in independent theaters located in the same city and year, and therefore they can be interpreted as results of a difference-in-differences approach focusing on the treated group before and after treatment.

Tables 5A and 5B run specification (3) under three different samples for each outcome variable. The first sample (columns 1 and 4 in both tables) contains observations of integrated theaters within one year of divestiture and all observations from independent theaters. The second sample (columns 2 and 5) adds observations of integrated theaters within two years of divestiture and all observations from independent theaters, whereas the third sample contains all observations (columns 3 and 6) from all theaters. I divide the sample into these three subsets to focus on the immediate effects after divestiture (within one year) while progressively allowing the effect to show later (within two years and after four years).

Results in Table 5A show the impact of vertical separation on evening prices are not immediate, because no statistically significant change occurs within one, two, or three years after separation (columns 1 and 2). The result shows four or more years later only in column 3. On the one hand, this finding is not unexpected because uniform pricing and price stickiness were common practices and probably attenuated any sudden increases in prices after separation. On the other hand, and even if expected, I explain later that management turnover and stockholder composition changes were slow to occur after studio separation and this fact may have prolonged this stickiness for longer than usual. Columns 4 to 6 show that no differences occur in changes in matinee prices that are not captured by city/year fixed effects. This result is consistent with the results in Table 3.

Finally, Table 5B runs the same specifications as Table 5A with admissions and box office revenues as outcome variables. Evidence in Table 5B shows that

TABLE 5A—DIFFERENCE-IN-DIFFERENCES ESTIMATION WITH THEATER AND CITY/YEAR FIXED EFFECTS

Dependent variable	Evening price			Matinee price		
	(1)	(2)	(3)	(4)	(5)	(6)
4 plus years prior			−0.064 (0.039)			−0.004 (0.021)
1 to 3 years prior	−0.016 (0.029)	−0.026 (0.029)	−0.033 (0.022)	0.016 (0.020)	0.009 (0.018)	0.002 (0.014)
1 to 3 years after	−0.049 (0.033)	−0.022 (0.027)	−0.007 (0.021)	−0.030 (0.021)	−0.010 (0.019)	−0.004 (0.013)
4 plus years after			0.116* (0.061)			0.029 (0.027)
Constant	1.004*** (0.026)	1.038*** (0.023)	0.868*** (0.030)	0.597*** (0.019)	0.622*** (0.018)	0.487*** (0.018)
Theater FE	Yes	Yes	Yes	Yes	Yes	Yes
Year/city FE	Yes	Yes	Yes	Yes	Yes	Yes
Years around divestiture	−1 to +1	−2 to +2	All	−1 to +1	−2 to +2	All
Observations	1,646	1,894	2,685	1,646	1,894	2,685
R ²	0.81	0.80	0.76	0.80	0.79	0.77

Note: Standard errors clustered at the theater level in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

TABLE 5B—DIFFERENCE-IN-DIFFERENCES ESTIMATION WITH THEATER AND CITY/YEAR FIXED EFFECTS

Dep. var.	Admissions			Box office revenue		
	(1)	(2)	(3)	(4)	(5)	(6)
4 plus years prior			3,980.763*** (894.428)			1,948.158** (766.787)
1 to 3 years prior	393.853 (404.733)	676.849* (399.008)	1,483.807*** (447.635)	280.021 (438.278)	306.470 (425.701)	948.602** (470.920)
1 to 3 years after	−358.662 (347.809)	−828.791** (343.989)	−579.800 (402.078)	−33.701 (520.111)	−457.034 (419.253)	−193.890 (508.486)
4 plus years after			−1,576.435** (760.816)			−48.436 (963.871)
Constant	11,867.316*** (384.490)	12,927.824*** (370.918)	14,262.025*** (608.323)	11,160.599*** (338.198)	12,679.551*** (335.662)	12,375.943*** (487.502)
Theater FE	Yes	Yes	Yes	Yes	Yes	Yes
Year/city FE	Yes	Yes	Yes	Yes	Yes	Yes
Years around divestiture	−1 to +1	−2 to +2	All	−1 to +1	−2 to +2	All
Observations	1,646	1,894	2,685	1,646	1,894	2,685
R ²	0.93	0.92	0.89	0.95	0.95	0.94

Note: Standard errors clustered at the theater level in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

integrated theaters sold more tickets and collected more revenues prior to separation and that this decrease was perhaps faster than in independent theaters (because I control for city-specific time trends) in the case of admission sales but statistically the same in terms of box office revenues.¹⁶

IV. Robustness Checks

I implement a first robustness check by running the same cross-sectional specifications from Table 3 with theater/movie/week-level data accounting for whether the movie playing is distributed by the same studio that owns (or at some point owned) the theater. I show results of this exercise in Table 6 from columns 1 to 8.

Columns 1 and 2 show that movies from the five majors and three minors were screened in theaters with lower prices (between 4.4 and 3.5 cents lower). Not surprisingly, due to uniform pricing practices (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 Table 3. Columns 3 and 4 show qualitatively similar results for matinee prices.

Finally, columns 5 to 8 repeat the same exercise with admissions per movie and box office per movie. These specifications show that integrated theaters sold more admission tickets and collected more revenues than independent theaters even after accounting for whether a big studio distributed the movie. These theaters did not seem to collect higher revenues when they screened movies of their own studio. Overall, movies from the five big 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 Table 3.

Findings in Table 6 seem to suggest two main channels for the negative relation between vertical integration and prices. First, integrated theaters operate at a lower cost, which 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 tickets at lower prices than other studios seems to suggest these studios were concerned with high prices and therefore actively looked for outlets that charged lower prices.¹⁷

Another robustness check takes 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 introduced noise in revenue and admissions data, but not in price reporting. Table 7 addresses this problem by dropping all observations from cities and years in which *Variety* reported revenues jointly for a group of theaters. Columns 1 and 2 in Table 7 and columns 3

¹⁶ Although not shown here, the results in this section and Tables 3, 4, 5A, and 5B are qualitatively robust to the use of theater-week level data. The results are also robust when I repeated the full analysis with the subsample of 148 theaters (46 independent and 102 integrated) that I observed in every year of my sample period. The only exception are matinee prices in formerly integrated theaters, which do not seem to differ from independent theaters in specification (1).

¹⁷ Although I do not show them here, I have also run these specifications with movie fixed effects, and I find that integrated theaters sold evening and matinee prices for 2 cents less than independent theaters. This evidence is available upon request.

TABLE 6—CROSS-SECTIONAL ANALYSIS WITH THEATER-MOVIE-WEEK LEVEL DATA

Dep. var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VI ever?	−0.016 (0.034)	0.013 (0.028)	−0.014 (0.020)	−0.032** (0.014)	−1,501.55** (747.834)	−148.737 (660.081)	−1,510.730 (1,000.595)	377.994 (901.679)
VI?	0.008 (0.026)	−0.023 (0.015)	−0.0004 (0.013)	0.003 (0.009)	3,067.23*** (550.372)	1,276.35** (533.808)	3,017.06*** (782.968)	813.963 (627.936)
VI, studio movie?	0.004 (0.042)	−0.002 (0.024)	0.024 (0.017)	0.008 (0.011)	952.895 (995.355)	1,502.49* (817.468)	760.368 (1,405.370)	1,209.330 (843.334)
VI ever, studio movie?	0.002 (0.048)	−0.015 (0.027)	−0.016 (0.015)	−0.006 (0.010)	684.584 (866.219)	−266.010 (743.502)	318.863 (2,057.943)	−961.391 (1,700.512)
Movie big five?	−0.044** (0.023)	−0.043** (0.020)	−0.026*** (0.010)	−0.019** (0.008)	1,484.36*** (337.603)	1,295.82*** (244.336)	1,650.77** (714.104)	1,402.57*** (541.499)
Movie little three?	−0.033 (0.022)	−0.036* (0.020)	−0.017* (0.010)	−0.017** (0.008)	393.621* (221.411)	160.561 (205.750)	86.603 (306.626)	−240.495 (266.871)
Seats	0.000 0.000	0.000 0.000	−0.00001 (0.0001)	−0.00001** (0.00001)	5.106*** (0.557)	5.376*** (0.490)	6.051*** (1.476)	6.644*** (1.296)
TV	0.073*** (0.005)	0.024*** (0.005)	0.040*** (0.002)	−0.002 (0.003)	38.720 (98.067)	−86.124 (250.129)	1038.37*** (197.009)	162.128 (228.018)
Pctg. integ. theater in city	0.003*** (0.001)	−0.0002 (0.001)	0.0001 (0.0001)	0.0003 (0.0003)	85.264*** (22.091)	22.846* (13.850)	128.302*** (33.838)	23.298* (12.609)
HHI	−0.00004*** (0.00001)	−0.000001 (0.001)	0.000002 (0.00001)	0.00001** (0.00001)	−0.771*** (0.167)	0.085 (0.100)	−1.427*** (0.373)	0.091 (0.101)
Constant	0.797*** (0.050)	0.819*** (0.033)	0.516*** (0.024)	0.494*** (0.015)	1,721.140 (1,086.787)	3,946.56*** (940.846)	−3,293.240 (3,025.680)	−1,752.360 (2,517.783)
City FE	No	Yes	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes	No	Yes
Observations	143,200	143,200	143,200	143,200	143,153	143,153	143,153	143,153
R ²	0.27	0.54	0.29	0.56	0.32	0.39	0.28	0.44

Notes: This table shows cross-sectional OLS regressions for all four outcome variables using data at the theater-movie level. Four variables are in this table that have not appeared before in the empirical analysis:

- (i) “VI, Studio Movie?” equals 1 if the integrated theater at a given point in time shows a movie of that same studio, and 0 otherwise.
- (ii) “VI Ever, Studio Movie?” equals 1 if the 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.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

and 4 repeat the analysis in Tables 3 and 4, respectively, and show qualitatively similar results. If anything, columns 3 and 4 find that admissions and revenues go down at a faster rate in integrated theaters than in independent theaters.

A final concern is whether the studio-specific timing of divestiture may endogenously tilt results toward finding no immediate price change after divestiture and price differences before divestiture and after four years. Although one may argue the US Supreme Court ruling to separate studios from their theater holdings went against the studios’ will, different studios signed their decrees in different years, and some of them sold some theaters before signing their decree as a way to signal good faith and conduct while negotiating with the Department of Justice. Therefore, a valid concern is that studios optimally chose their timing to divest to maximize their theaters’ sale value.

TABLE 7—RESULTS AFTER DROPPING OBSERVATIONS
WITH JOINT REPORTING USING THEATER/YEAR DATA

Dependent variable	Adm (1)	BOR (2)	ln [Adm] (3)	ln [BOR] (4)
VI ever?	−472.166 (730.085)	48.353 (965.735)		
VI?	1,135.698* (657.351)	−193.615 (976.262)	0.029 (0.054)	0.174*** (0.065)
Seats	6.030*** (0.510)	7.452*** (1.503)		
TV			−0.002 (0.009)	0.008 (0.009)
Pctg. integ. theater in city			0.0003 (0.001)	0.0003 (0.001)
HHI			−0.00001** (0.00001)	−0.00001 (0.001)
VI ever? × year			−0.015* (0.008)	0.008 (0.009)
VI? × year			−0.0004 (0.008)	−0.019** (0.008)
Year			−0.043*** (0.008)	−0.021** (0.009)
Constant	1,170.108 (726.520)	−1,705.104 (2,227.986)	9.542*** (0.036)	9.228*** (0.040)
City/year FE	Yes	Yes	No	No
Year FE	No	No	No	No
Theater FE	No	No	Yes	Yes
Observations	2,442	2,442	2,442	2,442
R ²	0.72	0.63	0.91	0.91

Note: Robust standard errors in parentheses, clustered at the theater level.

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

* Significant at the 10 percent level.

For this reason, Table 8 presents results from OLS regressions of ticket prices on the year a theater was separated from its parent studio. Columns 1 to 4 show that theaters sold later in the sample period did not sell tickets at higher prices than those sold during the first half of the sample. Columns 5 to 8 examine differences in prices by studio-separation year and show no robust differences between theaters sold earlier or later. Even though these findings are not evidence that studios did not choose their divestiture timing strategically, they are suggestive evidence that strategic timing did not manifest itself through ticket prices.¹⁸

¹⁸ Tables A1, A2, and A3 in the Appendix run studio-specific regressions for all three specifications. Table A1 shows replication results from specification (1) at the studio level and suggest that main results in the paper come from lower prices at MGM, Warner, and RKO theaters. Table A2 runs studio-specific regressions of specification (2) and finds results overall consistent with findings in Table 4. Finally, Table A3 runs specification (3) using city/year-level regressors as well as theater and year fixed effects because of data limitations. Results are also robust, and only column 4 (RKO) does not yield a statistically significant coefficient.

TABLE 8—DID STUDIOS SELL THEATERS IN YEARS WHEN TICKET PRICES WERE HIGHER?

Dep. var.	Evening price (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sold before 1951?	0.023 (0.037)	0.028 (0.018)	0.010 (0.047)	0.023 (0.024)				
Sold in 1945?					0.365* (0.210)	0.017 (0.056)	0.401* (0.229)	0.041 (0.077)
Sold in 1946?					−0.039 (0.082)	−0.060 (0.056)	−0.003 (0.122)	0.048 (0.063)
Sold in 1947?					0.004 (0.097)	−0.006 (0.062)	0.041 (0.132)	0.092** (0.046)
Sold in 1948?					0.161 (0.142)	0.110 (0.081)	0.197 (0.168)	0.235*** (0.074)
Sold in 1949?					−0.063 (0.049)	−0.068* (0.040)	−0.027 (0.102)	0.046 (0.041)
Sold in 1950?					−0.072 (0.067)	−0.065 (0.052)	−0.036 (0.112)	0.055 (0.048)
Sold in 1951?					−0.036 (0.096)	−0.038 (0.035)		0.058 (0.036)
Sold in 1952?					0.111 (0.118)	−0.020 (0.050)	0.147 (0.149)	0.059 (0.055)
Sold in 1953?					−0.006 (0.045)	−0.002 (0.028)	0.030 (0.100)	0.094*** (0.036)
Sold in 1954?					−0.132** (0.066)	−0.110*** (0.032)	−0.096 (0.111)	
Constant	0.987*** (0.032)	0.772*** (0.055)	0.987*** (0.032)	0.741*** (0.024)	1.019*** (0.025)	0.788*** (0.058)	0.983*** (0.093)	0.629*** (0.050)
City FE	No	Yes	No	Yes	No	Yes	No	Yes
Year FE	No	Yes	No	Yes	No	Yes	No	Yes
Sample	All	All	Studio owned	Studio owned	All	All	Studio owned	Studio owned
Observations	2,685	2,685	1,493	1,493	2,685	2,685	1,493	1,493
R ²	0.00	0.47	0.00	0.59	0.02	0.48	0.05	0.60

Notes: This table presents results from OLS regressions using theater/year level data and city and year fixed effects. Standard errors clustered at the theater level in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

V. Discussion and Alternative Explanations

Two main results in the paper deserve further discussion before one considers alternative explanations. The first result is that integrated theaters charge 4 percent lower prices (4 cents over an average price of 1 dollar) than independent theaters. This estimate for savings due to the elimination of double marginalization is reasonable given that others have studied this same question and found qualitatively similar results in other industries. For example, Villas-Boas (2007) finds a potential decrease in price of between 2.2 percent and 3.2 percent when comparing a fully disintegrated vertical chain with different models of integration in the yogurt retailing industry. Ito and Lee (2007) examine airline ticket pricing and show that ticket

prices combining flights from airlines that code-share are 6.4 percent higher than “fully integrated” tickets and that ticket prices combining flights of fully independent airlines are 11.6 percent higher than those of “fully integrated” tickets. Given these magnitudes, my finding of 4 percent falls in the middle of these estimates.

The second main result in the paper is that the impact of organizational form on prices takes four or more years to be statistically significant in the data. Although the variation in the data does not allow me to investigate further the source of this result, I can speculate about the reasons consistent with this delay. On the one hand, price stickiness and rigidity are embedded in the movie industry.¹⁹ The literature has documented immediate price responses to changes in organizational form in other industries such as gas retailing (Hastings 2004) and airline travel (Ito and Lee 2007).²⁰ These sectors are ones in which firms change prices often (weekly or even daily), consumers are not surprised by the changes, and therefore firms may not be afraid of antagonizing consumers (Anderson and Simester 2010). In the movie exhibition industry,²¹ prices do not change with such regularity: movie theaters charge the same prices for all movies and they seldom change prices within a year.²²

In my dataset, prices in both integrated and independent theaters (slowly) increase over time (see Figure 1). Therefore, the data do not show that prices remain constant for four years after studio separation. Instead, the evidence suggests the impact of studio separation on prices takes four or more years to be statistically noticeable after including theater and city $\times$ year fixed effects. Whereas the former wash away initial price differences among theaters, the latter control perfectly for city-specific time trends. This interpretation of the evidence is consistent with what it is known in the macroeconomics literature (Taylor 1980; Nakamura and Steinsson 2013) as the “contract multiplier” when prices are strategic complements in competitive environments. When such a strategic complementarity exists, a shock in the cost structure of a firm may not lead to a differential in price in equilibrium, because rival firms (that did not experience the shock) have an incentive to follow price increases (of the firms experiencing the shock). This explanation is consistent with my findings that independent theaters may have increased their prices following price changes of formerly integrated theaters.

On the other hand, the slow price reaction to changes in organizational form may also be due to a slow transition in governance and control of the newly created theatrical firms after studio divestiture. Following the divestiture, the composition of

¹⁹ Rigidity and path-dependence are the main reasons practitioners and researchers continuously cite to rationalize the fact that movie theaters charge the same ticket prices for blockbusters and flops, summer and winter seasons, small and large screens.

²⁰ More recently, e-book prices reacted (up) immediately to changes in ownership as a counter-example of this explanation.

²¹ Other examples of sticky prices in the literature are Young and Levy (forthcoming) showing that Coca-Cola bottles did not change prices over 70 years; Cecchetti (1986) on magazine prices changing only every three to six years; Carlton (1986) on B2B industrial good prices unchanged for several years; and, Kashyap (1995) on catalog prices of 12 retail goods not changing for 15 months.

²² This practice was established in the times of silent movies when movies were perceived as homogenous products and the only differentiation came from inputs the theaters introduced (which is why we see different uniform prices at different theaters). Similarly, the cost of movies does not change with time, because the cost of production is sunk and the marginal cost of producing an extra movie copy (extra reels) is constant. The use of revenue-sharing only exacerbates the absorption of cost differences.

the top management team and main shareholders of each theater company did not change rapidly. For example, Charles Skouras (brother of 20th Century Fox Pictures president Spyros Skouras) ran the theater division of 20th Century Fox. After the divestiture, he became the president of Fox West Coast Theaters and Fox National Theaters, Inc. Even if the theater separation from Fox studios was complete in both a legal and fiscal dimension, one would have difficulty arguing the Skouras brothers would not behave the same way they did before the divestiture.²³

In the case of Paramount, Leonard Goldenson had been the manager of the theatrical division since the mid-1930s and yet he reorganized United Paramount Theaters after the divestiture before becoming its president in 1951.²⁴ The company split occurred such that dual management would take place within a year and no stockholder received shares of both companies. Despite these restrictions, no limits were placed on how much stock of each company investors could purchase in the open market.²⁵ Therefore, unsurprisingly, management practices did not change immediately, because top executives and stockholders did not change either. Similar stories occurred in the cases of Warner, RKO, and MGM.²⁶

These facts suggest reasons why the effect of the change of ownership took a long time to show up in prices (after four years). Both an unusual price stickiness idiosyncratic to this industry (theaters do not change prices as often as other industries) and an unusually slow transition of the new theatrical firms in their new governance and executive teams explain this delay.

A. 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 US Supreme Court ruling, as was reflected in

²³ *TIME Magazine*, "Personality," August 11, 1952. A paragraph of this article details as follows:

Some five years ago, the antitrust division of the Department of Justice finally completed its Herculean task of dividing the producing end of the movie business from the theater-managing end, in which the Skourases had grown up. Spyros' producing company thereupon sold its stock in Charlie's theater company. The division was a legal and fiscal one, but it would take an agency far greater than the US Government to sever the blood ties which bind the Skourases together.

²⁴ Felicity Barringer, "Leonard Goldenson, Force Behind ABC, Is Dead at 94," *New York Times*, December 28, 1999.

²⁵ *TIME Magazine*, "Paramount Gives In," March 7, 1949.

²⁶ The case of RKO is the simplest to analyze given that despite signing the decree in 1948 and splitting companies in 1950, Howard Hughes did not let go of his stock and influence until 1955 when the General Tire and Rubber Company purchased his interest in the movie business (*TIME Magazine*, "Retake at RKO," December 22, 1952).

On the other hand, Warner Brothers separated in 1953 into Warner Brothers Pictures and Stanley Warner Corporation, dividing every share of the old company into a half share of the two newly created companies. Simon Fabian (Fabian Enterprises), a friend of the Warner brothers, bought Stanley Warner Corporation and later would try to buy Warner Brothers Pictures together with Boston banker Serge Semenenko. Two of the Warner brothers remained active in the board of directors (*TIME Magazine*, "Boston to Hollywood," May 21, 1956).

Finally, MGM-Loew's hired Nicholas Schenck to run the company at separation in 1954 who then quit in 1955. Arthur Loew (grandson of the founder) took over after 35 years in the company and was replaced in 1956 by Joseph Vogel, who had managed the theatrical division since 1945 (*TIME Magazine*, "Personnel Changes," December 26, 1955, and January 21, 1957). The company finally split in 1959 when Tisch Industries purchased the theatrical interest.

price levels and evolution during the sample period examined in this paper. In this section, I argue this concern does not affect my results for two reasons.

A first explanation could be that after the US Supreme Court ruling all theaters competed for A-movies. This fact allowed second-run theaters (and other lower-run theaters as well) to become first-run theaters, thereby increasing prices everywhere (De Vany and Eckert 1991). Note this explanation would mean prices at independent theaters would go up more quickly 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 independent theaters.

A simpler second explanation is that these theaters were indeed showing different movies (different quality) during the whole period or they were obtaining movies from different studios in different years and therefore setting different average prices for the movie schedules. This possibility is again discardable for a number of reasons. Prior research has shown qualitatively (Kenney and Klein 1983) and quantitatively (Hanssen 2010) that all theaters showed movies from all studios and that blocks of movies rarely ever fill a theater's schedule. De Vany and Eckert (1991) explicitly describe "season contracts" as containing a number of movies lower (approximately well over half) than the entire studio production.²⁷

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

A third explanation consistent with organizational form driving theater costs (rather than pricing) would be one whereby vertical integration insulated local managers from market competition while allowing the sharing of management practices across theaters. 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 with whom they could share practices or a change in career concerns due to the divestiture. Moreover, if these practices were lowering costs, one would have difficulty arguing the newly independent theatrical firms disposed of them.

A fourth explanation would be one whereby managerial effort increases after vertical separation due to the fact that exhibitor managers are then capturing a higher share of the surplus. For this explanation to be valid, higher effort would somehow

²⁷ Not shown here and available upon request, I run specification (1) with movie fixed effects and using movie/theater/week-level data and find that integrated theaters were selling tickets at 2 cents less than independent theaters.

translate into higher prices and potentially higher revenues given the importance of fixed costs in the movie-exhibition business. Unfortunately, no clear channel links more effort to higher prices, and I observe revenues decreasing more rapidly in recently divested theaters. This evidence does not reject the possibility that exhibitor effort may have increased after vertical separation, but it is at odds with the increase in effort being responsible for the faster increase in prices over time in divested theaters.

Finally, formerly integrated theaters might have gone through major renovation and refurbishment after divestiture and increased their prices accordingly after reopening their doors. This explanation would be consistent with the delay in the effect on price, but would have little to say regarding double marginalization as an explanation. Figure 1 shows that the main result of the paper is robust to including only those theaters that are always reported by *Variety* and do not disappear from the data. Similarly, anecdotal evidence suggests the golden age of movie palaces peaked under studio ownership and decayed after the studio system broke down.²⁸

VI. Concluding Remarks

This paper empirically estimates the impact of the US Supreme Court ruling in the 1948 United States versus Paramount antitrust case on movie ticket prices, admissions, and box office revenues. After several years of litigation and rounds of appeals, the US Supreme Court banned bundling practices and mandated the five major studios in the US movie industry to sell their theatrical divisions. As a result, an econometric study of the impact of such judiciary resolution represents a unique opportunity for studying 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 1911 Standard Oil case and the 1982 AT&T case) whereby antitrust authorities requested the dissolution of firms under scrutiny. This type of sentence is not free of huge transaction and reorganization costs on the firm's side, and understanding its consequences on outcomes is important to evaluate its benefits and costs. This paper contributes to this goal 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 they charged, statistically speaking, the same prices after studio separation. I also find that theaters that had ever been owned by a studio charged 6 cents less for matinees, regardless of whether they were in fact integrated at the time. More importantly, integrated theaters increased

²⁸The World Wide Web is full of links that describe how competition between major studios was the cause of building movie palaces and of large investments in luxurious movie theaters. See the link (among many others) <http://www.dobywood.com/FoxTheatreAtlanta/Palacehistory.html>.

their prices (both evening and matinee) at faster rates than independent theaters after studio separation. Price differentials between integrated and independent studios took, statistically speaking, four or more years to surface. Institutional detail suggests this delay may be due to strategic pricing complementarities between formerly integrated and independent theaters, industry-specific price stickiness, and a slow managerial and governance transition after studio divestiture. Other results suggest that even though integrated theaters sold more admission tickets and collected more revenues than independent theaters, no difference existed in the rate at which sales and revenues decreased across theaters of different organizational forms.

Because the impact of the ruling on prices and sales are well-documented, increases in prices unambiguously decreased consumer surplus and welfare in this industry (holding everything else constant). Future research should investigate further how consumer surplus and total welfare were affected. Moreover, the Paramount case sentence may have also changed other dimensions of the motion picture industry that also had an impact on consumer surplus. On the one hand, vertical disintegration had an effect on the type of movies showing in theaters and the length of their runs. 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 this antitrust case as an empirical application, because these decisions are important sources of consumer surplus and welfare. This research agenda will contribute to our understanding of how and why the organization of production within firm boundaries matters.

APPENDIX

TABLE A1—STUDIO-SPECIFIC CROSS-SECTIONAL OLS REGRESSIONS
OF EVENING PRICE ON VERTICAL INTEGRATION

Dep. var.	Evening price				
Studio name:	FOX	MGM	Warner	RKO	Paramount
	(1)	(2)	(3)	(4)	(5)
VI?	−0.011 (0.027)	−0.157*** (0.047)	−0.243** (0.102)	−0.103 (0.071)	0.089 (0.085)
VI ever?	0.005 (0.039)	0.072 (0.046)	0.212* (0.113)	−0.008 (0.078)	−0.100 (0.063)
Seats	−0.00001 (0.00001)	−0.00003* (0.00001)	−0.00003* (0.00001)	0.00001 (0.00001)	−0.00002 (0.00002)
Constant	1.034*** (0.035)	1.050*** (0.033)	1.063*** (0.032)	0.993*** (0.054)	1.053*** (0.032)
City/year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,684	1,484	1,440	1,475	1,526
R ²	0.54	0.56	0.51	0.48	0.51

Notes: This table shows OLS regressions comparing theaters of each individual studio to the set of all independent theaters in the sample. Robust standard errors in parentheses.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

TABLE A2—STUDIO-SPECIFIC TIME-TREND OLS REGRESSIONS
OF LOG OF EVENING PRICE ON VERTICAL INTEGRATION

Dependent variable Studio name:	ln(evening price) FOX (1)	MGM (2)	Warner (3)	RKO (4)	Paramount (5)
VI?	0.060 (0.056)	0.073 (0.117)	0.646*** (0.203)	0.339** (0.150)	0.095 (0.066)
VI ever? $\times$ year	0.011* (0.006)	0.017 (0.014)	0.088*** (0.025)	0.044** (0.019)	0.015* (0.008)
VI? $\times$ year	-0.011* (0.006)	-0.010 (0.013)	-0.086*** (0.023)	-0.039** (0.018)	-0.010 (0.009)
Year	0.027*** (0.004)	0.033*** (0.005)	0.037*** (0.005)	0.030*** (0.005)	0.031*** (0.005)
TV	0.002 (0.006)	-0.006 (0.008)	-0.012 (0.009)	-0.001 (0.009)	-0.003 (0.008)
Pctg. integ. theater in city	0.000 (0.001)	0.000 (0.001)	-0.001 (0.001)	0.000 (0.001)	0.000 (0.001)
HHI	0.000002 (0.000001)	0.0000001 (0.000001)	0.000003 (0.000001)	0.000001 (0.000001)	-0.000001 (0.000001)
Constant	-0.234*** (0.022)	-0.271*** (0.031)	-0.339*** (0.041)	-0.303*** (0.034)	-0.261*** (0.023)
Theater FE	Yes	Yes	Yes	Yes	Yes
Observations	1,684	1,484	1,440	1,475	1,526
R ²	0.79	0.82	0.79	0.79	0.80

Notes: This table shows time-trend OLS regressions comparing theaters of each individual studio to the set of all independent theaters in the sample. Robust standard errors in parentheses.

***Significant at the 1 percent level. **Significant at the 5 percent level. *Significant at the 10 percent level.

TABLE A3—STUDIO-SPECIFIC DIFFERENCE-IN-DIFFERENCES REGRESSIONS
OF EVENING PRICE BEFORE AND AFTER VERTICAL SEPARATION

Dependent variable Studio name:	Evening price FOX (1)	MGM (2)	Warner (3)	RKO (4)	Paramount (5)
4 plus years prior	-0.063 (0.045)	-0.029 (0.050)	-0.064 (0.053)	-0.079 (0.075)	0.037 (0.044)
1 to 3 years prior	-0.045 (0.033)	-0.004 (0.037)	-0.040 (0.039)	-0.060* (0.035)	0.037 (0.027)
1 to 3 years after	0.014 (0.039)	0.013 (0.027)	0.094 (0.080)	-0.073** (0.029)	0.015 (0.045)
4 plus years after	0.128* (0.079)	0.217* (0.131)	0.471*** (0.174)	0.071 (0.079)	0.096* (0.056)
Constant	0.898*** (0.024)	0.874*** (0.029)	0.924*** (0.030)	0.883*** (0.028)	0.869*** (0.026)
City year regressors	Yes	Yes	Yes	Yes	Yes
Theater FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	1,684	1,484	1,440	1,475	1,526
R ²	0.74	0.76	0.73	0.72	0.74

Notes: This table shows difference-in-differences OLS regressions comparing theaters of each individual studio to the set of all independent theaters in the sample. City year regressors are HHI, years since TV introduction, and city percentage of integrated theaters. Robust standard errors in parentheses.

***Significant at the 1 percent level. **Significant at the 5 percent level. *Significant at the 10 percent level.

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