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Economic Effects of Vertical Disintegration: The American Motion Picture Industry, 1945 to 1955

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Abstract
In 1948, the United States Supreme Court declared the operations of eight of the nation's largest motion picture studios in violation of the 1890 Sherman Antitrust Act. The decision ordered them to disintegrate their producer-distributor roles from cinemas. The Court believed this would promote competitive practices in a hitherto uncompetitive industry. However, these desired benefits were not entirely reached. Instead, by leading the Hollywood studio system to collapse, the Court also distorted the supply-chain for motion pictures. This work utilizes Coasian analyses of transaction costs to show that institutional integration was an efficient structure for the motion picture industry. It explores the motives to integrate and the benefits it garnered. Having laid this groundwork, it then assesses the effects theatre divorcement had on the industry and offers plausible counterfactuals had the studios remained intact after 1948.

1 Introduction

There has been much conjecture over the effects that government intervention can have on industry. The case examined here is the intervention of the United States Judiciary on the American motion picture industry in the late 1940s. Since 1890, the year Congress signed the Sherman Antitrust Act into law, the government has served as the self-imposed overseer that assures the proper functioning of competitive markets. Chief Justice Hughes deemed the act as salient as a constitutional provision.[2] Specifically, its goal is to eliminate potential

[1] This dissertation was completed at the London School of Economics under the advisory of Dr. Gerben Bakker.
[2] 'Businessmen and the Sherman Act', *Fortune*, Jan. 1950, p. 104.

restraints on trade.[3] In doing so it provides American industries with an incentive for performance.[4]

In 1948, the government upheld its pledge to competitive markets when Attorney General Tom Clark, former head of the Justice Department's Antitrust Division, swayed the Supreme Court in favour of the United States government.[5] The defendants on trial were the nation's eight largest producers, distributors and exhibitors of motion pictures. The holdings that the Court ordered them to divest from were substantial, equivalent to 3,137 theatres in 1945, and the licensing practices that it enjoined were critical to their commercial strength.[6] In the words of a defence counsel 24 hours after the case, 'we've been hit with a baseball bat'.[7] This work discusses and evaluates the effects that this court decision had on the industry it altered. Given the degree of existing literature on the subject, it employs new methods to reinforce and disprove the conclusions of various prior analyses.

To develop a robust structure that directly addresses the question, this work evolves in four sections. The remainder of S1 gives background on integration in the industry and identifies the alleged restraints on trade. It reviews the literature on motion picture trusts and examines the growing concentration within the 1940s American motion picture industry.

S2 develops a theory about why this phenomenon occurred. Understanding the original reasons for integration will be a crucial step in

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[3] 'Sherman Act and the motion picture industry', p. 361.
[4] 'Businessmen and the Sherman Act', *Fortune*, Jan. 1950, p. 105.
[5] The *Paramount cases* refers to a series of eight decisions made by the courts. These began with the *Consent Decree* in 1938 and ended in 1949, when the District Court upheld the divestiture rulings of the Supreme Court. These cases will be referred to collectively as *Paramount* herein. See DeVany, *Hollywood economics*, p. 141 for a full timeline of the relevant cases. Attorney General John Sonnett, head of the Anti-Trust Division argued the case before the Supreme Court. 'Verdict shocks', *Variety*, 5 May 1948, p. 18.
[6] Due to low theatre demand defendants found it difficult to sell at reasonable prices. It took until 1957 for full divorcement. See Conant, *Antitrust in the motion picture industry*, pp. 108-11 for breakdown of 1945 theatre holdings and joint-ownerships.
[7] 'Verdict shocks', *Variety*, 5 May 1948, p. 18.

assessing the losses incurred upon its ultimate unravelling. A Coasian transaction cost analysis of the vertically integrated studios shows how a studio-centric industry structure minimised costs. Thus, although the primary objective of this work is quantification of surplus changes, it is also an exploration in the fundamental economic theory of transaction costs.

In S3, it applies a bottom-up approach to answer the central research question: *What were the effects of United States vs. Paramount Pictures on the motion picture industry?* The approach first examines the effects on each industry agent, which are *(a)* independent producers, *(b)* independent exhibitors, and *(c)* the defendants.[8] It then examines counterfactual scenarios in which the defendants were acquitted and contrasts these with the actual one. To construct counterfactuals that conceivably could have been, the criterion established by Fogel is referred to.[9] S3.4 aggregates the results.

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[8] A producer refers to a company that assembles the inputs for a motion picture and turns them into the outputs, which are movies. The distributor is a person, firm or corporation that licenses the exhibition of motion pictures and distributes the positive film reels to those exhibitors it has sold licenses to. The licensing transaction is more like a lease than a sale – the print can only be shown for an explicit duration of time. An exhibitor is any individual, partnership, unincorporated association, or corporation that shows motion pictures to the public for a profit. In commercial terms, these agents comprise the production, wholesale and retail operations of the motion picture industry, respectively. Definitions derived from Senate, 'Motion-picture trade practices–1956', pp. 58-60 in app. 1. Multiple authors, such as Ramsaye and Bennet claim that the public shared no stake in divorcement. Proponents of the intervention claim that consumers benefited from lowered entry costs that lead to *(i)* higher quality movies, and *(ii)* lower admission prices. Bakker postulates that since the theatres were colluding, this probably resulted in an increase in the price of admissions. Bakker, 'Origins of increased productivity growth', p. 42; Ramsaye, 'Rise and place of the motion picture', p. 9; Bennet, 'The merger movement in the motion picture industry', p. 92. Plausible reasons for why cost reductions from combinations were not passed down to consumers are discussed in S3.2.

[9] The methodology suggested by Fogel is as follows: '…the new economic history places its primary emphasis on reconstructing measurements which might have existed in the past, but are no longer extant, on the recombination of primary data in a manner which enables them to obtain measurements that were never before made, and on finding methods of measuring economic phenomena that cannot be measured directly'. Fogel, 'The reunification of economic history with economic theory', p. 92.

To conclude, S4 remarks on the significance of the findings and suggests paths for future research.

The appendices are used for reference.

Throughout this analysis multiple primary sources are used for supporting evidence. Notable government documents are the *Survey of Current Business* published by the United States Department of Commerce, the Congressional Serial Set and transcripts from the relevant court cases. Industry trade publications that are referenced are *Variety*, *Box Office* and *Hollywood Reporter*. Evidence is also extracted from newspaper articles from the *Wall Street Journal*, *New York Times, Fortune, Los Angeles Times* and *Barron's National Business and Financial Weekly*. For information on annual film releases, the *International Motion Picture Almanac for 1956* is used. Film profit-loss data is extracted from the earnings ledgers of C.J. Tevlin and Eddie Marmix. Additionally, several secondary literature pieces from the period serve primary source functions.

Prior to further exploration, three conditions should be noted.

Firstly, many authors who have previously explored this subject simultaneously observed its legal aspects; in contrast, this work remains largely absent of legal analysis except where definitions are required for proper economic analysis.[10]

Secondly, intense transformations within the media sector in general, and the motion picture industry in particular occurred during the period. These included the mass diffusion of television, evolving tastes and suburbanisation of middle-class America, changes in the industry's tax structure, internal rife from unrelenting trade unions and the entrance of foreign competition into the market.[11] These variables inevitably place

[10] Cf. app. II for discussion of trade practices.

[11] In 1955, Lovell estimated that Hollywood studios engaged in collective bargaining with 39 different unions. For more on these groups see Lovell, *Collective bargaining in the motion picture industry'*, p. 11. The trend towards suburbanization was recognized

limits on statistical inference.[12] Therefore, this investigation is carried out like a contaminated crime scene in which actual evidence must be deciphered from misleads.

Thirdly, the motion picture industry was notorious for a paucity of reliable trade statistics. As the 1946 president of the Motion Picture Association noted, 'the motion picture industry probably knows less about itself than any other major industry in the United States'. Thus, although the data is the most accurate available, its precision is difficult to ascertain.[13]

1.1 The Historical Context

Figure 1:
Pioneers Of Industry Integration, Adolph Zukor & Marcus Loew[14]

in the industry as 'decentralization'. Suburban theatres that were in walking distance or offered parking space became the new fashion as automobile sales grew. For a fuller explanation of this trend see 'Congestion cues "decentralizing"', *Variety*, 9 Jun. 1948, p. 7. The repeal of the 20 percent admissions tax in 1953 signified another big change. 'Admission tax cut still seen likely despite ike nix', *Variety*, 11 Feb. 1953, p. 3.

[12] Cf. fig. 7 in §2.1.2 for impact of television on consumer admissions expenditure.

[13] Inglis, *Freedom of the movies*, p. 35.

[14] Photograph from Balio, *American film industry*, p. 119.

Trust activity in the American motion picture industry dates back to 1909, yet the process of vertical integration began in July 1916 when the Famous Players, Jesse L. Lasky and Paramount Pictures merged into the Famous Players-Lasky Corporation.[15] Spearheaded by Adolph Zukor, an aggressive immigrant from the fur manufacturing business, it marked the first time an American production company combined with a distribution company.[16] Huettig notes that Zukor had seen no point in leaving the fate of his business at the discretion of its distributor, Paramount Pictures.[17] Additionally, the terms of agreement meant that 35 percent of Zukor's gross stayed with Paramount.

By secretly acquiring Paramount stock, Zukor was able to depose the former head of Paramount Pictures, W. W. Hodkinson, and in June 1916 he took complete control of the company.[18] This assured him rights to all the income generated by his films, and, more importantly, it assured a buyer of his films. He also had control to schedule favourable play dates and longer runs, and to charge higher rental prices.

By 1916, his strategy had already shown results. He was distributing 220 features per year and rentals had increased

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[15] Mezias, 'Blind trust', p. 3 cites the ten companies that pooled resources into the Motion Pictures Patent Company in 1908 as the first instance of trust in the industry. Anti-trust litigation was brought against it in 1912. Prior to 1908, Pathé-Frères dominated the American market. In Musser, *Emergence of cinema*, p. 412, Pathé-Frères was said to have 'advertised something new every week'. The French motion picture company's film exports to the United States were more numerous than the output of all domestic producers combined. It would go on to become the only European member of the MPPC. See Balio, *American industry*, p. 88. For a discussion of ways that the MPCC trust benefitted society see Balio, *American Film Industry*, p. 106.

[16] Balio, *American Film Industry*, p. 110 credits Zukor as a visionary who first brought the feature film to commercial success through his engineering of the star system. He also credits him with the entrepreneurial spirit to combat, and ultimately deteriorate the monopoly power of the MPCC. For a fuller biography of Adolph Zukor, see *International almanac of motion pictures for 1956*, p. 282.

[17] Huettig, *Economic control of the motion picture industry*, p. 30-1.

[18] Balio, *American film industry*, p. 118.

significantly.[19] Zukor's company represents the first to have integrated forward from production into distribution, and eventually exhibition.[20] In reaction to Zukor's merger, the First National Exhibitors Circuit became the first theatres to integrate backwards into production. By 1920 it had acquired 639 theatres.[21] These deals marked the first steps, forward and backward, towards full vertical integration of the industry.[22]

Nearly twenty years later, the corporations that had developed business models along these vertically integrated foundations were charged with restraint of trade. In July 1938, the consent decree, *United States v. Paramount Pictures, Inc,* was filed. However, due to fragile business conditions caused by the war, the government postponed action against the majors until after the war.[23] The main accusation was that they violated §1 and §2 of the 1890 Sherman Antitrust Act. On 31 December 1949, Paramount Pictures Incorporated was split in two: Paramount Pictures Corporation and United Paramount Theatres.[24] The rest of the integrated companies soon followed.[25]

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[19] Huettig, *Economic control of the motion picture industry*, p. 32. App. I of Senate, 'Motion-picture trade practices–1956' defines a feature film as 'any motion picture, regardless of topic the length of the film of which is in excess of 4,000 feet'. That definition is applied here and for the remainder of this work.

[20] Zukor formally entered exhibition in 1919 when he received $10 million in financing from Kuyhn, Loeb and Company. As of 31 Aug. 1921, he owned 303 theatres. Additionally, Zukor made use of block-booking which he used to market lower quality merchandise. Huettig, *Economic control of the motion picture industry*, p. 36. Cf. app. II for overview of block-booking.

[21] Lovell and Carter, *Collective bargaining in the motion picture industry*, p. 8.

[22] Integration of the defendants began in the 1920s. It proceeded as follows: exhibition to production – Loew's, Fox; production to exhibition – Warner, MGM; distribution to production/exhibition – Paramount. DeVany, *Hollywood economics*, p. 153.

[23] At that point, a new attorney general, Tom Clark, was appointed. Holding more hawkish convictions than his predecessor, Clark took swift action against the majors. Schatz, *Boom and bust*, p. 323.

[24] Schatz, *Boom and Bust*, p. 328.

[25] '20th-Century to dispose of theatres', *Los Angeles Times*, 21 Dec. 1948, p. 13.

1.2 The Historiographical Context

The core debate is whether vertical integration in the motion picture industry was oligopic or an efficient solution to market imperfections. Conant gives the fullest perspective on the economic effects of antitrust in the industry.[26] His findings were that *Paramount* helped independent producers, distributors, and exhibitors considerably. Waterman dismisses the possibility that the decision had any significant impact on real industry variables, except that it temporarily lowered entry costs.[27] Yet his results lack empirical robustness.

Technical analyses start with either Vogel or DeVany.[28] DeVany concludes that the unusual licensing contracts used by the major studios and the industry's concentrated structure were virtues of the producer's lack of product demand information.[29] He opines that the courts interfered with economic matters they did not understand, and identifies the economists who advocated disintegration on behalf of the Justice Department as the culprits who misled them. In his view, these economists had indoctrinated perfectly competitive practices through the multitude of antitrust cases during the period. The problem was that they overlaid generic antitrust frameworks onto the motion picture industry, even though they were unfamiliar with its distinct mechanics. Although

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[26] Conant contributes substantially to the existing literature, which, hitherto, had not recognized the importance of rental price discrimination. Conant's work follows the models of Nicholls and Kaysen who examine the economic effects of antitrust action against the cigarette and shoe manufacturing industries, respectively. Kaysen, *United States vs. United Shoe Machinery Corporation*; Nicholls, *Price policies in the cigarette industry.*

[27] Waterman, *Hollywood's road to riches*, p. 46. Litman refers to these entry costs as 'absolute cost barriers to entry'. For a more explicit list of what these barriers include see Litman, *Motion picture mega-industry*, p. 274.

[28] Although Vogel's handbook for financial and economic analyses covers most of the industry themes, it is predominantly focused on trends that occurred post 1970. A former entertainment industry analyst at Merrill Lynch, Vogel offers a unique, modernised lens for evaluating the historical financial statistics of the industry.

[29] DeVany takes a comprehensive look at the uncertainty inherent in motion picture industry economics, mostly post 1985. DeVany, *Hollywood economics*, p. 144.

there is evidence that the courts took full perspectives in other antitrust cases, DeVany concludes their *Paramount* ruling was biased.[30]

Williamson finds that court ordered divestiture should not occur in the form of a sudden shock to the industry, as it did in 1948.[31] Instead, he advocates a gradual divestiture process.[32] Although Williamson's argument for gradual divestment holds some weight, his belief that noncompliance should be followed by dissolution is not shared by DeVany.

The problem of antitrust economics being applied as a panacea can be observed in the works of contemporaneous economists. Walter Adams, an influential economics professor at the time, states that the test of a successful antitrust suit is 'whether substantial competition has been restored to the market place'.[33] This economic rationale was based on a general solution that supposedly fit any industry.[34] Adams had served as a professional witness before 36 congressional committees.[35] He typifies the antitrust economists whose rigid approach resulted in the *Paramount* ruling.[36]

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[30] Chamberlin, *Monopoly and competition and their regulation,* p. 130 gives an example of when the Court accounted for measures of control besides market share on a case involving the aluminium industry.
[31] Williamson, 'Market failure considerations', p. 1,527.
[32] This was the logic used by the District Court in the 1938 Decree, however, as the Court's records show, Paramount had increased its theatre holdings by nearly 50 percent between the Decree date and 1945. In 1935 Paramount held 1,034 theatres, in 1945 it held approximately 1,550. Of these, 195 were jointly owned with co-defendants. US Supreme Court, *United States v. Paramount Pictures*, pp. 17, 31.
[33] Adams, 'Discussion', p, 523.
[34] Adam's article gives direct evidence of this by issuing antitrust recommendations for the steel and metal container industries, which share few similarities with the motion picture industry. One interesting similarity that does exist, however, is the way in which substitutes affect each industry. For example, in Stauss, 'Discussion', p.29, he states 'it is too early, moreover, to estimate the future strength of inter-commodity competition from fibre, plastic, aluminium, and glass containers', p. 529. The analogous substitute in the motion picture industry was television.
[35] http://www.trinity.edu/departments/economics/adamvita.html
[36] Schatz notes that by late 1947, the Federal Trade commission was on an 'antitrust warpath'. Schatz, *Boom and bust*, p. 326.

Chamberlain also thought of antitrust economics as a precise formula. He states, 'competitive practices which are designed to drive competitors out of business by "unfair" means are illegal and are prosecuted with considerable vigour'.[37] Coase noticed this trend, stating, 'if an economist finds something – a business practice of one sort or another – that he does not understand, he looks for a monopoly explanation'.[38] This work overlays Coase's transaction cost framework on the motion picture industry to challenge the theory that a perfectly competitive industry was more desirable than an integrated one.

2. Motives for Integration

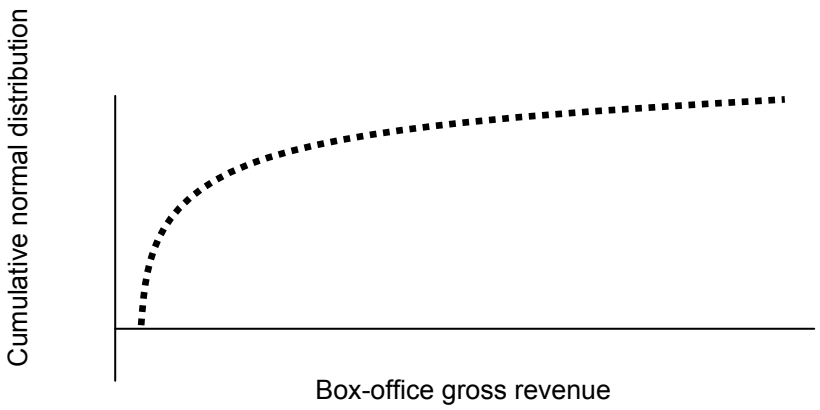
2.1 The Nature of Demand

Motion pictures are frequently classified as products for which demand forecasting is tenuous. It follows that an industry structure that eliminated demand uncertainty may have been Pareto efficient. DeVany describes the variation of box-office revenues as a Lévy distribution, in which revenues never converge to a long-run average. In his words, 'the confidence intervals are without bounds'.[39] Another stochastic process that has a Lévy distribution is the return on stocks. Equation 1 gives the distribution as defined in the asymptotic form.[40] Graphically, this can be depicted as a cumulative distribution with infinite variance. Figure 2 shows a theoretical example of what this distribution looks like.

[37] For the motion picture industry, these practices included block-booking and blind-selling, Cf. app. II. Chamberlin, *Monopoly and competition and their regulation,* p. 131.
[38] Williamson, *Economic institutions of capitalism*, p. 17.
[39] DeVany, *Hollywood economics*, p. 71.
[40] ibid., p. 73.

Figure 2:

Cumulative Distribution Of Box-Office Revenues



$$1 - F_X(x) \sim \left(\frac{x}{k}\right)^{-\alpha} \quad \text{where}: \quad x \to \infty \quad 0 < \alpha < 2 \qquad (1)$$

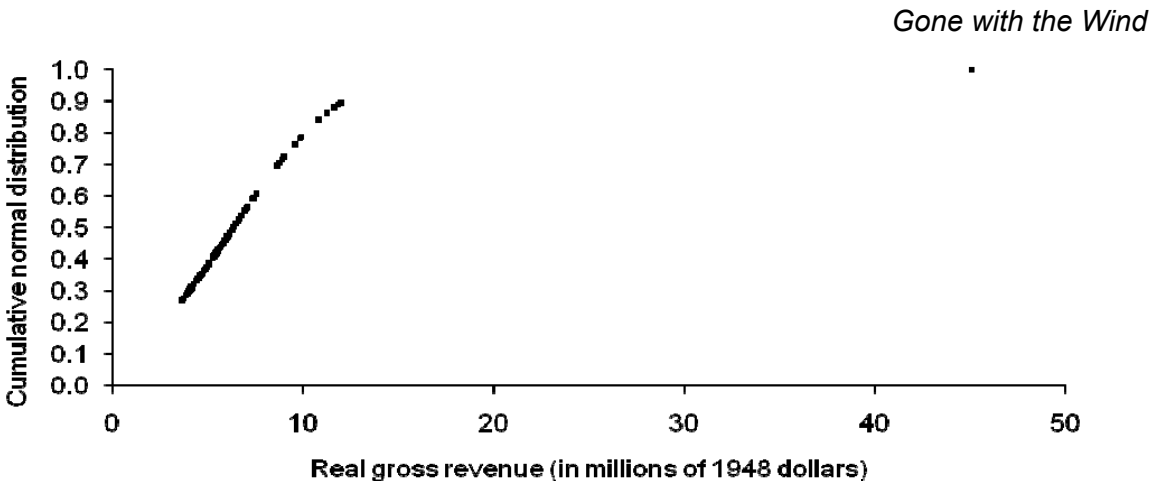
In his empirical analysis of feature film revenues from 1985 to 1996, DeVany finds the variance of revenues to be 122 million times as large as the expected value.[41]

To test whether the era from 1945 to 1955 faced the same element of uncertainty, a simpler form of DeVany's analysis is used. Figure 3 is an empirical representation of this phenomenon for the years prior to 1953.[42] Box-office returns are plotted for the 95 most successful films of all time through 1953.[43] The quotient of the variance over the mean is 3 million. Although this variation is not as large as that calculated by DeVany, this is

[41] DeVany, *Hollywood economics*, p. 90.
[42] It is a simpler version of DeVany's model since it does not control for star power or billboard ranking.
[43] Cf. app. V. 'All-time top grosser', *Variety*, 21 Jan. 1953.

probably because the cross-section is limited to only the 95 most successful films, whereas DeVany's sample size is 1,500 randomly selected films. It empirically proves that box-office revenues did not exhibit central tendency – not even for the most successful films.

Figure 3
Cumulative Pareto Distribution



***Note**:* Cf. tab. 15 in app. IV for box-office revenue by film.
Source: 'All-time top grosser', *Variety*, 21 Jan. 1953, p. 4

Any forecasted value would be overpowered by its infinite variance. Since the studios bore these risks through a multitude of rental contracts, an industrial structure that eliminated those contracts by bringing decisions beneath one roof may have been efficient.[44]

This high degree of product risk is germane to the original motivations for vertical integration. As Chamberlin points out in his study

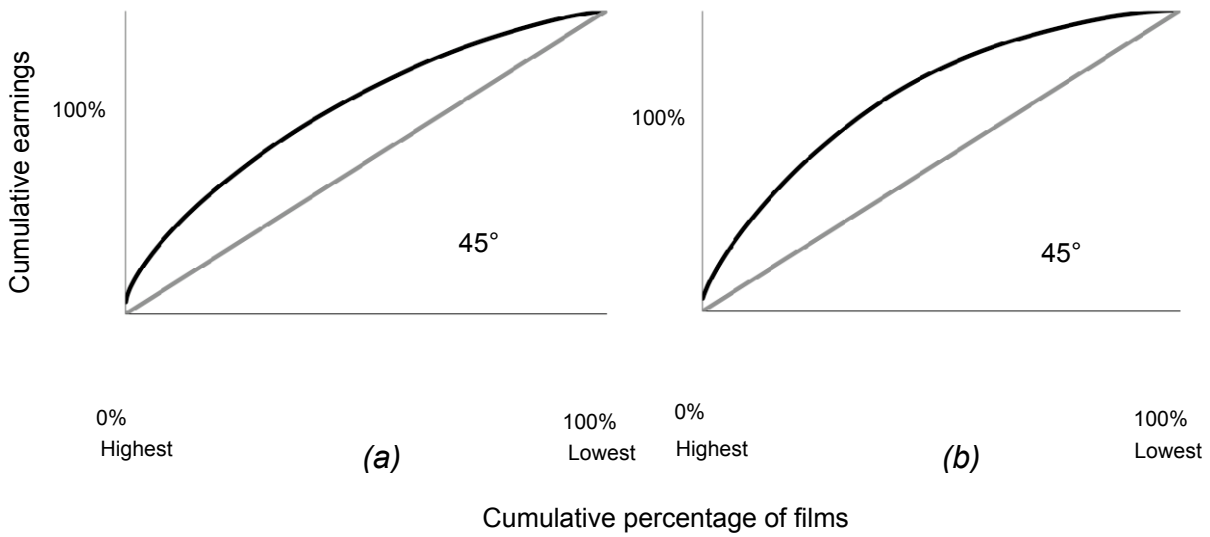
[44] Solutions to the problem of unpredictability did not only occur at the structural level. The major studios also produced formula pictures, which were similar products within the different genres.

on American monopoly, 'much vertical entry has an efficiency origin, but further study may show that it also has a control consequence'.[45] Thus, irrespective of the true motives of the major studios, the certainty premiums from vertical integration should not be discounted.

An alternative method for testing the stochastic nature of motion picture revenues is the Gini coefficient. This measure of 'inequality' among film incomes further demonstrates the unpredictability of box office performance. The data is rental income for films produced by RKO and MGM from 1928 to 1950.[46] To control for variation in film inputs, the income measure in figure 4*(a)* is real earnings per dollar of cost, rather than the absolute earnings of each film.[47] Figure 4*(b)* shows the Lorenz-curve when plotted using the absolute measure.

[45] Chamberlin, *Monopoly and competition and their regulation,* p. 125.
[46] Originally developed to show inequality between national incomes, the Gini-coefficinet has been adapted for different uses. Bakker has applied it to the distribution of payrolls among directors and actors/actresses. Bakker, 'Stars and stories', p. 489.
[47] Production costs for films that RKO or MGM solely distributed are recorded as nil. Since these are few, especially before the mid-1940s, they are excluded from the sample. Excluding these films the sample size is 623 motion pictures. Cf. app. VI.

Figure 4
Lorenz Curves For Motion Picture Earnings



***Notes**:* Fig. 4(*a)* is the CPI adjusted earnings share of RKO and MGM releases in the C.J. Tevlin and Eddie Mannix ledgers – cf. app. VI. Earnings measured as income over cost. Fig. 4*(b)* uses same films but measures earnings as total income.
***Sources**:* Jewell, *RKO Film Grosses, 1929-1951: the C.J. Tevlin ledger*: Available on microfiche for 'RKO film grosses'. Glancy, *MGM film grosses, 1924-1948: The Eddie Mannix ledger*. Available on microfiche for 'MGM film grosses'.

As predicted, figure 4*(b)* shows more inequality among films, represented by a larger area between the curve and the 45-degree line. This is the conventional form of measure used by most authors, including DeVany, however, since the curve in figure 4*(a)* controls for quality it is used to derive a lower bound for the Gini coefficient.[48] The Gini coefficient for the Lorenz-curve in figure 4*(a)* is 0.36 and in figure 4*(b)* it is 0.44. A

[48] The Gini-coefficient is calculated as $G = \left(\frac{N+1}{N-1}\right) - \left(\frac{2 \bullet \sum_{i=1}^{n} P_i X_i}{N \bullet \bar{X} \bullet (N-1)}\right)$, where $\bar{x}$ is the average earnings per film, P_i is the rank of film *i* with earnings x_i, and *N* is the number of films. For the Gini-coefficient calculated from Figure 4(a) the sample size is 623 and for Figure 4(b) it is 684. Gini-coefficient calculations from Deaton, *Analysis of household surveys*, p. 139.

simple average of the two gives 0.40, which is similar to the inequality in the United States today, where the richest 10 percent possess 16 times the wealth of the poorest 10 percent.[49] Bakker estimates the Gini-coefficient of 1932 films in the United States to be 0.29.[50] Since the data used here is from 1928 to 1951, this suggests the inequality of film revenues grew over time.[51]

The Gini-coefficient results suggest a lower degree of inequality among films than the Pareto distribution. Therefore, integration may not have been a solution to demand uncertainty. S2.1.1 will observe whether the two were in fact related.

2.1.1 Testing Certainty Premiums From Integration

This section tests correlations between demand uncertainty and integration. Figure 5*(a)* shows four different representations of industry concentration. The Herfindahl-Hirschmann Index and the M firm Concentration Ratio are the traditional methods used for measuring industry control.[52] Market control is gauged using both share of feature films and revenue.[53]

The two measures of predictability of film performance are the average profit margins from individual releases and the correlation between the cost and revenues of specific films.[54] If studio control

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[49] United Nations, *Human Development Report 2009*, statistical tables, tab M.
[50] Bakker, 'Stars and stories', p. 489.
[51] This is likely due to increasing US population and income. As population grew, marginal returns on high-income films over median-income films increased.
[52] The Hefindahl-Hirschmann Index has become the convention for measuring concentration since it takes into account both the number and sizes of firms. Litman, *Motion picture mega-industry*, p. 270.
[53] Although the main accusation against the majors was not their control over production, but exhibition, specifically first-run houses, data on concentration of cinema ownership is limited.
[54] These measures were derived from two sources: the C.J. Tevlin ledger for RKO and the Eddie Marmix ledger for MGM. Although the original purpose of the ledgers remains unknown, it is thought that they were recorded by the company's accountants, Tevlin and Marmix. Any measurement issues in these documents will most likely be in

resulted in lower uncertainty, then there should be a positive relationship between the revenue concentration indices and film profit margins. Since studios would only invest in large budget films if they were assured a market to sell them to, there should also be a positive relationship between concentration and the cost-earnings correlation. Interestingly, this relationship does hold prior to 1941, after which it reverses. The 1942/3 season stands out with an increase in both concentration and profit variability.[55] The popularity of war films, such as *Hitler's Children*, which returned 590 percent to its cost, probably explains the seasons above normal profitability even when studio control had already begun to wane.[56]

The second noticeable trend is from 1950 to 1955, when output share from the seven majors, excluding United Artists, fell by nearly 30 percent. This sharp drop in output illustrates one of the most interesting ironies of *Paramount*: that many of the typical characteristics of a restrained market became more apparent in the industrial organisation after divorcement than before it. M.A. Adelman, a prominent MIT economist of the 1950s stated that the signs of a controlled market 'are

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the calculation of profit. This is because each firm may have used different accounting standards and treated taxes differently depending on capital structure. Therefore, although volatility in profit margins will be used as evidence, the most robust figures will be for total earnings, which has standardised calculation methods. Additionally, Sedgwick notes that there is a low correlation between production revenues and profits due to the increasing marginal distribution costs that are incurred with popular films. Sedgwick and Pokorny, *Risk environment of film making*, p. 206. Jewell, *RKO Film Grosses, 1929-1951: the C.J. Tevlin ledger*: Available on microfiche for 'RKO film grosses'. Glancy, *MGM film grosses, 1924-1948: The Eddie Mannix ledger*. Available on microfiche for 'MGM film grosses'.

[55] Potential war-related distortions on cinema going may skew the profit variability for those years.

[56] Profitability data for the final three seasons is not instructive because it only represents RKO, which made losses on 64 percent of releases in those years. Further financial difficulties induced by the management failure of its owner, Howard Hughes, led it to collapse. It ceased production entirely in 1957. Finler, *Hollywood story*, p. 33.

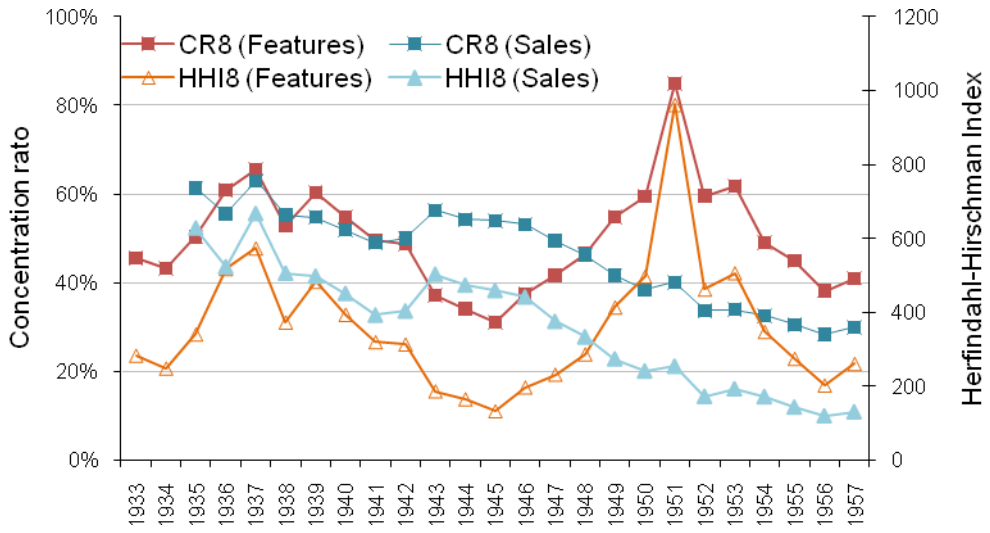
not size, or agreement, but restricted output, higher prices, and excess capacity'.[57]

After 1951, the year by which all studios had spun off their theatre holdings, output of the major studios dropped significantly and rental rates rose accordingly.[58] Although this reaction had beneficial results for the independent producers, the increase in rental prices severely worsened the plight of exhibitors.

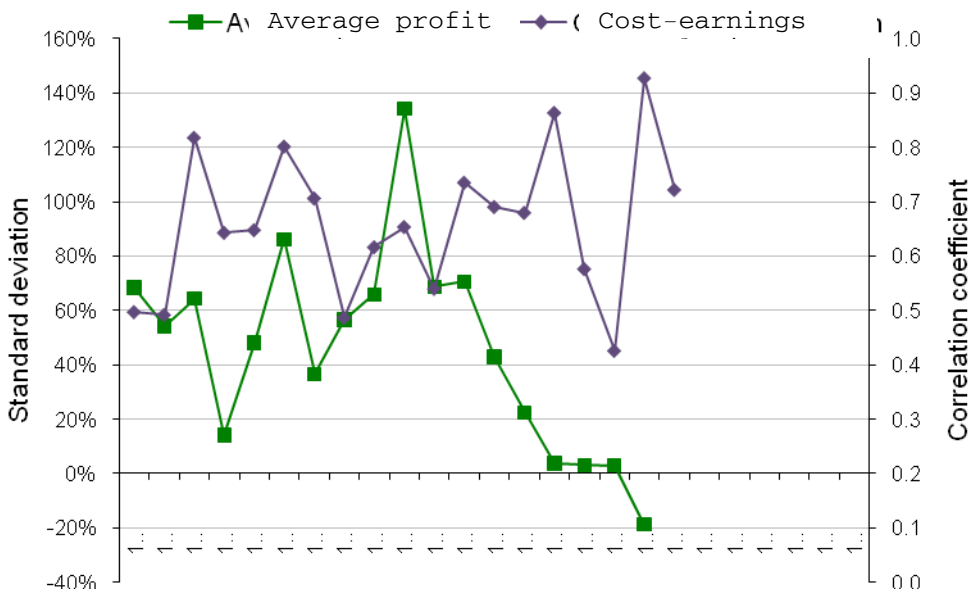
The correlation between average profit margins and concentration of sales revenue would seem obvious, since heightened control of industry revenues would hypothetically lead to better price-cost margins for the members of the oligopoly. This phenomenon of lower average costs with larger market shares is referred to as survivability.[59]

[57] Adams, 'Discussion', p. 523.
[58] Since rentals comprised a significant percentage of exhibitor expenses, the increase in these rates meant an increase in their average costs. Cf. §3.2 tab 1.
[59] Litman, *Motion picture mega-industry*, p. 27.

Figure 5
Production Concentration Ratios Vs. Film Earnings Certainty



(a)



(b)

***Notes**:* Cf. app. V tab. 17 for concentration ratio data. Film profitability 1948-51 just for RKO – MGM ledger ends in 1947.
***Sources**:* Finler, *Hollywood story*, pp. 484-7, 500-3. Jewell, *RKO film grosses, 1929-1951: the C.J. Tevlin ledger*: Available on microfiche for 'RKO film grosses'. Glancy, *MGM film grosses, 1924-1948: the Eddie Mannix ledger*. Available on microfiche for 'MGM Film Grosses'.

The correlation of the cost-earnings correlation and feature output concentration is slightly more difficult to prove empirically.[60] Figure 5 shows a weakly positive correlation. It demonstrates that by controlling a larger portion of total releases, the majors could limit uncertainty over demand – assuring that producing higher budget films would mean increased revenues.[61]

Yet after 1948, this was no longer true. Since studios became more uncertain about revenues, their discount rates went up. Uncertainty is a type of transaction cost because it places limits on the value of assets being traded, so when discount rates increased so did transaction costs. Discount rate increases also meant that studios had to raise film rentals to maintain the same expected return on a portfolio of films. Thus, transaction cost increases meant supply contracted, which led to market excess demand and rising rental rates.

2.1.2 An Approximation for Consumer Demand Elasticity

Having shown that industry concentration gave the majors pricing power, approximating the price elasticity of demand will determine the degree of that power. In terms of the consumer's decision to buy a movie ticket, Vogel attributes more significance to the full cost of spending a night at the theatre than to the ticket price alone.[62] Thus, the

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[60] By stating that an increase in this correlation led to a rise in predictability assumes that the cost-earnings ratio is a good proxy for predictability. Although there were few factors to predict consumer demand, budget size was probably the best metric for doing so, and therefore the cost-earnings correlation is the best proxy for this purpose.
[61] Unexpectedly high cost-earnings correlation during the war years, when output concentration was lowest, was likely the result of the consistently profitable war films.
[62] These costs include child-care services, parking or restaurant meals. Vogel, *Entertainment industry economics*, p. 39. Preliminary evidence from estimating the demand function yielded interesting results. In the 1970s, the price of soda was found to be the most significant variable affecting motion picture demand in the United States. Since soda is a compliment to admission tickets, price increases led to declining in ticket demand, *ceteris paribus*. It is the author's opinion that this high significance can be traced to the everyday observance of soda prices. Since consumers are more

uncompensated demand curve for admissions is expected to be price inelastic.

Multiple authors have estimated this elasticity, yet the study that offers the best benchmark for this work is by Cameron, who estimates the price elasticity of demand for admissions to be -0.8 from 1965 to 1979.[63] Although these estimates are made for Britain, the more important factor in measuring elasticity is time period rather than location, since the availability of new substitutes over time can lead to a change in measured elasticity.[64] Additionally, the similar cultural patterns and extensive trade between Britain and the United States – suggesting similar availabilities of substitutes – should mean near equal price elasticities across the two countries.

Assuming that the demand demographic remained constant over the time interval, average price elasticity can be derived from the consumer uncompensated demand function.[65] This assumes that the consumers' characteristics are constant. Although the median population age dropped over the period, the change was not large enough to affect

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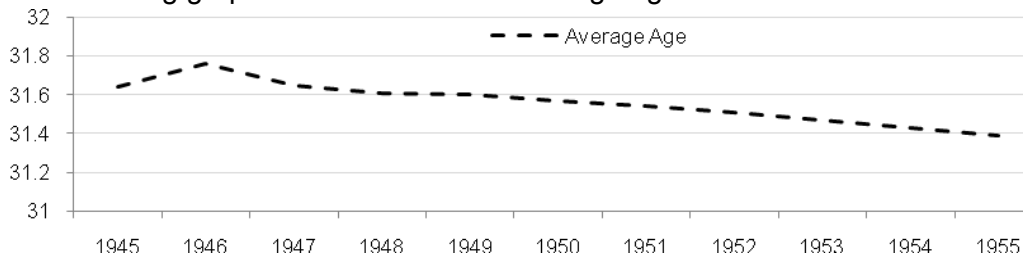
aware of the price of soda, versus say the price of tickets, it has a strongest impact on their decision to visit the cinema.

[63] Cameron, 'Supply and demand for cinema tickets', p. 60.

[64] The effect of the fall in budget share – see fig. 7 – was probably outweighed by the mass diffusion of close substitutes so that the Marshallian price elasticity rose over the period. Therefore, the -0.8 estimation for post-1955 is an upper bound.

[65] A more accurate derivation of elasticity would include changes in consumer demographics not included in this analysis. As young American males returned from Europe and the Pacific, a rise in the fertility rate skewed the age distribution. From to 1951 the population growth rate was 64 percent higher than from 1945 to 1946. This led to a significant decline in the median age. US Census Bureau, *Population estimates*.

The following graph shows the trend in average age.



the elasticity.[66] Another plausible explanation for a change in price elasticity of uncompensated demand over the period could be the 40 percent rise in American disposable income from 1947 to 1953.[67] This would have led to a positive income effect if admission tickets were normal goods and a negative effect if inferior goods. Here, 1940s admissions are hypothesised to be inferior goods so, by the Slutsky equation, the price elasticity of uncompensated demand should have risen over the period since the expenditure share fell. An additional explanation for the changing elasticity is the new availability of substitutes, which caused the portion of disposable income spent on theatre admission to drop by 20 percent.[68] This would mean a higher price elasticity of compensated demand and therefore a higher price elasticity of uncompensated demand. In the estimated demand function, these factors are controlled for by the expenditure share variable.[69]

Ceteris paribus, equation 2 is the price elasticity of demand.

$$\varepsilon_P = (\delta Q / \delta P) \bullet (P^t / Q^t) \qquad (2)$$

Where ε_P is the own price elasticity of Marshallian demand, Q^t is the annual attendance in year *t*, and P^t is the average real ticket price in year *t*.[70]

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[66] Moreover, admission ticket demand for children is less elastic than for adults. One plausible reason for why this is could be is that parents who took their children to the cinema would likely not have left and disappointed their children just because the price was too high. Litman notes that a child's selection process is mostly influenced by a film's marketing and promotion. Litman, *Motion picture mega-industry*, p. 165.

[67] This can be shown from the Slutsky Equation: $\varepsilon_P = \varepsilon_S - \theta\xi_Y$ where η_P is the price elasticity of demand, or $(\delta D/\delta p_1)(p_1/q_1)$, ε_S is the elasticity of substitution, or $(\delta D/\delta p_1)(p_1/q_1)$, ξ_Y is the income elasticity of demand, or $(\delta D/\delta m)(m/q_1)$, and θ is the consumer's expenditure share, or (p_1q_1/E).

[68] Senate, *Problems of independent motion picture exhibitors,* p. 2.

[69] Cf. app. III.

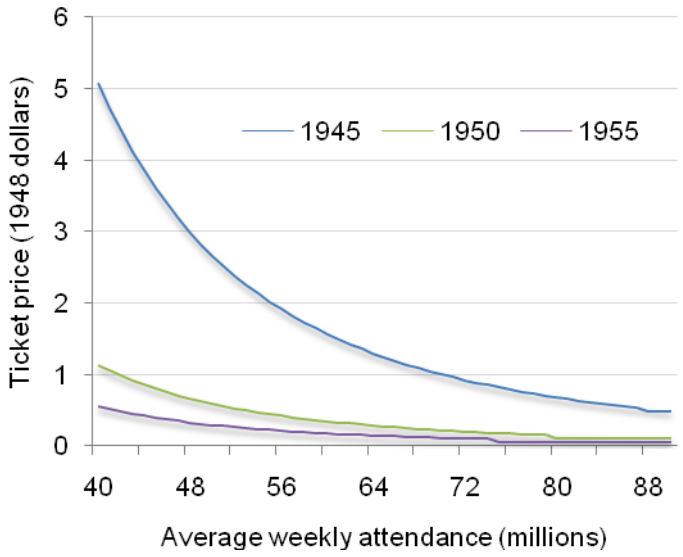
[70] Quantity demanded is measured as average annual attendance rather than real box office receipts because it is more consistent throughout the literature.

The results of this estimation yield a ε_P value of 0.34. This estimate is slightly lower than Litman's estimate of 0.415 for the period 1990 to 1994.[71] This makes sense because *(i)* new substitutes became available, *(ii)* the substitution effect and income effect are opposite for inferior goods, and *(iii)* the admission ticket budget share fell over time, which raised the price elasticity of uncompensated demand closer to that of compensated demand. Therefore, since consumer demand responsiveness to price increases was low, it can be said that pricing power in the exhibition market was an attractive option for those who could obtain it.[72]

Figure 6 shows the fitted demand curves for 1945 to 1955. The shallower distance between 1950 and 1955 can be attributed to the slowing pace of television diffusion shown in figure 7 and the corresponding fall in consumer expenditure share in figure 8.[73]

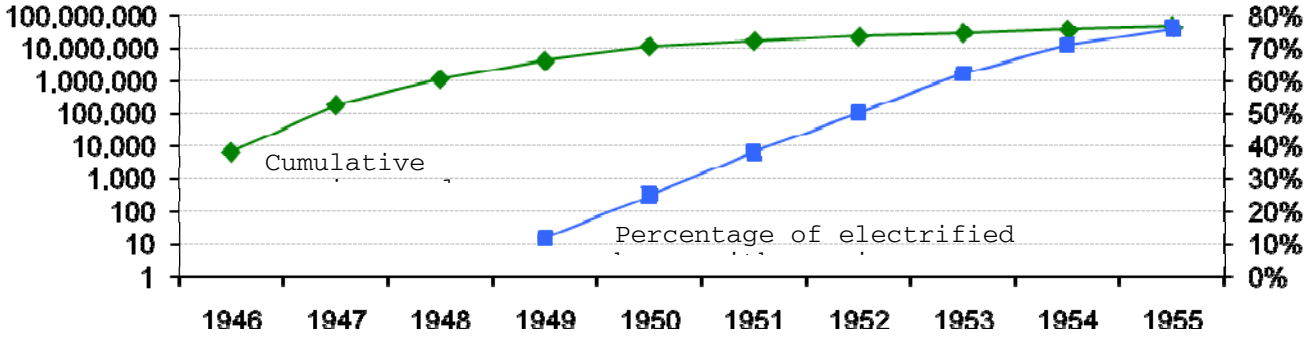
[71] Litman, *Motion picture mega-industry*, p. 42.
[72] See Bakker, 'Origins of increased productivity growth', p. 37, for an explanation of how elasticity affects social savings.
[73] Cf. fig. 7 for cumulative television sales.

Figure 6
Consumer Demand Changes



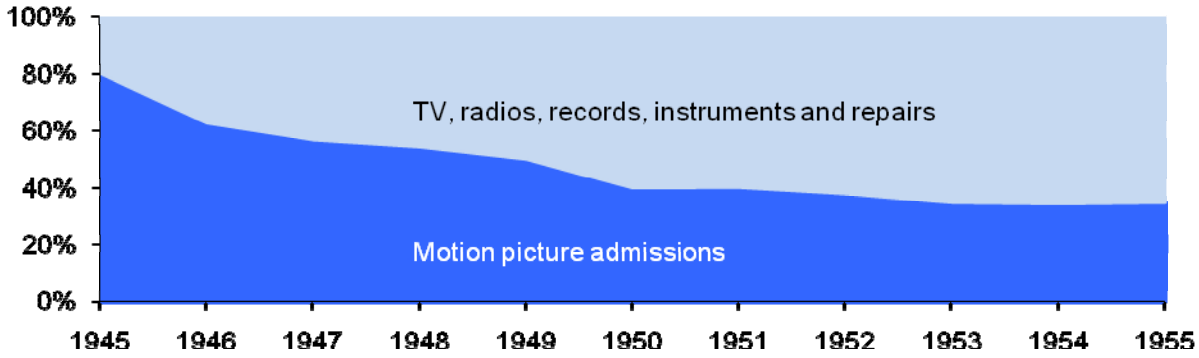
***Notes**:* Cf. tab. 12 in app. III for data; tab. 13 for demand function estimation.

Figure 7
Television Receiver Sales And Sets In Use



***Source**:* Conant, *Antitrust in the motion picture industry*, p. 11.

Figure 8
Motion Picture Vs. Television Expenditures



***Source**:* Conant, *Antitrust in the motion picture industry*, p. 13.

This section has shown that *(i)* demand uncertainty was a major problem facing motion picture studios, and *(ii)* consumer Marshallian demand could be exploited due to the low price elasticity for admission tickets. The option to integrate and reduce that uncertainty was therefore alluring. Selling their theatres meant the loss of a valuable channel for collecting demand information. This information opacity supply contracts had to contain several contingencies, which raised the costs of doing business. These costs are the subject of the next section.

2.2 Coasian Analysis of Transaction Costs

Now that the fruits of integration are explicit, the losses from disintegration can be properly analysed. DeVany takes the view that institutional combinations were efficient reactions to the obstacles created by the limited information shown in §2.1. This work applies a Coasian transaction cost framework to determine the robustness of his thesis. It tests whether the studio licensing practices deemed illegal by the Court were inefficient, anticompetitive strategies or optimal solutions to principal-agent dilemmas.

The New Institutional Economics research was the first to examine the firm as both a production function and a governance structure.[74] Coase stated, 'a firm is therefore likely to emerge in those cases where a very short term contract would be unsatisfactory'.[75] Coase continues, 'it is obviously more important in the case of services…than in the case of the buying of commodities'. This concept was the Court's crucial mix-up; it considered motion pictures homogeneous commodities, which they are not. They are heterogeneous products for which consumer demand functions are unrelated to those of other films.[76] Vertical integration may therefore have been an institutional solution to market imperfections caused by high degrees of uncertainty.

Justice Douglas stated the Justice Department's argument for divorcement, 'it is not for us…to pick and choose between competing business and economic theories in applying…[the Sherman Act.] Congress has made that choice. It has declared that the rule of trade and commerce should be competition, not combination'.[77] However, to understand the true intention behind the Sherman Act, Justice Douglas' logic needs to go one step further.

The economic intention of the act was the protection of buyers to ensure that prices are as close as possible to marginal costs. Therefore, the main objective was suppression of prices to competitive levels. However, by reducing marginal costs, vertical integration of the studios may have reduced rental prices to less than they would have been under perfect competition. This is because the high contract costs that are inherent in competitive markets for motion pictures raise the marginal

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[74] Williamson, *Economic institutions of capitalism*, p. 16.
[75] Coase, 'Nature of the firm', p. 392.
[76] This was shown in the variance analysis in §2.1. Not only is consumer demand difficult to predict, but it also wanes with time. As one motion picture accountant put it, 'the goods sold by the motion picture theatre have the perishability of fresh vegetables and the variety of a department store'. Howard, 'Yardsticks for motion picture theatre revenues and costs', p. 139.
[77] 'Sherman Act and the motion picture industry', p. 361.

costs of production and distribution. Williamson states, 'transaction cost economising is the main factor responsible for decisions to integrate'.[78] Alfred Chandler adds that the 'visible hand of managerial direction had replaced the invisible hand of market forces'. This was the key process by which the mass producers of film were able to lower their unit costs.[79] Evidence from *Variety* shows increased transaction costs. In January 1953, Columbia realised its highest all-time gross, yet despite this 'substantial operational costs' reduced its profitability to a meagre 1.36 percent.[80]

Transaction costs come in two forms, *ex ante* and *ex post*.[81] The first describes the process involved in arranging agreements, often in the form of intricate documents with several contingencies. If the two parties do not develop these types of contracts in advance, they can be renegotiated on an ad-hoc basis. For the studios, this meant formulating complex arrangements for contracting exhibitor licenses. In 1955, the distributor's cost of negotiating, transporting and collecting a print was between $10 and $20.[82] For the exhibitor, these were the search costs of filling a schedule.[83] *Ex ante* costs can also be related to financing. Inglis stresses the importance of studio size and reputation in obtaining bank loans.[84] From 1947 to 1950, Paramount Pictures' assets shrank from $170 to 109 million.[85] The interest rate it paid on term loans during that period went from 2 to 3 percent, supporting Inglis' theory.

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[78] Williamson, *Economic institutions of capitalism*, p. 103.
[79] Maltby, *Hollywood cinema*, p. 113.
[80] 'Big grosses but small profits', *Variety*, 7 Jan. 1953, p. 5.
[81] Williamson, *Economic institutions of capitalism*, p. 20.
[82] Conant, *Antitrust in the motion picture industry*, p. 75.
[83] To illustrate the search cost, Hanssen uses the testimony of an independent exhibitor, who states, 'buying one picture at a time is a killer. If you are an individual operator, you have to be on the road maybe five days a week and then try to run the theatre at night'. Hanssen, 'The block booking of films re-examined', p. 26.
[84] Inglis, *Freedom of the movies*, p. 33.
[85] 'Paramount's business last year', *Wall Street Journal*, 3 May 1948, p. 11; 'Paramount units' 1949 earnings shown separately', *Wall Street Journal*, 10 May 1950, p.11.

Ex post costs refer to those that occur if the drafted contracts become misaligned. They may also be agency costs, which include monitoring and bonding costs incurred by the principal and agent, respectively.[86] Williamson calls these measurement costs.[87]

These types of principal-agent dilemmas were frequent in the industry. For example, since distributors usually derived rental income from a percentage of a theatre's gross revenue, it was in the interest of the exhibitor to continually under report ticket sales.[88] *Variety* estimated unreported grosses at $20 million annually during the period with 20 to 25 percent of theatres underreporting.[89] Since vertical integration eliminated this market failure, it can be seen as a source of correction for market imperfections.

Governance consolidation is another transaction cost reducing solution suggested by Williamson.[90] By bringing all potential market conflicts under the control of single governance, the firm is able to attenuate any future problems that would otherwise result in high *ex post* costs.

Paramount Pictures chief executive Barney Balaban provides the most prominent example of a leader who minimised the costs of a broad set of transactions. On 16 June 1948, Balaban reported to the New York Times that he was 'certain that the decision in [*Paramount*], taken together with the decisions rendered on the same day by the court in two other cases involving theatre circuits, [would] force transformations within the industry'.[91] Prior to divorcement, Balaban's access to exclusive information and his ability to rearrange specialised assets at will allowed

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[86] Williamson, *Economic institutions of capitalism*, p. 21.
[87] ibid., pp. 22-3.
[88] Conant, *Antitrust in the motion picture industry*, p. 70.
[89] The problem of unreported grosses became so bad that two independent companies, Ross Federal Service and Confidential Reports Inc., were setup to audit theatre grosses. Conant, *Antitrust in the Motion Picture Industry*, p. 71.
[90] Williamson, *Economic institutions of capitalism*, pp. 22-3.
[91] 'Movies are seen at critical stage', *New York Times*, 16 Jun.1948, p. 43.

the company to avoid complex sequences of distribution-exhibition contracts.[92]

In contrast, the poorly administered leadership of Howard Hughes, who took control of RKO in 1948, led it to its ultimate demise in 1957.[93] Hughes exemplifies how the internalisation of Coasian costs could backfire by giving management too much responsibility. When improperly handled, as by Hughes, these responsibilities became overbearing.

Yet Hughes was an exception, and on the whole, consolidating decision=making within a single, competent manager improved information flows in an industry in which such flows were lacking.

2.2.1 Estimating Coasian Costs

The quantitative method used to calculate the level of these transaction costs over time treats them as residuals. Since the elements included in the production, distribution and exhibition of motion pictures had not changed too drastically from 1929 to 1948, the model assumes that the industry's cost function, *C(q)*, was stable over that period.[94] Additionally, the industry tax rate is assumed to be constant.

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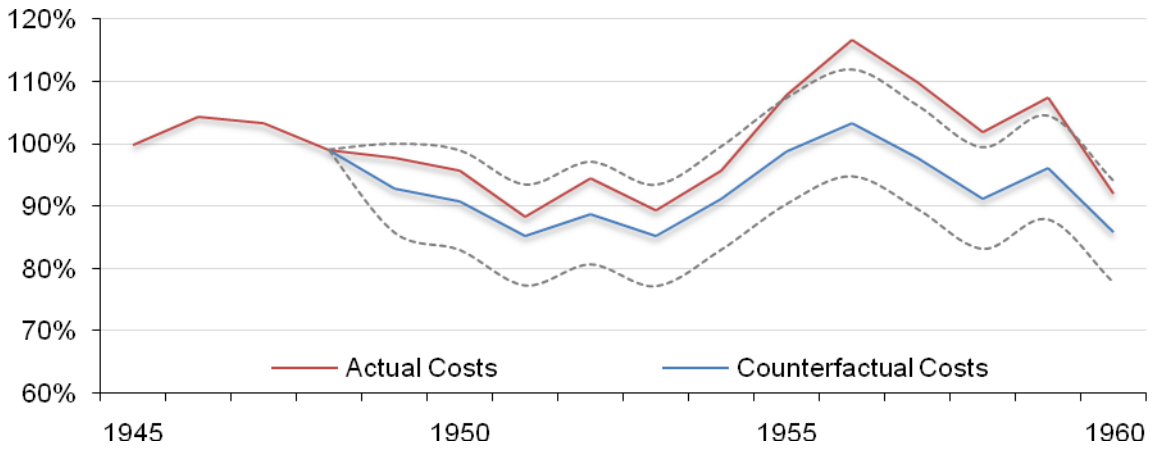
[92] Executives from the other majors, such as Universal's Nate Blumberg, RKO's Ned Depinet, or Loews' Nicholas Shenck are examples of business leaders who made the process of integration efficient. Maltby recognises Darryl Zanuck, executive producer at Twentieth Century-Fox, as one of Hollywood's all-time most influential producers. Maltby, *Hollywood cinema*, p. 134.

[93] The demise of RKO is fully attributed to Howard Hughes. Technical departments were functioning well. Finler, *Hollywood story*, p. 33, 291.

[94] There are two main reasons to assume that the cost function did not change from 1929 to 1948. The first is that only relative prices matter, not their absolute levels. Even though the price of capital changed over the period, so did the wages of actors, but the proportion of total cost that each represented likely did not change significantly. The second reason this assumption is valid is because all of the data being used is from the era that came before digital technology, which led to massive cost savings in the price of film technology. Waterman attributes much of the cost reduction in film production in the past few decades to computer-generated imagery. Yet his depiction of technological advance prior to CGI is rather bleak. Waterman, *Hollywood's road to riches*, p. 233-5. Bakker shows that total factor productivity growth in the entertainment industry was considerable between 1913 and 1950, averaging a cumulative growth rate of 1.59 percent. However, the results span over a period of intense technological transformation during which annual productivity growth rates were quite lumpy. This

Figure 9
Diverging Costs: Actual Vs. Counterfactual



***Notes**:* Upper and lower bounds represent 95 percent confidence intervals. Cf. tab. 11 in app. III .

An OLS regression of real industry costs against real sales gives the cost function as equation 3.[95]

$$C(Q) = 435.81 + 0.65 \bullet Q \qquad (3)$$

Since marginal costs are always less than average costs, it exhibits economies of scale. The predicted values of this cost function can be contrasted with the actual costs incurred post-1948, as is done in figure 9. Doing so differentiates between the rise in costs attributable to changing

work does not claim that there was no change in the cost function from 1929 to 1948, only that much of the productivity growth recorded from 1913 to 1950 was a result of advancement during the earlier half of the period. In his footnotes, Bakker even makes notice that Maddison's TFP estimates can be optimistic. Bakker, 'Origins of increased productivity growth in services', p. 25 in footnote 35. Weinstein flatly states, 'the basic technology of motion picture production did not change from the 1930s to the 1970s'. Weinstein, 'Profit-sharing contracts in Hollywood', p. 100. Since the digital age was largely a post-1998 phenomenon, the relative price change it caused will not affect the cost function. The most profound advancement of the period was sound in cinema, but even this transition occurred by 1928. In 1926, Warner Brothers' *Don Juan* became the first feature film to have sound. Inglis, *Freedom of the movies*, p. 33. Thus, technology should not pose problems for the accuracy of the model.

[95] Output is measured as real industry sales. By normalising the data using the CPI, values are measured relative to all consumer goods. Cf. app. III for cost function estimation and explanation of the first-order autoregressive term, AR(I).

output, and those related to structural adjustments, ostensibly resulting from disintegration.[96]

The model predicts that in 1955 industry costs would have been $164 million in 1948 prices, or 8 percent lower.[97] However, due to inevitable inaccuracies in the model, the absolute levels of the cost differences are less relevant than the fact that for each year from 1949 to 1955 costs are lower in the counterfactual case of studio integration than the actual case of freer entry and exit. Although counterfactual costs in figure 9 do not significantly differ from actual costs until 1954, the fact that predicted levels are continuously below actual levels suggests a trend.

The cost divergence comes from three possible sources: *(i)* above trend real wage increases, *(ii)* above trend increases in real capital costs, *(iii)* a lower utilisation efficiency of these factors. An increase in Coasian costs would suggest that all three probably occurred for the following reasons, respectively: *(i)* contracting out for labour meant higher marginal products and thus higher wages, *(ii)* less control over rental income and loss of scale economies increased borrowing costs and, *(iii)* selling films on a theatre-by-theatre basis meant utilisation of distribution resources was less efficient.

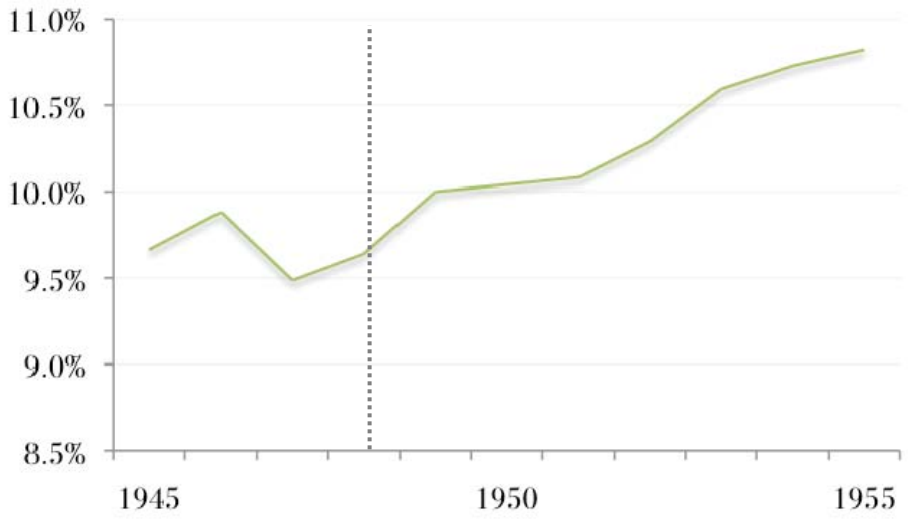
The results of this analysis show that an increase in Coasian costs was likely the impulse that transmitted the economic effects of divorcement. The main propagation mechanism by which the producer-distributors could transfer these cost increases down the supply chain was rental prices. This process is developed further in S3.2.

[96] This assumes that the relative prices of inputs remained constant. This assumption should be robust since the time-span under review is short.
[97] Cf. tab. 11 in app. III.

2.3 Returns to Scale

Joseph Schumpeter provided the foundations of justification for big business. The 'industrial mutation' he referred to was the power of large, more productive firms to outcompete their smaller rivals.[98] This section evaluates whether vertical integration increased returns to scale. To do so, properties of the industry production function before and after divorcement are contrasted.[99]

Figure 10
Part Time Workers As A Percent Of Total



Notes: Derived from tab. 16 in app. V. Dotted line denotes *Paramount* year.
Source: US Dept. of Commerce, *National income product accounts of the United States*, pp. 98-105.

[98] Of course, Schumpeter proceeds to describe the various phases during which constant growth in industrial concentration eventually leads to socialism. Fortunately, the motion picture industry did not comprise a large enough portion of national income to lead to any political nerves being shaken by its increasing amassment. There was, however, considerable animosity towards members of the industry who had been 'black-listed' for subscribing to the tenets of Communism. Although discussion of that matter in the current work ends here, the link between bigness in motion pictures and the fundamental beliefs of socialism would be an interesting subject for future research. 'Sherman Act', *Fortune*, p. 114.
[99] Industry production functions from 1929-48 and 1949-65 are estimated. Cf. app. III.

Three differences between the two functions can be identified. A mix of disintegration and measurement error by the Department of Commerce are used to explain these differences.

The first difference is in the use of labour. In the first period labour is the significant factor of production, whereas in the second period it loses significance.[100] Additionally, labour in the first period exhibits an increasing marginal product, confirming the scale economies found in the cost function. The portion of this trend that was picked up in the national statistics can be seen in figure 9, which shows the percentage of part time labour in the industry. However, due to increased subcontracting in the industry, the possibility of inaccurate measurement increased over time as employment became harder to record. Therefore, these records should be viewed as lower bound levels.

The second difference is a sharp increase in total factor productivity. This increase was likely caused by an increase in the skill level not accounted for in the data. As studios began outsourcing craftwork, skills became more narrowly defined and specialised.[101] It seems this trend began in late 1947, when studios cut payrolls by 30 percent to eliminate their high wartime employment.[102] Most of these cuts were craftsmen whose jobs with the studios never reincarnated.

Although the trend towards flexible specialisation would have augmented total factor productivity, the inconceivably high level for the second period, which was found to be 257 – versus a value of 2.89 for the first period – can be explained by the underestimation of labour input with

[100] Christopherson and Storper note that headcount reductions occurred predominantly among unionized craft workers while new administrative staff was brought on. Christopherson and Storper, 'Effects of flexible specialisation', p. 335.
[101] ibid., p. 341.
[102] 'Studio payrolls cut 30%', *Variety*, 10 Sep. 1947, p. 6.

an accurate output recording.[103] The fact that the Department of Commerce was likely unable to collect all the necessary employment data on the industry can be deduced from the lower coefficient of determination calculated in the regression for the second period. This was equal to 0.67 versus a value of 0.93 for the first period. Therefore, since it became more difficult to gather information on subcontracted work than on direct employment, the unexplained portion of the regression is likely due to measurement error by the Department of Commerce caused by the increasing trend towards subcontracted labour.

Thirdly, disintegration led to an increase in capitals share of production from insignificant to 0.44. This is partly due to the trend towards financing operations exhibited by the majors.[104] However, it can also be attributed to measurement error of the extensive short-term labour contracting labour described by Christopherson and Storper.[105] The data collected by the Department of Commerce would have come predominantly from the major motion picture firms, so that when labour was subcontracted the *measured* labour share would have fallen, and the capital share would have risen proportionately.

Due to measurement errors in these estimations, various productivity ratios (PR) of outputs to inputs are used as secondary evaluations. Bakker measures output in units of spectator-hours.[106] This unit of measure works well for estimating productivity trends across entertainment media; however, since the current study only examines the progression of a single medium, film, output is quantified as features released and attendance. Input is measured using industry employment –

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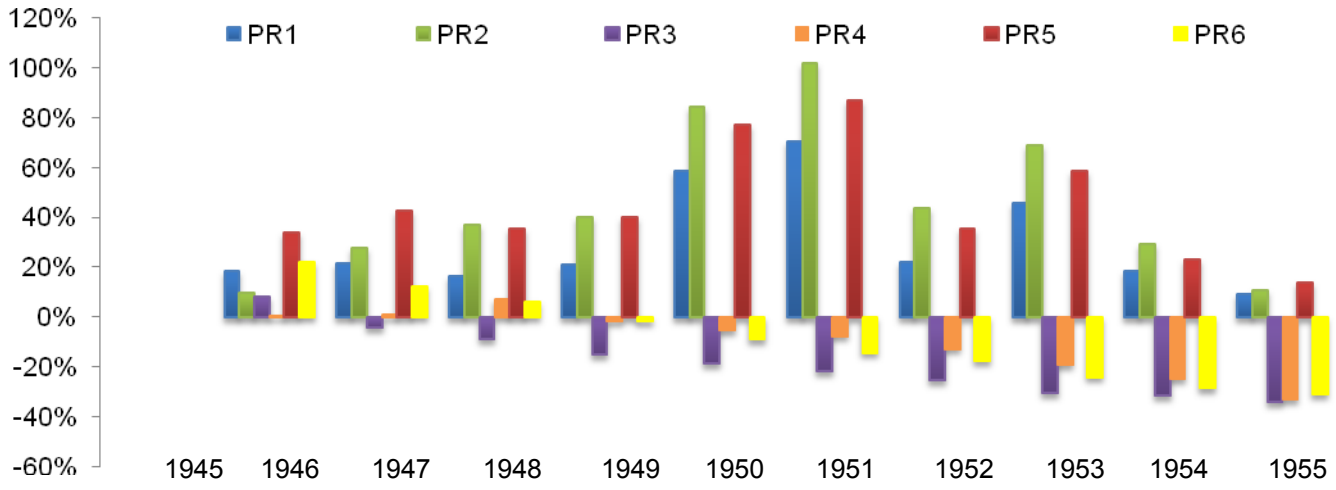
[103] For more on the impact flexible specialization had on total factor productivity see Christopherson and Storper, 'Effects of flexible specialisation', p. 341. Cf. app. III for further discussion of inaccurate measurement of labour input.
[104] Cf. §3.3 for discussion of the new role of studio . Christopherson and Storper, "Effects of Flexible Specialization," p. 334.
[105] ibid.
[106] Bakker, 'Time and productivity growth in services', p. 3.

PR1 and PR3, real wages – PR2 and PR4, and theatres – PR5 and PR6.[107]

Figure 11
Percent Change In Productivity Ratios



***Notes**:* Productivity ratios: PR1= films released / 10,000 industry employees, PR2 = films released / $10,000,000 real wages, PR3 = 1,000 annual attendance / industry employee, PR4 = annual attendance / $1 of real wages, PR5 = films released / theatre, PR6 = annual attendance / theatre.
***Source**:* Employee and wage data US Dept. of Commerce, *National income product accounts of the United States*; feature film and admissions data from Finler, *Hollywood story*, pp. 484-7, 500-3.

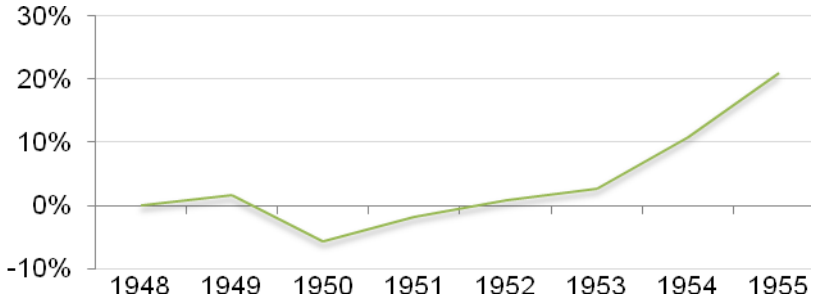
Figure 11 shows productivity changes relative to 1948 levels. These measurements varied considerably during the period. The most optimistic – PR1, PR2, PR5 – are all in terms of feature output and the

[107] This assumes a workforce of constant education, and therefore constant marginal product. Wage and employee data is derived from the US Dept. of Commerce, *National income product accounts of the United States*. Theatre data from Finler, *Hollywood story*, pp. 484-7, 500-3. The first four productivity ratios shown in fig. 11 were used by Litman to assess the period 1990-5. The two that use number of cinemas as an input are added in due to the saliency of that metric for this investigation. Cf. tab. 18 in app. V for calculation of productivity ratios. Litman, *Motion picture mega-industry*, p. 58.

least – PR3, PR4, PR6 – are all for annual attendance. This is not surprising given the fall in attendance caused by television.

Since features are the output of the production-distribution segment of the industry, and admissions are the output of the exhibition segment, the productivity of these segments diverged. The post-*Paramount* rise in productivity in the production-distribution segment was probably the result of layoffs and shutdowns in the exhibition segment. By first-order approximation, it does not appear that industry productivity improved over the period.[108]

Figure 12
Lamson Quality Index



***Source**:* Index derived from Lamson, 'Measured productivity', p. 300.

Since exhibition collected the largest share of industry revenues, a fall in its productivity matched by an equal rise in production-distribution productivity would have meant a fall in industry-wide productivity, as shown in figure 11.

[108] This assumes that the quality of feature films and tickets was stagnant over the period. There is reason to believe that this was not true for either. However, the changes in quality of admissions measured by Lamson in fig. 12 do not correlate with the trend in productivity shown in fig. 11. Therefore, although quality increased, it lagged the measured fall in productivity.

Figure 12 is a graphical representation of Lamson's ticket quality index, adjusted to a 1948 base-year. Immediately following *Paramount*, quality actually dropped. Since the Lamson index is specific to theatre quality attributes, it indicates that the figure 11 productivity measures of the exhibitor sector represent upper bounds.[109]

Although Lamson corrects for theatre quality, this hedonic price adjustment does not take into account film quality.[110] There is evidence that the quality of films probably went up during the period.[111] Furthermore, from the early 1950s onwards, exhibitors began to invest into three-dimensional technology, although not on a very large scale.[112] Therefore, productivity changes in terms of films released are lower-bound estimates.

These results suggest that *(i)* the costly effects of *Paramount*-induced inefficiencies were more acute in exhibition than production-distribution and *(ii)* total productivity change over the period was dismal compared to the 1.8 percent increase per annum estimated by Lamson

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[109] An interesting question is whether divorcement affected admissions ticket quality. Since competition in the production-distribution sector led to higher quality films being made it is possible that competition in the exhibition sector led to a similar increase in product quality. However, Lamson's index begins in 1947 and yet he makes no mention *Paramount* or its effects on quality. Therefore, quality change is assumed to be exogenous from divorcement. Lamson, 'Measured productivity', p. 300.

[110] One method studios used to lower picture quality was to continuously re-release films and sequels. For example, from 1931-55, 15 different *Tarzan* films were released. On the basis of titles, the quality of each successive release seemed to deteriorate. Examples of late *Tarzan* releases include *Tarzan and the Mermaids* (1947) and *Tarzan's Magic Fountain* (1948). Although the original was the most profitable, at 163 percent return on cost, not one of the 15 films made a loss. Their average profitability – excluding those for which data is unavailable – was 86 percent, 46 percent greater than the average of all films in the C.J. Tevlin and Eddie Marmix ledgers. Cf. app. VI.

[111] As stated by Adams, 'the public has benefited from an improvement in film quality. Though admission prices have gone up, the consumer probably gets more picture quality per dollar today than he did in 1948. In addition, he has more first-run choices than ever before'. Adams, 'Discussion', p. 523.

[112] By one estimate, it cost $300,000 to outfit a cinema with a three-dimensional installation in 1953. For more on the gradual uptake of three-dimensional technologies see 'Exhibs wary of 3-D hangover', *Variety*, 4 Feb. 1953, p. 7.

for all private services.[113] Lagging productivity was another cause of the losses incurred from *Paramount.* Precisely estimating these losses is the objective of S3.

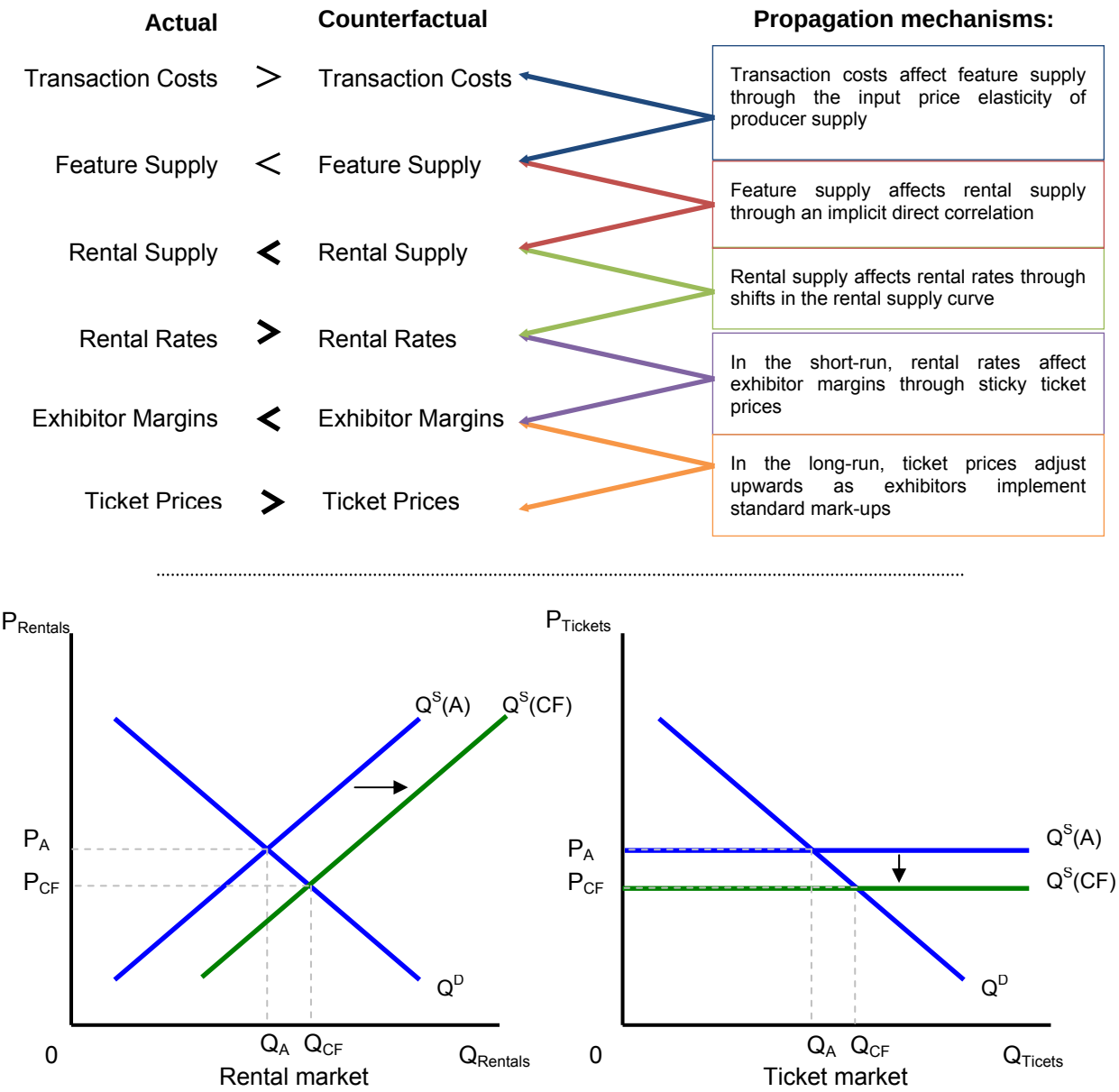
3. Effects of Disintegration on Industry Surplus

On the day of the Supreme Court verdict Martin Quigley, editor-in-chief of *Hollywood Reporter*, stated, 'what is to be ordained for the defendants must immediately affect…all of the industry'.[114] This section assesses the effects *Paramount* had on industry surplus by assuming that the Coasian costs outlined in S2 were transmitted through distributor rental prices.[115] This price rise is used as the exogenous shock in the model. The focus of the discussion is how they were propagated through the system. Figure 13 shows the hypothesised process. It implies causal relationships moving downward.

[113] Lamson, 'Measured productivity', p. 292.
[114] 'The big day', *Hollywood Reporter*, 4 May 1948, p. 3.
[115] The underlying assumption is that distributor rental prices were directly related to production-distribution costs. To clarify, it implies a direct relationship, not that marginal costs and prices were equal. The first assumption is robust since retail are determined using mark-ups to costs. The second assumption, which is not used, would be weak due to the high degree of concentration in the distribution sector.

Figure 13

Transfer Of Shock Through The Supply Chain



Notes: As producer-distributor costs decrease, rental supply shifts outward and rental prices decrease. As rental prices decrease, exhibitor profit margins increase and ticket supply shifts outward, lowering ticket prices. For the rental market, quantity supplied is equal to actual marginal production-distribution costs and counterfactual marginal production-distribution costs, which are measured as $Q^S(A)$ and $Q^S(CF)$, respectively. For the ticket market, quantity supplied is a function of actual rental costs and counterfactual rental costs, and is measured as $Q^S(A)$ and $Q^S(CF)$, respectively. The gradients of the curves should be ignored since the graphic is for illustrative purposes only. Ticket supply is assumed to be perfectly elastic because all prices at a cinema are equal, regardless of an individual film's popularity. To increase revenue for popular films, exhibitors extend the length of runs instead of increase prices. This assumption is confirmed by DeVany who claims that admission quantitites are almost entirely determined by consumer demand curves. The sizes of these effects are measured precisely in §3.2 and §3.3.
Source: DeVany, *Hollywood economics*, p. 45.

3.1 The Independent Producer

It is difficult to dispute the good fortune that *Paramount* brought to independent producers. *Variety* noted that independent producers saw the new 'competition as pushing up prices and taking them out of the position of being told by a major with control over most first-runs in a territory that they have to take his price – or else'.[116] This was how the majors maintained market power – by controlling geographic regions of the country and enacting policies of reciprocity towards one another such as priority access to each other's first-run theatres.[117] Upon dissolution of these agreements, the independent producers gained access to the most profitable cinemas. Having access to class A cinemas gave them incentives to produce class A films, and they did. Independents went from producing 5 percent of class A films prior to *Paramount*, to making more than 50 percent of all features in 1957, a majority of which were class A.[118]

Adams concurs that independent producers were the chief beneficiaries of divorcement. He states, 'first it seems clear (with the exception of World War II) have independent producers been as successful as since the divorcement of the Big Five. With the vertical control over choice exhibition outlets broken, independents have enjoyed an unparalleled opportunity to market a quality product'.[119]

However, this group had already been successful prior to divorcement. This was because they were few in number and agile in the face of hardship.[120] In 1947, there were only 25 members of the Society

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[116] 'Independent producers happy over possible K.O. to buying combines', *Variety*, 12 May 1948, p. 5.
[117] Balio, *American film industry*, p. 540.
[118] Conant, *Antitrust in the motion picture industry*, p. 200.
[119] Adams, 'Discussion', p. 523.
[120] Conant attributes the flexibility of independent producers to their ad hoc production schedule. This allowed them to lease studio space on a picture-by-picture basis as opposed to getting tied up in long-term fixed-investments. After *Paramount*, unutilised

of Independent Motion Picture Producers, whose total economic power did not exceed that of a single major.[121] Yet despite their small revenue share, independents produced better quality pictures and were the innovative forces that drove the industry to new frontiers.[122] Furthermore, during the war when the majors dominated, independent producers faired rather well.[123]

One business aspect where independent producers had difficulty, however, was in obtaining financing. It seems likely that a form of 'crowding out' had taken place, in which the major producers consumed all inexpensive credit lines, pushing up rates for the independents. Just prior to divorcement, banks required that 15 percent of loans to independents have a guarantor or be backed up by collateral. Moreover, to get hold of these guarantees, independents had to relinquish 10 percent of profits on average.[124] However, once the majors lost their theatre collateral, independents became relatively less risky to lend to in the eyes of banks and could gain better financing arrangements.

Conant emphasises the commercial improvement of independent producers after *Paramount*. His evidence indicates that there were 40 independent producers in 1945, 70 in 1946, and 100 in 1947.[125] Although Nelson, his source, clearly disclaims that these estimates were rough at best, with 1946 estimates of the number of independent producers ranging from 36 to over 100, the increasing trend in the number of independents is clear.[126]

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production lots were leased out to independents for around $100,000 per class A picture. Conant, *Antitrust in the motion picture industry*, pp. 114-5.

[121] Nelson, 'The independent producer', p.51.

[122] From 1940-7, 3 out of the 7 best picture awards given out by the Academy of Motion Picture Arts and Sciences went to independent producers. Moreover, the record for the most awards won by a single picture was held by independent producer David Selznick for his picture, *Gone With the Wind* (1939). Nelson, 'The independent producer', p. 52.

[123] ibid., p. 55.

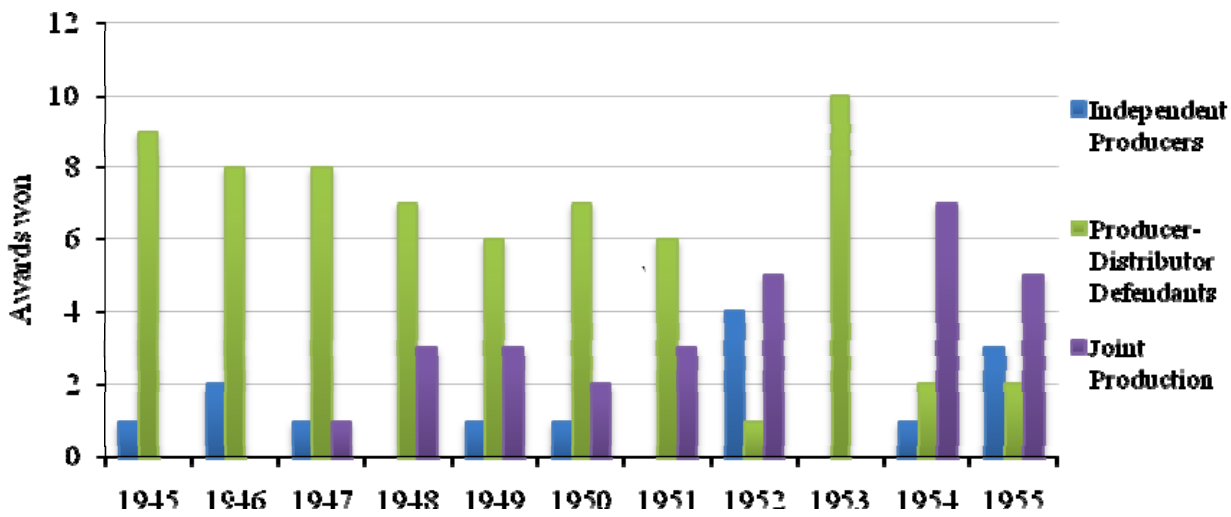
[124] 'Bell tolls for indie producers', *Variety*, 19 May 1948, p. 3.

[125] Conant, *Antitrust in the Motion Picture Industry*, pp. 112 –3.

[126] Nelson, 'The independent producer', p. 51.

Conant cites two reasons for the increasing independent market share: *(i)* increased film demand from divorced theatres trying to fill voids left by discontinued B picture production, and *(ii)* the descent of the Production Code Administration, which the majors had exploited to raise barriers to entry.[127] He reasoned that the enjoining of block-booking stunted the market for low-grade films. It is more likely, however, that B pictures stopped being made because of the new substitute for low-quality entertainment – television.[128]

Figure 14
Distribution Of Awards For Quality



***Notes**: The producer-distributor spike in 1953 is due to Columbia's *From Here to Eternity*, which won 8 out of the 10 potential awards.*
***Source**: International motion picture almanac for 1956*, pp. 595-6, 602.

On a revenue basis, distributor advances to independent producers increased from 1945 to 1955. These funding advance increases mark another distinction between the independent-major relationship before *Paramount* and after. Warner Brothers increased its advances from

[127] Conant, *Antitrust in the Motion Picture Industry*, p. 113.
[128] This is not to say that television programs were not good, merely that they required fewer resources to produce than features.

$1,643,388 in 1946 to $25,093,990 in 1956.[129] After the sale of theatres, the studio business model focused on leasing lots and financing independents.[130] Thus, entry costs for independents were lowered because *(i)* independent films had new access to first-run theatres, and *(ii)* divorcement opened new financing channels.

Yet the most convincing evidence of the improving situation of independent producers is the number of feature films they produced. By 1957, they produced a majority of releases, a 35 percent increase from the 1949 level.[131]

More wins at award ceremonies are another measure of lowered barriers to entry for independent producers. Figure 14 shows results for two awards ceremonies. Taking samples from different ceremonies eliminates potential bias in the data from judgment panel capture by interest groups, namely the studios.[132]

The trend in figure 14 suggests that independent producers began to gain share of high quality productions by both sole sponsorship and joint productions with majors. Ingris notes that an increasing number of high calibre producers and directors formed releasing contracts with the studios, confirming this trend.[133]

Yet despite the independent producers' increasing market share, it does not appear that they captured a significant portion of the market for high grossing pictures. Of the top 119 grossing films of 1952, the only one

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[129] Conant, *Antitrust in the motion picture industry*, p. 117.
[130] Balio, *American film industry*, p. 573.
[131] Conant, *Antitrust in the motion picture industry*, p. 118.
[132] Any bias would likely be small, so two ceremonies are enough to adequately diversify the sample. The awards included are the top 6 for the Academy Awards – best feature picture, best performance by an actor, best performance by an actress, best performance by an actor in supporting role, best performance by an actress in a supporting role, best achievement in directing – and the NY Film Critics Awards – best motion picture, best male performance, best feminine performance, best direction.
[133] Ingris, *Freedom of the movies*, p.34.

produced by a non-major was ranked 119.[134] Independent producers, including United Artists, had only produced 7 of the 95 top grossing films through 1953.[135]

Therefore, independent producers benefited from *Paramount*, but would have to wait till after the period under investigation to access the market for highest grossing pictures.

3.2 The Independent Exhibitor

The focus now turns to the effects divorcement had on independent exhibitors. This work contends that disintegration worsened the effectiveness of this exchange for two reasons: *(i)* disintegration created more transaction costs that led to higher rental prices, and *(ii)* producers lost their incentive to release high levels of output since they no longer were entitled to the revenues from exhibition, leading to a further rise in rental prices.[136]

A director of the Southern California Theatre Owners' Association testified that studios produced 387 features annually prior to divorcement

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[134] It was *Wild Blue Yonder* (1951), produced by Republic. 'Top grosser of 1952', *Variety*, 7 Jan. 1953, p. 61.

[135] 'All-time top grossers', *Variety*, 21 Jan. 1953, p. 4.

[136] As the product moves down the chain from the producers to the consumers, separate rounds of competitive bargaining occur between agents, in which one buys the product and the other sells it. These bargaining rounds can be briefly described as follows:

(1) Producer sells copyrights to distributors - this transaction normally begins before production starts. This transaction normally begins before production starts,
(2) Distributors sell licensing agreements to exhibitors, and
(3) Exhibitors sell admissions tickets to consumers.

The accusations brought against the major studios claimed that they had been guilty of monopolistic and collusive practices in the type (2) bilateral sale described above. It should be noted that the reason independent distributors were not also at fault for anti-competitive practices was that they did not have the power to practice block-booking to any meaningful extent. This was because most of the schedules of exhibitors had already been fully booked by the block-booking efforts of the Big Eight. Senate, *To prohibit and to prevent the trade practices*, p. 1. Additionally, during the period there were more than 400 film exchanges in operation in the United States, of which independent distributors handled less than 5 percent of the films exhibited. Ingris, *Freedom of the movies*, pp. 36, 44.

and 240 after.[137] His logic was that without theatres, the majors had a lower incentive to produce continuous streams of output. In economic terms, this was due to the elimination of the certainty premiums detected in §2.1.1.[138] More generally, their profit-maximising feature supply decreased when they lost claims to ticket revenues. The majors may also have cut output because the new court ordered restrictions on profitable rental terms meant raising prices was the only way to compensate shareholders. Thus, the control that occurred after divorcement was not direct price controls, but restraint of output.

In defence of the studios, a *Variety* report released on November 18, 1953 quoted Paramount chief Barney Balaban as stating, 'we have absolutely no limitation on the number of pictures to be made and I doubt whether any other studio has the limitation – one which we have not set and which is beyond the control of human beings is the limitation of ideas and talent'.[139] In essence, Balaban attributed the drop in supply to a shortcoming in ideas.

The validity of his statement is difficult to prove, however, it seems more than coincidental that a shortfall in supply would follow an event as influential as *Paramount*. Adams stated, 'the recent action of the FCC has, I think, demonstrated once again that government is not an agent of countervailing power; that, instead, government often supports the economic forces which breed monopoly; that the government's exercise of administrative or regulatory powers often creates the very restraints

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[137] 'Movie antitrust actions hit by exhibitor at inquiry', *Los Angeles Times*, 1 Apr. 1953, p. A1.

[138] Another reason why majors were disincentivised to produce high output was because they derived a substantial portion of their pre-*Paramount* income from theatres. Theatres probably had higher optimal production levels than the production-distribution – since showing more pictures meant theatres could attract a wider array of audiences, increasing ticket sales. Without exhibition revenues, optimal output for collusive producer-distributors would have dropped to obtain higher prices. Simply stated: $\delta\pi/\delta Q$ for producer-distributors < $\delta\pi/\delta Q$ for exhibitors.

[139] 'Balaban first to answer charge of deliberately-plotted shortage', *Variety,* 18 Nov. 1953, p. 5.

which antitrust is subsequently required to dissolve'.[140] The quote seems particularly valid. The Court did not eliminate concentration – it simply distorted it by turning it from effective to hostile.

Before assessing the net effects of the alleged restraint on output, gross performance of independent exhibitors is extrapolated forward from 1945 to 1955. Figure 15 shows the percent change in price of exhibitor inputs relative to admission prices.

The cost index is base-weighted according to a 1946 basket derived from Conant, shown in table 1.[141] Odlum gives another potential weighting.[142] However, since Odlum's estimates are less thorough, and since he was the chairman of the Board for RKO, an average of Conant's cost weightings is used.

Since figure 15 shows the gross performance of exhibitors from 1945 to 1955 it includes omitted variables. To reveal what portion of the difficulty *Paramount* caused directly, counterfactual rental prices are estimated.[143] The difference between the counterfactual and actual rental prices is used to show the extent of the independent exhibitors' predicament that was *Paramount* induced.[144]

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[140] Adams, 'Discussion', p. 523.

[141] The substitution bias from using a Laspeyres price index is assumed to be small due to limits for exhibitor input alternatives. Intuitively, there is one way to show a film that requires inputs in fixed-proportions. This should only vary by the size of cinemas, but this poses no problem since the model predictions are for the average exhibitor. Conant, *Antitrust in the motion picture industry*, p. 170.

[142] Odlum, 'Financial organization', p. 25.

[143] The rental rates exhibitors paid to the studios were trade secrets rarely released, however, reasonable estimates of these rates per ticket sold were made in §3.2.

Measuring the real rental price as a proportion of tickets sold is the most robust way to measure them since the alternative – calculating rental price inflation as percentage change in total rentals – would not account for quantities.

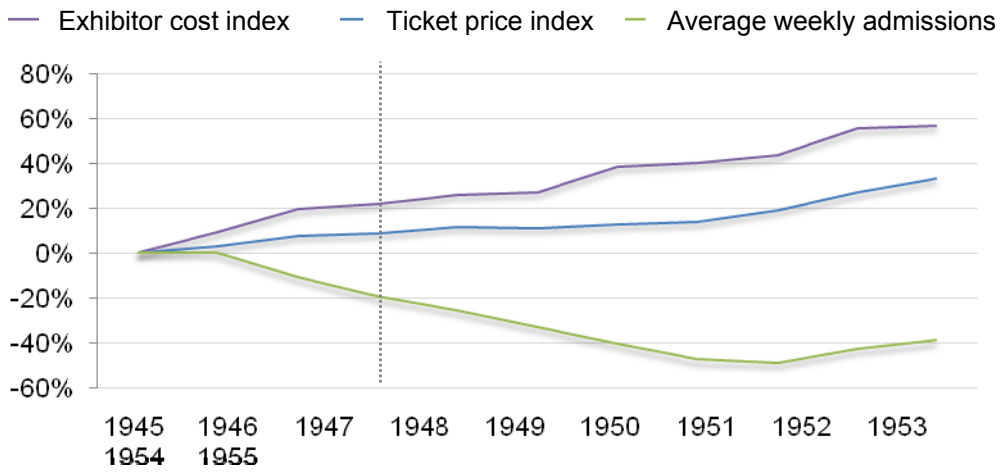
Even if the number of rentals was available, rental rates would still be better substitutes for the hypothetical price per rental because of the many contingencies in rental agreements that price does not include.

For a full list of exhibitor costs in 1948 see Howard, 'Yardsticks for motion picture revenues and costs', p. 132.

[144] Although this analysis uses rental prices as the primary propagation mechanism, *Paramount* likely had an affect on wages due to the specialisation of labour it caused.

Figure 15:

Exhibitor Input Prices Relative To Ticket Prices And Attendance



***Note**:* Indices derived from admission prices and costs in tab. 2. Dotted line denotes *Paramount* year.
***Sources**:* Price indices derived from Conant, *Antitrust in the motion picture industry*, p. 4; attendance data from Finler, *Hollywood story*, p. 507.

Table 1:
Weights For The Exhibitor Cost Index

Source	Conant (Loop theatres)	Conant (Outlying theatres)		Conant (Average)	Odlum
Measurement year	1946	1946		1946	1947
Admissions	$1.00	$1.00		$1.00	$1.00
Expenses					
Film rentals	0.32	0.24		0.29	0.32
Salaries	0.10	0.17		0.12	0.16
Advertising	0.06	0.03		0.07	
Rent	0.15	0.23		0.17	0.15
Supplies	0.01	0.01		0.01	
Program costs	0.13	0.02		0.15	
All other	0.06	0.09		0.08	0.20
Total	0.82	0.79		0.88	0.83
Operating profit	0.18	0.21		0.12	0.17

***Notes**:* All costs are normalised to cents on the dollar of admissions.
***Sources**:* Conant, *Antitrust in the Motion Picture Industry*, p. 170; Odlum, 'Financial organization', p. 19.

However, including these would result in double counting since wage increases are already accounted for in rising rental prices.

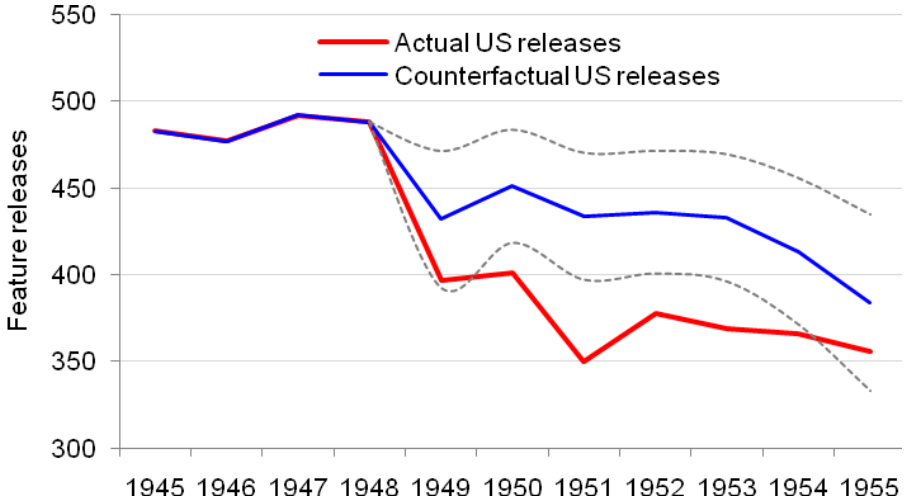
Table 2:
Actual Exhibitor Price-Margin Analysis

	'45	'46	'47	'48	'49	'50	'51	52	'53	'54	'55
Admission tickets (¢)	39.8	41.0	42.9	43.3	44.5	44.3	44.9	45.3	47.5	50.5	53.1
Film rentals	11.3	11.3	12.3	11.9	12.4	12.6	13.0	13.4	14.5	17.2	16.9
Salaries[a]	4.1	4.7	4.8	4.6	4.7	4.7	5.1	5.1	5.2	5.6	6.0
Rent[b]	6.9	7.0	7.2	7.7	8.0	8.3	8.6	9.0	9.4	9.8	9.9
Advertising[c]	2.2	2.8	3.3	3.3	4.4	3.9	5.0	5.1	4.7	5.2	5.3
Supplies[d]	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Program costs[d]	5.5	6.2	7.7	8.3	7.9	8.1	9.1	8.9	8.7	8.8	8.8
All other[d]	2.7	3.1	3.8	4.2	4.0	4.1	4.6	4.5	4.4	4.4	4.4
Total	33.0	36.1	39.5	40.3	41.6	42.0	45.8	46.4	47.4	51.3	51.8
Operating profit	6.8	4.9	3.4	3.0	2.9	2.3	-0.9	-1.1	0.1	-0.8	1.3
20% tax[e]	1.4	1.0	0.7	0.6	0.6	0.5	0.0	0.0	0.0	0.0	0.3
Net profit	5.4	3.9	2.7	2.4	2.3	1.9	-0.9	-1.1	0.1	-0.8	1.1
Net profit margin (%)	13.6	9.5	6.4	5.6	5.2	4.2	-1.9	-2.3	0.1	-1.7	2.0

[a] Indexed to annual wages per employee
[b] Indexed to BLS rent index.
[c] Indexed to derived advertising inflation per feature.
[d] Indexed to PPI.
[e] The 20 percent tax implemented in 1944 was levied on major fractions.
***Note**:* All figures based on 1946 base year weightings in tab. 1.
***Sources**:* Conant, *Antitrust in the motion picture industry*, p. 4; Senate, *Motion-picture distribution trade practices–1956*, p. 28; US Dept. of Commerce, *Income and product accounts of the United States*, pp. 94-7; Conant, *Antitrust in the motion picture industry*, p. 9; Bureau of Labor Statistics, *CPI*; Senate, *Repeal of tax on admission*, p. 2.

Figure 16:

Counterfactual Industry Releases



***Notes**:* Upper and lower bounds represent 95 percent confident intervals. Cf. tab. 20 in app. V for calculations.
***Source**:* Actual releases from Finler, *Hollywood story*, pp. 484-487, 500-503.

Table 3:
Estimating Exhibitor Rental Demand

	$lnQ_{Rentals} = \beta_0 + \beta_1 \bullet lnP_{Rentals} + \beta_2 \bullet lnP_{Compliments} + \varepsilon$
β_0	6.57**
	6.52
β_1	-0.81
	-1.66
β_2	-0.47*
	-2.36
Number of years	11
R^2	0.65
Adjusted R^2	0.57
F-statistic	7.58
Durbin-Watson	1.52

***Notes**:* Cf. tab. 2 for price data; cf. tab. 20 in app. V for feature supply data.

Since rental rates were a function of supply, a feature supply function is first estimated.[145] Two variables are used.[146] Once in log form, a cost per feature variable, C_t / F_t, will show the input price elasticity of supply. An expectations variable, measured as real box office receipts per feature in the previous period, BO_{t-1} / F_{t-1}, shows how demand expectations affected producer supply decisions. These will be sufficient to approximate counterfactual feature supply. Any difference between actual output and the fitted values indicates whether the majors restrained output.[147]

The output function is equation 4.[148]

$$Q = 670.39 - 216.27 \bullet lnC_t / F_t + 72.26 \bullet lnBO_{t-1} / F_{t-1} \qquad (4)$$

Figure 16 shows that the actual fall in output was below the predicted level, indicating an abnormally large downward fluctuation. This had dire consequences for independent exhibitors who – ironically – brought the original complaints to the Justice Department. Already struggling to maintain a withering business model, the supply cut worsened their plight. Although the main culprit for the poor commercial

[145] Since rental prices are unobservable, rental rates are used. These are equal to the rental costs as a percentage of ticket sales. Rental rates more appropriate than real rental prices because *(i)* they represent real price changes relative to other exhibitor inputs, and *(ii)* rental prices rarely existed as such and were determined as percentages as box office sales.
[146] Litman generalises output supply as Qs = f[$Price_{Product}$ (+), $Price_{Substitutes\ in\ production}$ (+), Technology (+), $Price_{Inputs}$ (-), Competitors (+), Expectations (+/-), Institutional Factors (+/-)), Time (+)].Litman, *Motion picture mega-industry*, p. 244.
[147] Variables Litman includes that cannot be directly measured are institutional factors. These are interpreted here as oligopoly.
[148] Cf. tab. 20 in app. V for real cost and receipt data. Cf. tab. 14 in app. III for regression results.

Table 4:
Counterfactual Rental Rates

	PPI	Counterfactual features released	Counterfactual rental rate[a]	Actual rental rate[b]	Rate difference
1945	1.00	483	-	0.29	-
1946	1.14	477	-	0.28	-
1947	1.40	492	-	0.29	-
1948	1.52	488	-	0.27	-
1949	1.44	432	0.28	0.28	0.00
1950	1.48	451	0.26	0.28	-0.03
1951	1.67	434	0.25	0.29	-0.04
1952	1.62	436	0.25	0.30	-0.04
1953	1.60	433	0.26	0.31	-0.05
1954	1.61	414	0.27	0.34	-0.07
1955	1.61	384	0.30	0.32	-0.02

[a] Derived from equation 5.
[b] Equals annual rental income divided by annual ticket sales.
***Note**:* Cf. tab. 20 in app. V for counterfactual releases.
***Source**:* PPI data from Bureau of Labor Statistics.

health of independent exhibitors was Schumpeterian creative destruction caused by changing American tastes, lower counterfactual rental rates would mean *Paramount* exacerbated their difficulties.[149]

Regressing actual rates against the quantity of annual releases yields an estimate of the exhibitor's rental demand.[150] Results of this regression are in table 3. Substituting the counterfactual feature output in table 21 into the inverse rental demand function gives counterfactual rental rates.[151] The inputs for the exhibitor demand function are rental

[149] Cameron acknowledges this explanation for the predicament of British exhibitors during the same period. Cameron, 'Supply and demand for cinema tickets', p. 38.
[150] A perfect estimation of elasticity would relate rental rates to number of rentals as opposed to number of features. However, since number of rentals is a direct function of the number of features, using film feature output as a measure of supply is satisfactory.
[151] This requires the assumption that output was a function of exhibitor demand. Although exhibitor negotiating power was constrained due to the degree of oligopoly in production-distribution, their collective demand was likely strong. It also assumes that exhibitors did not consider consumer ticket demand in making their decisions. Since ticket demand is inherently unpredictable, as was proven in §2.1, this is a fair assumption. Exhibitors would have had no reason to consider expected consumer demand when determining their demand for features if they had no way of predicting it.

rates, $P_{Rentals}$, and compliments in production, $P_{Compliments}$.[152] Counterfactual results are in table 4. Equation 5 solves for inverse demand.

[152] The PPI is used as a proxy for the complimentary exhibition costs. This is an appropriate index since it is almost directly correlates with the cost inflation of the industry as whole.

Table 5:
Counterfactual Exhibitor Price-Margin Analysis

	‘45	‘46	‘47	‘48	‘49	‘50	‘51	52	‘53	‘54	‘55
Admission tickets (¢)	39.8	41.0	42.9	43.3	44.5	44.3	44.9	45.3	47.5	50.5	53.1
Film rentals	11.3	11.3	12.3	11.9	12.3	11.4	11.3	11.5	12.3	13.8	15.9
Other costs[a]	21.7	24.8	27.2	28.4	29.2	29.4	32.8	32.9	32.9	34.1	34.9
Total	33.0	36.1	39.5	40.3	41.5	40.8	44.1	44.4	45.2	48.0	50.8
Operating profit	6.8	5.5	3.4	3.0	3.0	3.5	0.8	0.9	2.3	2.5	2.3
20% tax	1.4	1.1	0.7	0.6	0.6	0.7	0.2	0.2	0.5	0.5	0.5
Net profit	5.4	4.4	2.7	2.4	2.4	2.8	0.6	0.7	1.8	2.0	1.9
Counterfactual net profit margin (%)	13.6	10.8	6.4	5.6	5.4	6.3	1.4	1.5	3.8	4.0	3.5
Actual net profit margin (%)	13.6	9.5	6.4	5.6	5.2	4.2	-1.9	-2.3	0.1	-1.7	2.0
Margin loss (%)	-	-	-	-	0.2	2.2	3.3	3.8	3.7	5.7	1.5
Real box office receipts (millions)	1,941	2,091	1,723	1,506	1,469	1,376	1,214	1,133	1,071	1,100	1,192
Total loss (millions)	-	-	-	-	2.9	30.3	40.1	43.1	39.6	62.7	17.9

[a] Same as in tab. 2.
***Note**:* Figures to the right of ragged line are counterfactual.
***Sources**:* Cf. tab. 2.

$$lnQ_D = 6.57 - 0.81 \bullet lnP_{Rentals} - 047 \bullet lnP_{Compliments} \quad (5)$$

$$lnP_{Rentals} = (6.57 - 0.47 \bullet lnP_{Compliments} - lnQ_D) / 0.81$$

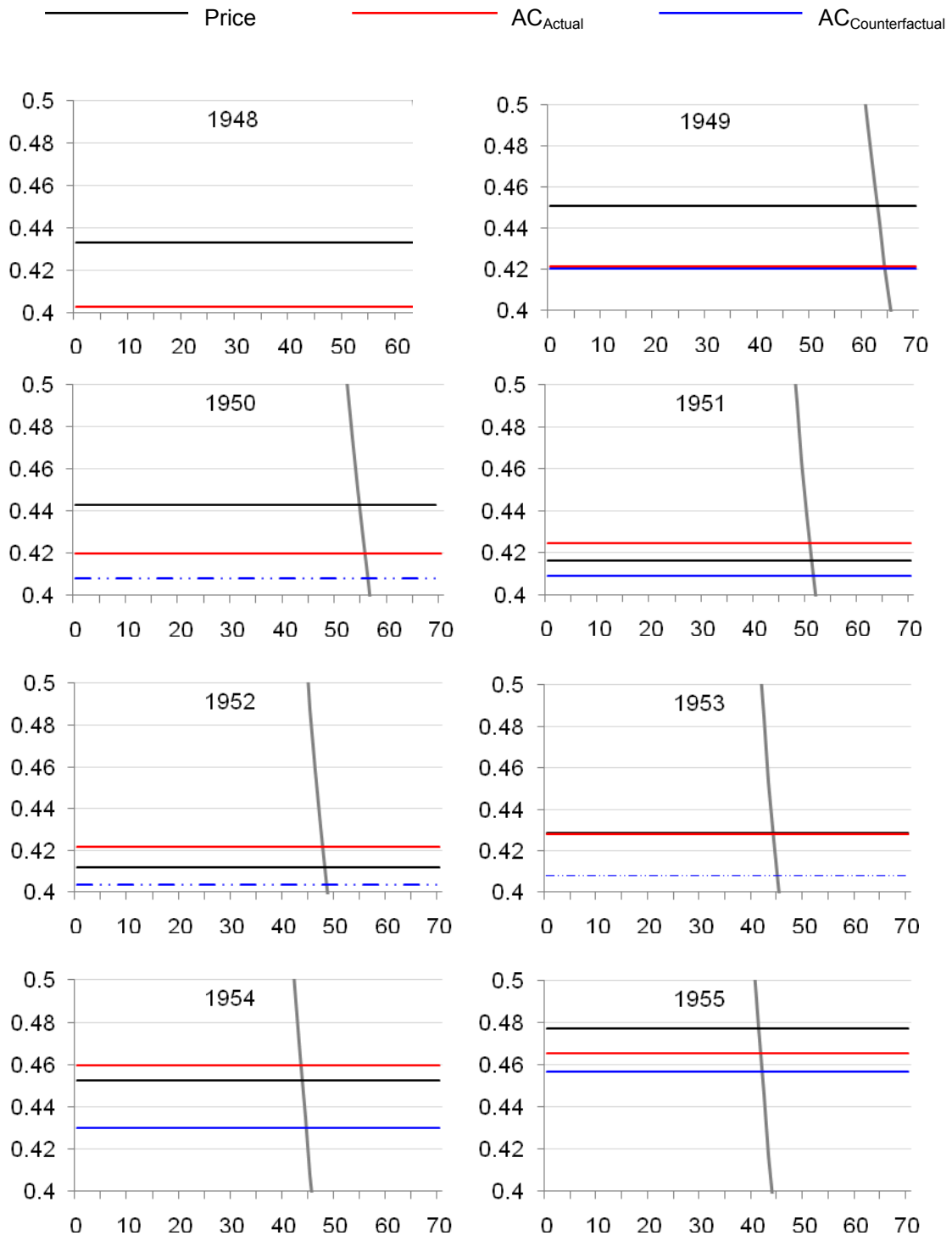
$$P_{Rentals} = e^{(6.57 - 0.47 \bullet lnPCompliments - lnQD) / 0.81}$$

Using the counterfactual rental rates in table 4, the price-margin analysis in table 2 can be repeated for the counterfactual scenario. This is done in table 5.

The rising cost of film rentals meant losses instead of profits for the representative exhibitor. Marginal income was negative for 3 years between 1949 and 1955 due to the *Paramount*-induced cut in output. By 1954, exhibitors would have had 5.7 percent higher margins had the studios held their theatres. When margins finally did begin to rebound in 1955, the main reason was likely because so many theatres had gone out of business that pricing power had finally returned. Therefore, it seems likely that independent exhibitors suffered unnecessarily.

Figure 17:

Change In Exhibitor Surplus



***Note**:* All charts are scaled proportionately so that intertemporal comparisons of exhibitor surplus can be made. Since exhibitor costs are assumed to not exhibit scale effects, average costs are equal to the actual and counterfactual marginal costs in tab. 6.

Table 6:
Annual Fall In Exhibitor Surplus

	MC_A	MC_{CF}	MC_A - MC_{CF}	ΔMC	$\Delta MC/MC_A$	ε^b	Receipts[a]	Annual loss[a]	Real loss[b]
1948	40.9	40.9	0.0	0.00	0.00	0.81	1,506	0	0.00
1949	42.2	42.1	0.1	0.00	0.10	0.81	1,451	1	1.43
1950	42.5	41.5	1.0	0.02	0.99	0.81	1,376	14	13.32
1951	45.8	44.3	1.5	0.03	1.48	0.81	1,310	19	17.82
1952	46.4	44.6	1.8	0.04	1.77	0.81	1,246	22	19.80
1953	47.4	45.7	1.7	0.04	1.68	0.81	1,187	20	17.51
1954	51.3	48.5	2.8	0.05	2.74	0.81	1,228	34	29.43
1955	52.1	51.3	0.8	0.02	0.80	0.81	1,326	11	9.20
Total									108.51

[a] In millions of current dollars.
[b] In millions of 1948 dollars.
[c] Cf. tab. 3 for price elasticity estimation.
***Notes**:* All data is after-tax. Cf. tab. 2 and 5 for marginal cost data.
***Source**:* Total receipts from Finler, *Hollywood story*, p. 507.

Their annual surplus losses are shown graphically in figure 17 as the area bounded by actual and counterfactual marginal costs, the vertical axis, and the consumer demand curve, which for simplicity is assumed to have constant elasticity.[153]

Equation 6 calculates annual losses.

$$\textit{Fall in exhibitor surplus} = (\Delta MC)[1-(1/2)(\varepsilon)(\Delta MC/\ MC_{Actual}) \qquad (6)$$

Where ΔMC is the difference in actual and counterfactual marginal costs and ε is the exhibitor price elasticity of demand for rentals, 0.81, from table 3. The change in annual surplus is shown in table 6.

From 1945 to 1955, national ticket prices increased by a third, yet as table 2 shows, this was not enough to offset the rental price hikes.

[153] Since consumer demand is estimated using a double logarithmic relationship, the price elasticity of demand is constant for all values of price and quantity. Constant elasticity is a good assumption to make when the price range being evaluated is confined, as is the case for each year in fig. 17. Feinstein and Thomas, *Making history count*, pp.349-51. Cf. app. III for estimation of the consumer demand function.

S2.2.1 showed that costs were controlled less effectively in a competitive industry structure than a studio-centric one, and the analysis in table 6 implies that independent exhibitors inherited the lion's share of the excess costs.

The final cost transfer in the supply chain is from the exhibitor to the end-consumer. However, this analysis has revealed that even without divorcement, the independent exhibitor would not have been able to lower admission prices, hence prices were sticky in the short-run. The most they would have been able reduce prices by while remaining profitability was 2 percent between 1951 and 1954. Therefore, it seems unlikely that they would pass on the counterfactual margin increases to consumers. This is because cinemas were profitable enterprises before the 1950s, with close to 8 percent average profit margins from 1945 to 1948 – see table 2. This indicates that any surplus gained they would keep so that they could come closer to achieving their standard retail mark-ups. Additionally, given the exceptionally low consumer demand in the early 1950s, lowering prices would probably not have lifted revenues.

Nor did independent exhibitors have the power to boost prices to raise margins. Although the long-run price elasticity was estimated to be low, a flood of substitutes came to market during this era – namely television programming.[154] Exhibitors in a majority of the areas covered by *Variety* were too cautious to raise prices in 1950.[155] Moreover, as the rate of closure of marginal houses gained pace, those still open became evermore wary of raising prices.[156]

These results suggest that the hypothesis of lower admission prices in the counterfactual state was correct in its assumption that prices were

[154] *Variety* reported theatres in Washington, D.C. as 'afraid to tilt their tabs in the face of the tremendous increase of TV sets'. 'Price hike vs. attendance dip', *Variety*, 6 Dec. 1950, p. 22.
[155] ibid., p. 3.
[156] ibid.

sticky. Accordingly, it seems that the transfer of costs through the supply chain stopped at the independent exhibitor who got saddled with the bill.

3.3 The Defendants

On June 15, 1948, Paramount president Barney Balaban said, "I believe that our theatre interests will be reduced with a corresponding reduction of our ultimate earning power." He also stated that 85 to 90 percent of the company's $67 million in fixed assets were theatre holdings.[157] This section aims to quantify Balaban's forecast for earnings.

Although DeVany mentions the impact *Paramount* had on the defendants' market values, he does not extend his analysis to the effects that forced theatre sales had on earnings or revenue potentials.[158] To estimate how the hypothesised cost increases affected the defendants, this section backs-out annual earnings losses from the defendants' share prices. By estimating earnings change this way, inferences based on qualitative inference are avoided. The methodology uses elements from the work of Cready and Hurtt to empirically measure investor responses to antitrust decisions.[159]

During the decade under investigation, several events had large impacts on the *Paramount* defendants. To estimate how each event impacted the industry, DeVany uses a regression that follows the capital asset pricing theory.[160] However, his analysis is incomplete because it does not include trading volume or volatility, two key indicators for an event's significance, which are accounted for here.

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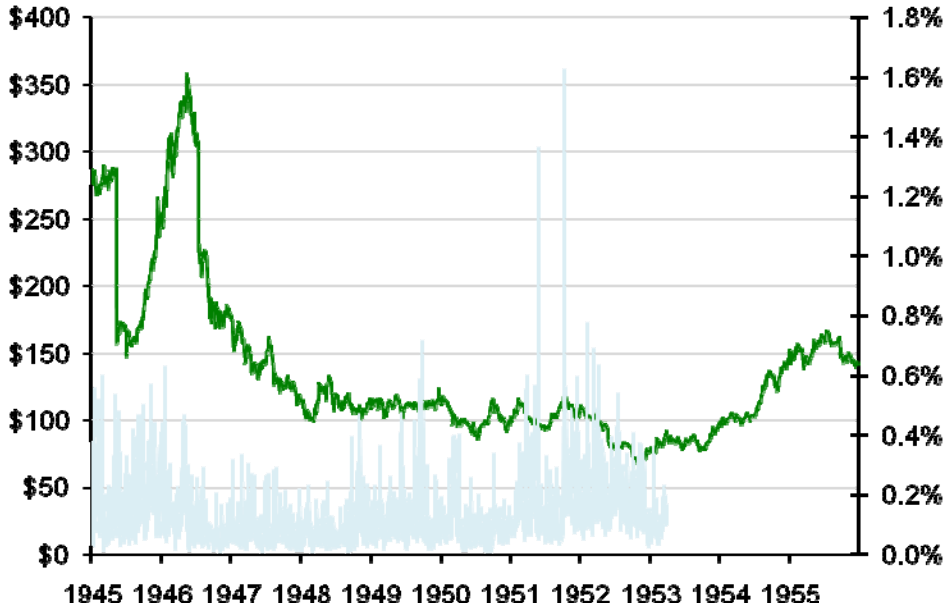
[157] 'Theatres 90% par assets', *Variety*, 16 Jun. 1948, p. 3, 23.
[158] DeVany, *Hollywood economics*, p. 186.
[159] Cready and Hurtt, 'Assessing investor response', p. 891.
[160] DeVany, *Hollywood economics*, p. 181.

Figure 18:

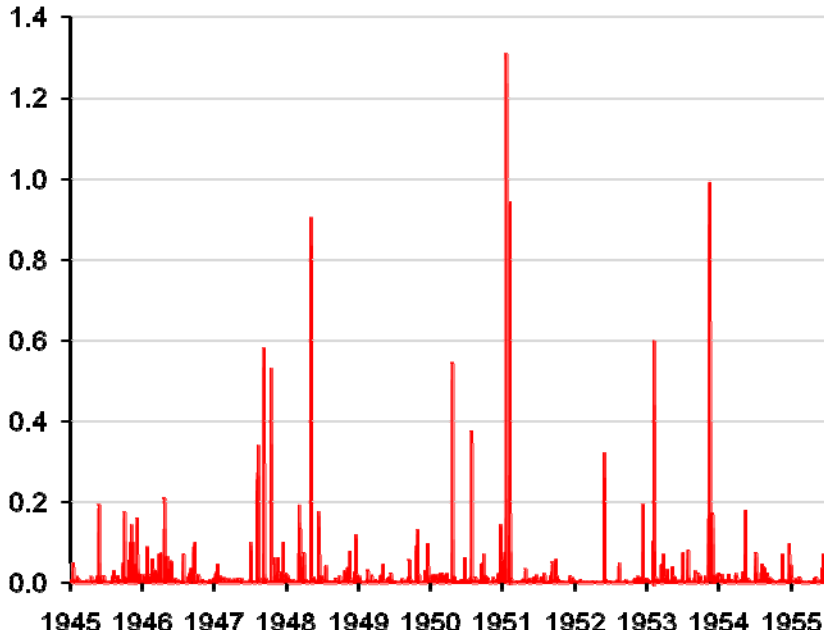
Value-Weighted Studio Stock Price Index



***Note**:* Cf. footnote 161 for method of weighting.
***Source**:* Share price and volume data from Wharton Research Database Service.

Figure 19:

Event Impact Screener



***Notes**:* The meter is constructed using beta-excess returns, volume and volatility. Cf. app. IV for derivation.
***Source**:* Wharton Research Database Service.

Figure 18, which shows share price information for seven Hollywood studios, gives a preliminary look at the commercial performance of the studios.[161]

However, for a more precise analysis of the events that had the greatest impact on investor sentiment, the Event Impact Screener in figure 19 was used.[162] It confirmed that 4 May was in fact the day that antitrust-related matters had the largest impact on studio shares.[163]

The net effect on the defendants' earnings potential will be a proxy for the change in producer-distributor surplus. It is estimated using historical price to earnings ratios from the years preceding *Paramount*. Although the methodology of Fogel serves as a foundation for building the counterfactual, previous literature in which this specific methodology is used is yet to be uncovered.

The method used to assess the impact *Paramount* had on defendants is preferred to looking directly at financial statements because omitted variables, particularly consumer substitution away from motion pictures, affected the company's actual earnings. Analysing stock price

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[161] The studios are Columbia, MGM, Paramount, RKO, Twentieth Century Fox, Universal and Warner Bros. The following equation is used to create the value-weighted index. It weights the prices of each stock relative to their market capitalisations:

$$P^{t}_{index} = \frac{\sum_{S=1}^{7}\left(P_s^t\right)\left(P_s^t \bullet Q_s^t\right)}{\left(\overline{P}^t \bullet \overline{Q}^t\right)}$$

Where $P_s{}^t$ represents the closing price of stock *s* on day *t*, $Q_s{}^t$ is the number of shares it has outstanding, and $\overline{P}^t$ and $\overline{Q}^t$ are the average price and quantity for all seven companies, respectively. $P^t{}_{index}$ is the price of the value-weighted index on date *t*. The calculated index values range from a high of $358.30 on September 5, 1946 to a low of $67.20 on October 10, 1952. These peak and trough dates are consistent with the industry's performance over the period as a whole.

[162] Cf. app. IV for an explanation of how the Event Impact Screener were constructed.

[163] From the Event Impact Screener, specific trading dates of financial importance can be selected for event analysis by observing the points when the meter rises above the designated threshold, here assumed to be 0.8. The meter exceeds the 0.8 threshold on three discrete occasions: 4 May 1948, 19 Jan. 1951, and 13 Nov. 1953. The event occurring on the first date, 4 May 1948, is the landmark event this work focuses on. Therefore, the time surrounding this day was chosen as the period to analyse.

movements over time periods when investors were responding solely to the news of court intervention leads to a closer estimate of the earnings impact of divorcement.

The method involves three empirical items of importance. They are: *(i)* the trailing fourteen-year earnings multiple before divorcement, *(ii)* the average multiple from 1948 to 1951, *(iii)* the average stock price over the year trailing 4 May 1948, and *(iv)* the average stock price over the year following the divorcement ruling.[164] From this data an estimate of the expected fall in earnings can be made.[165]

The assumption of relatively stagnant technological progress in the industry will be important again. This is because if technology changed over the period then the market values of the companies would be expected to trade at growth premiums above the long-run average multiple being used to forecast. This is a safe assumption because a primary innovation, drive-ins, had already been around for a while and a secondary innovation, three-dimensional technology, was not installed in theatres until 1953.[166]

Another assumption this method depends on is the perspicacity of investors. There is evidence that motion picture stocks were held by

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[164] The assumption is that markets in the 1940s exhibited imperfect transparency of information (i.e., semi-strong version of the efficient markets hypothesis). Since investors would have had some difficulty in accurately estimating the effect of divorcement, the data gives them 12 months on either end of the court case to price in the impact. This assumption is confirmed in a *Variety* report that mentions the 'difficulty of deciphering the legalistic technicalities of the decision apparently caused the delayed reaction' in stock prices. 'Film stocks in post-decision dip', *Variety*, 5 May 1948 Although divestiture was not ordered directly by the Supreme Court, the harshness in its tone indicated that divestiture would be required upon remit to the district court. One defence attorney put it, 'while the court itself didn't order divestiture, it sent the case back to the lower court for it to do the divesting'. *Variety* attributed the lagged reaction to the difficulty investors had in deciphering the ruling. 'Verdict shocks', *Variety*, 5 May 1948, p. 1, 18.

[165] The years 1948 and 1951 were chosen since they are the closest surrounding the court case for which financial results were available. They may provide a more accurate reading than the fourteen-year trailing multiple.

[166] 'Exhibs wary of 3-d hangover', *Variety*, 4 Feb. 1953, p. 7.

institutional investment managers, such as Dividend Shares, Inc.[167] This indicates that fluctuations in share price were based on professional calculations, not guesswork.

The assessment for annual losses in net earnings begins by calculating the fourteen-year industry earnings multiple. To do this, data from six major studios will be inputted into equation 7, in which $\pi^t_{studios}$ is the sum of net earnings in year *t*, and $MV^t_{studios}$ is their market value from equation 8.[168]

$$M_{studios}^{t=1935-1948} = \frac{1}{14} \bullet \sum_{t=1935}^{1948} \frac{MV_{studios}^t}{\pi_{studios}^t} \tag{7}$$

$$MV_{studios}^t = \sum_{s=1}^{6} \overline{P}_s^t \bullet \overline{Q}_s^t \tag{8}$$

Equation 8 states that for each year, *t*, $MV^t_{studios}$ is equal to the sum of their market capitalisations, which are the products of their average annual stock prices, $\overline{P}_s^t$, and average shares outstanding, $\overline{Q}_s^t$. These equations are also used to find a sales multiple. The only difference in the calculations is that total studio profits, $\pi^t_{studios}$, are replaced with revenues. Since earnings tend to exhibit a higher degree of volatility than sales, the sales multiple will be useful to confirm the findings. A slight variant of equation 7 will also be used to find the average multiple for 1948 to 1951. If this multiple is higher than the fourteen-year trailing earnings multiple, then a lower and upper bound of earnings loss, respectively, can be estimated.[169]

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[167] 'A breast of the market', *Wall Street Journal*, 3 Feb. 1945, p. 7; 'A breast of the market', *Wall Street Journal*, 27 July 1945, p. 13.

[168] The work in this section incorporates data from six different studios: Fox, Paramount, Loews, Warner Bros, RKO and Columbia. Universal is not included because no stock listing data could be found prior to 1945.

[169] By the Inada conditions, which state that the marginal product of capital goes to ∞ as the level of capital goes to zero, it follows that the post-divorcements earnings multiple was higher than the pre-divorcement multiple. This is because when a firm's assets contract, its level of capital decreases and therefore its marginal product of capital increases. When marginal products of capital increase, capital accumulation happens faster, and there is more growth. If growth prospects increase, the current

Table 7:
Backing Out Loss In Earnings Power

	1	2	3 = 1 / 2	4	5 = 1 / 4
	Market value[ab]	Earnings[a]	Earnings multiple	Sales[a]	Sales multiple
1935	122	15	8.39	280	0.44
1936	183	32	5.81	319	0.57
1937	245	38	6.43	346	0.71
1938	152	22	6.84	346	0.44
1939	130	18	7.24	335	0.39
1940	84	17	5.02	345	0.24
1941	106	32	3.37	345	0.31
1942	138	46	2.97	407	0.34
1943	244	56	4.37	553	0.44
1944	305	56	5.45	600	0.51
1945	389	59	6.61	633	0.62
1946	713	115	6.21	735	0.97
1947	561	84	6.71	717	0.78
1948	431	52	8.24	667	0.65
1951	323	31	10.38	717	0.45
Average			6.27		0.53
		Implied earnings[a]	Earnings multiple	Implied sales[a]	Sales multiple
3 May 1947 to 3 May 1948	491	78	6.27	934	0.53
4 May 1948 to 4 May 1949	421	67	6.27	801	0.53
Annual loss		11		133	
3 May 1947 to 3 May 1948	491	51	9.31	862	0.57
4 May 1948 to 4 May 1949	421	43	9.31	738	0.57
Annual loss		8		124	

[a] In millions of current dollars
[b] Sum of the average market capitalisations of the six majors: Columbia, Warner Bros, RKO, Paramount, Fox and MGM. Universal is not included in the analysis because it did not begin listing its shares until 1945.
***Sources**:* Market values from Wharton Research Database Service; earnings and sales prior to 1940 from Rosten, *Hollywood*, pp. 376-377; earnings and sales from 1940 to 1949 from Schatz, *Boom and bust*, pp.464-465. Earnings and sales for 1951 are from 'Big grosses but small profits', *Variety*, 7 Jan. 1953, p. 5, 63.

stock price will be several times higher than the current earnings per share since it factors in higher future earnings.

Finally, the expected fall in earnings, $\Delta\pi$, can be calculated using the average price in the year following the announcement, P_{t+1}, the average price in the year preceding it, P_{t-1}, and the earnings multiple from equation 7. This gives equation 9. Annual results for $\Delta\pi$ appear in table 7.

$$\Delta\pi = \frac{P_{t-1} - P_{t+1}}{M_{studios}^{t=1935-1948}} \qquad (9)$$

The results show that the six defendants in this analysis were expected to lose between $8 and $11 million in bottom-line income and between $124 and $133 million in top-line income each year.[170] This would have been equivalent to between 8 and 13 percent of their earnings power relative to 1947, their most recent year of earnings prior to *Paramount*.

However, since the upper and lower bounds for the loss in revenue are closer to one another, these estimated losses are probably more robust than the estimated losses in earnings power. As a portion of 1947 sales, the annually recurring loss in revenue caused by divestiture would have been between 17 and 19 percent.[171]

Using net earnings as a proxy for producer surplus means that the majors lost between 8 and 13 percent of their producer surplus. Deflating these losses to the 1948 base-year gives total losses from 1948 to 1955 between $56 and 76 million in net earnings and $862 and 925 million in sales.

[170] Figures are unadjusted for price level.
[171] The method for backing out earnings losses is inevitably prone to flaws due to the random walk of stock prices. However, given the relative stability of price to earnings ratios over time, it is the best available method for calculating expected losses.

3.4 The Industry

Having found the net change in surplus for the three industry segments, the change in industry surplus is the sum of these. Since evidence for independent producers indicated a qualitative net benefit, it is evaluated simply as a positive change. Equation 10 is the sum of changes.

(10)

$$\Delta PS = \Delta PS_{\text{Independent Producers}} + \Delta PS_{\text{Independent Exhibitors}} + \Delta PS_{\text{Defendents}}$$

$$= \quad (+) \quad + \quad (-109) \quad + \quad (-66)$$

$$\geq \quad -175$$

Therefore, the quantitative findings support the qualitative theory that the industry did not benefit from *Paramount*. Evaluated as a single entity, the industry lost up to $175 million in surplus over the ten years under investigation. This is equivalent to 17 percent of the $1,059 million in industry earnings for 1941 to 1948 – the equivalent length period before *Paramount*.[172] Assuming the lost surplus would have been paid out to investors, this equates to a 36 percent cut in dividend income.[173]

4. Concluding Remarks

The objective of this work was to evaluate the effects *Paramount* had on industry surplus. In doing so, it demonstrated that unusual trade practices and industry concentration are not *ipso facto* bad for society. Instead, they can be institutional solutions to market imperfections such

[172] All surpluses denominated in CPI-adjusted 1948 dollars. Industry earnings for 1938-48 from US Dept. of Commerce*, Income and product accounts of the United States,* pp. 116-21.

[173] Real dividend payments from 1948-55 were $304 million. Cf. tab. 16 in app. V.

as information scarcity. It has provided insight to why vertical integration in the American motion picture industry was an efficient, market-led process.

It was also a case study in the fundamental economic theory of transaction costs. By developing a model that propagated *Paramount*-induced costs through film rental prices, it demonstrated how copious amounts of insignificant costs can amass into substantial losses of efficiency and surplus.

The first step in evaluating surplus change from disintegration was to identify the original motives behind integration. These included reduction in uncertainty over exhibitor rental demand and consumer ticket demand, the ability to exploit inelastic consumer demand curves through cinema control, and the diminution of contract costs.

Next, it measured Coasian costs as residuals of the industry cost function. The findings showed that actual industry costs after 1948 were persistently above those predicted by a model specified to an integrated system. This indicated the presence of higher transaction costs, which increased total industry costs by an average 6 percent per annum from 1949 to 1955.

With this theoretical cost framework in place, it assessed the effects that divorcement had on the industry agents. The commercial performance of independent producers was assessed based on changes in market share. To understand the effect on independent exhibitors, a feature supply model was developed which showed that post-*Paramount* producer-distributor supply was abnormally low. It then inputted the counterfactual features into the inverse exhibitor demand function to show that rentals would have been cheaper under the studio system. Under stable assumptions, price-margin analyses showed that divorcement led the representative independent exhibitor from profit to loss making. In microeconomic terms, long run average costs dipped below prices and

forced exhibitors to face the shutdown rule. Solving for the defendants' surplus loss required a more original, though less reliable methodology. Under less stable assumptions, it used historical earnings multiples of studio stock prices to show the impact divorcement had on gross and net income.

The findings showed that only one group, the independent producers, benefitted in any meaningful way. This was mainly attributable to the rise in rental rates, which by 1954 had peaked to 25 percent above the counterfactual level. Both the defendants and independent exhibitors were impaired by *Paramount*, losing $66 million and $109 million in surplus, respectively, from 1948 to 1955. The sum of these losses was equivalent to 17 percent of real industry earnings for the previous equal length period. These findings diverge from the conventional belief that perfect competition would help the industry. Instead, they show that the inherent market imperfections in a competitive motion picture industry lowered its efficiency.

Implicit in this study were assumptions that should be further elaborated. Although firm profit maximisation was assumed under competitive conditions, it is likely that deliberate attempts were made to restrain entry, pool profits, and fix prices. The intention of this work was not to condone these practices, but to support efficient practices that are often misclassified as foul play.

This work also assumed that the Department of Justice was thoroughgoing in its prevention of the practices the courts enjoined. However, it is possible that proper enforcement of the *Paramount* decrees was not carried out. Referring to the Sherman Law of 1890, Adams states, 'the enforcement agencies…have vacillated in the vigour and clarity with which they have carried out the doctrine'.[174] If this were true

[174] Chamberlin, *Monopoly and competition and their regulation,* p. 129.

then industry control may have remained pervasive while not identifiable in the data.

By offering a deeper understanding of the economic aspects of the final days of the studio system, the work also opened avenues for further research. One factor that it did not consider was actors, or, in economic language, the main input in feature production. The star-system was a pervasive characteristic of the studio-controlled industry, but when studios disintegrated the practice of retaining actors went with them. A combination of this work and Christopherson and Storper's could yield insightful results for how shortened wage contracts affected worker compensation.

Since the findings show ticket prices were unaffected by *Paramount* and since the work assumes that changes in cinema quality were exogenous to disintegration, the consumer gets left out of the discussion. But in actuality, disintegration could have impacted quality. In terms of cinema quality, the large number of closures could have left only the best remaining. Conversely, it might have eliminated competition in exhibition, in which case proprietors had less incentive to maintain high quality facilities. In terms of the movies themselves, most evidence suggested that *Paramount* augmented quality. However, more research is required to know exactly how and to what degree. A better understanding of *Paramount's* impact on quality would advance our knowledge of how disintegration affects hedonic prices.

This work's decadal scope means that it is a study of short-run changes. Although well suited to that goal, its models are incapable of delivering answers to questions about the long-term effects of disintegration. Its most conclusive long-term finding is that the excess industry costs accelerated the pace of Schumpeterian creative destruction. More cinemas went under than in a counterfactual integrated system because of tighter margins. Therefore, the estimated change in

industry surplus does not constitute a 'new normal', but a transitional dynamic. It is possible that after the submergence of American cinema houses, ticket supply receded, admission prices became flexible, and exhibitors returned to profitability. A better grasp of these extended effects deserves further research.

Finally, an interesting question is whether the counterfactual studio system would have lasted through the demand collapse of the early 1950s. With a 1955 audience only 60 percent as large as it was ten years earlier, the mass-production system could have become ineffective at containing costs. Although the findings of this work do not suggest such an outcome, it is possible that if it had not forcedly dissolved, it would have done so organically.

It seems appropriate to conclude with an analogy. In 1950, American Can was unsuccessfully prosecuted for the monopolisation of that industry. In his final remarks, the district judge said, "I am not willing to burn a cathedral down because someone committed a sin therein."[175] Unfortunately for the motion picture industry, the 1948 Supreme Court justices did not share their colleague's respect for cathedrals.

[175] Stauss, 'Discussion', p. 530.

Appendix I:

Sequence of Events in Motion Picture Industry Antitrust

The following sequence of antitrust events was obtained from Gil.[176] It has been edited for succinctness.

1910
MPCC v. Laemmle
MPCC v. Pantograph
MPCC v. Ullman

1912
MPPC v. Independent Moving Pictures
Greater New York Film Rental Company v. MPCC
DOJ brings action against MPPC

1915
Mutual Film Corporation v. Industrial Commission of Ohio

1918
United States v. MPPC

1921
FTC brings action against Famous Players-Lasky

1927
FTC v. Famous Players-Lasky

1931
Sono Art World Wide Pictures v. Lando

1932
FTC v. Paramount Famous-Lasky

1934
Rembusch v. MPPDA

1935
Glass v. Hoblitzelle

1936
Shubert Theatre Players v. MGM

1938
DOJ brings action against 8 defendants *Paramount*

1940
5 major *Paramount* defendants sign onto Consent decree

1942
Consent decree becomes void

1944
DOJ revives suit against 8 *Paramount* defendants

1946
District Court hears United States v. Paramount Pictures:
New consent decree issued by District Court – instates system of competitive bidding
Hughes Tool Co. v. MPAA

1948
Supreme Court rules against 8 *Paramount* defendants in US v. Paramount
RKO agrees to divorce cinemas

1949
Paramount agrees to divorce cinemas

[176] Gil, 'Breaking the studios: antitrust and the motion picture industry,' pp. 86-8.

Appendix II:

Conceptualising the Trade Restraining Practices

This section gives an overview of the trade practices the court enjoined. Aghion and Bolton prove that exclusive contracts prevent entry. In their model, the exclusive contracts are set in place to extract the producer surplus that the new entrant would have otherwise received.[177] More formally, for an entry-preventing agreement to be rational, the profits of the incumbent must be lower post-entry than pre-entry. In the case of the motion picture industry in the 1940s and 1950s, the primary problem was not that new entrants were being excluded, but that former prosperous businesses – the independent exhibitors – were being outcompeted by the majors.

Block-Booking

Block-booking is a form of tie-in sales. It means that an exhibitor must agree to purchase a group of films in order to obtain a single feature, normally a first-run. The number of films under contract ran as high as 40 to 50 in a single booking.[178] Other products that could have been included in the conditions for purchase were newsreels, shorts, foreign pictures or advertisements.

Stigler formerly approaches the phenomena of block booking by showing how it can increase a producer's total return on a bundle of films above that level which he would receive under individual negotiations.[179] The restraining effects on trade caused by block-booking was first examined by Kenney and Klein, whose work is later revisited by Hanssen.[180] The two works differ slightly in their opinions on the practice. By highlighting the exploitative nature of 'average-price' selling, in which a

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[177] Aghion and Bolton, 'Contracts as a barrier to entry', p. 389.
[178] Ingris, *Freedom of the movies*, p. 47.
[179] Stigler, 'A note on block-booking', p. 156.
[180] App. I of Senate, *Motion-picture trade practices–1956*, defines block-booking as 'the practice of licensing, or offering for license, one feature, or group of features, upon condition that the exhibitor shall also license another feature or group of features released by the distributor during a given period. Compulsory block booking may be briefly described as "full line forcing"'. Kenney and Klein, 'Economics of block-booking', p. 497; Hanssen, 'Block-booking of films re-examined', p. 396.

group of products of unpredictable quality are sold as a single unit, Kenney and Klein resolve that block-booking does not comply with the perfectly competitive model. Hanssen convincingly refutes that it is an efficient method of product allocation. He arrives at this conclusion after accounting for the high search costs inherited by the independent exhibitor under alternative single purchase arrangements.[181] In essence, block booking was just a way to reduce the selling costs per film.[182]

There is much irony behind the Courts decision on block-booking. Judge Michael Igoe first enjoined the practice in a case involving the majors and a theatre on the South Side of Chicago.[183] Although the Court replaced the practice with a system closer to competitive bidding to enhance the competitive position of independent exhibitors, in practice it actually gave more pricing power to the distributor.[184] Consequently, independent exhibitors actually lobbied against the Justice Department's effort to render competitive bidding as the standard practice. The Coasian analysis carried out in this work proves that practices like block-booking resulted in lower contract costs.

Blind-Selling

Senate Report no. 532 defines blind-selling as 'the trade practice, of the Big Eight, whereby pictures are leased to the exhibitors usually before they have been produced and with little or no information concerning the character or quality of the pictures that will be delivered, the stories that will be embodied therein, or the treatment that will be accorded the story material in the filming thereof. Blind selling requires exhibitors to "buy a pig in a poke"'. A comprehensive Nash equilibrium

[181] Hanssen, 'The block booking of films re-examined', p. 26.
[182] This was also the defence argument given by the majors.
[183] 'Block booking system loses', *Los Angeles Times*, 17 Oct. 1946, p. 7.
[184] It was found that distributors could actually raise rental prices in many locations through competitive bid auctions for licenses. '5 majors favor competitive idea', *Variety*, 19 May 1948, p. 7.

simulation of how blind-selling negatively affected independent exhibitors was demonstrated by Blumenthal. She proves that independent exhibitors who bid with imperfect knowledge about the product do lose expected income.[185]

Formula Deals

Another practice that was deemed illegal by *Paramount* was the formula deal. Similar to master agreements, formula deals consisted of contracts between a major and either an unaffiliated or affiliated circuit. Instead of specifying dates and locations of showings, these arrangements only specified a percentage of the box office gross that the circuit would owe to the distributor. The courts enjoined these practices for two reasons: *(i)* blanket agreements eliminated the competitive bidding process for individual films, and thereby inhibited the ability of independents to acquire quality feature films, and *(ii)* they made it possible for a theatre circuit to bid on a license that would cover all its theatres, allowing it to effectually distribute profits from zones free of competition to those where competition was tight.[186]

Independent theatre exhibitors simply could not compete with the economies of scale that were achieved by the majors through their franchises. A theatre that a major had turned into a franchise meant that it would contract to buy the distributor's entire season of product.[187] Similarly, the major circuits that were unaffiliated with the majors had also signed exclusive agreements known as master agreements. Under a master agreement, a theatre circuit could purchase licenses to cover an entire chain of theatres, leading to significant economies of scope.

[185] Blumenthal, 'Auctions with constrained information', p. 191.
[186] US Supreme Court, *United States v. Paramount Pictures, 335 US 154*.
[187] ibid., footnote 4.

Unreasonable Clearances

As defined by Congressional record, a clearance is a 'period of time (stipulated in license contracts) which must elapse between conclusion of one run and commencement of second run of the same feature in a given area'.[188] At the tie, it was common to see different classes of exhibitors that ranged from first all the way to eighth-run houses.[189]

It is because of clearances that the control of first-run houses was so important. Owing to perishability of product value, first-run profits came in at significantly higher margins than those of later runs. They also command larger audiences due to the promotion and marketing activities that were extensively engaged in by these metropolitan houses. Even though the majors only controlled 15 to 20 percent of the country's theatres, over 80 percent of the first-run theatres were in some way affiliate.[190]

[188] Definition from app. I of Senate, *Motion picture trade practices–1956*.
[189] Inglis, *Freedom of the movies*, p. 50.
[190] ibid., p. 51.

Appendix III:

Estimating Economic Models

From 1929 to 1965 the United States Department of Commerce published the *National Income Product Accounts of the United States*, which gives detailed data on industry inputs and outputs.[191] The following set of functions is estimated with data primarily from this publication. Other sources, such as Finler, are used to supplement it.[192]

The Industry Production Function

To estimate the industry production function, output is measured in real annual sales, capital is measured as real capital consumption and labour as full and part time workers. The function takes the neoclassical form of equation 11.

$$Q = AK^{\alpha 1}N^{\alpha 2} \qquad (11)$$

However, for the purposes of estimation, Equation 11 will be redefined in logarithmic form, as is done in equation 12.

$$lnQ = ln\ (A) + \alpha_1 \bullet ln(K) + \alpha_2 \bullet ln(N) \qquad (12)$$

Since the early motion picture industry was heavily reliant on labour input – the star system – a model with just labour input is also tested for robustness. The results for 1929 to 1948 are summarised in table 8.

[191] US Dept. of Commerce, *Income and product accounts of the United States*.
[192] Finler, *Hollywood Story* .

Table 8:
Estimating The Industry Production Function, 1929-48

	Model 1	Model 2
	$lnQ = \beta_0 + \alpha_2 \bullet ln(N) + \varepsilon$	$lnQ = \beta_0 + \alpha_1 \bullet ln(K) + \alpha_2 \bullet ln(N) + \varepsilon$
β_0	1.06*	0.76
	(2.30)	(0.65)
α_1	-	0.05
	-	(0.28)
α_2	1.19**	1.35**
	(13.7)	(10.05)
Number of years	20	20
R^2	0.93	0.93
F-statistic	187.89	87.81
Durbin-Watson	1.75	1.75

** = Significant at the 1 percent level.
* = Significant at the 5 percent level.
***Notes**:* Cf. tab. 16 in app. V for industry cost and output data.
***Source**:* US Dept. of Commerce*, Income and product accounts of the United States*, pp. 116-21, 142-5.

From these results it is evident that labour represents a larger share of output than capital. However, due to the inevitable issues that arise when estimating a production function using time-series data, there are several flaws in both model 1 and model 2.[193] Firstly, they do not hold for changing technology. Although technological change was probably relatively stagnant over the period, it would be difficult to argue that it did not occur at all. Secondly, although the input and output prices are adjusted using the CPI, their relative prices likely changed over time. This would have meant producers would substitute away from relatively expensive variables towards cheaper ones. Therefore, the assumption that factor shares remained constant over time is probably an

[193] For a robust cross-sectional model, the model would require

unreasonable one. Nonetheless, it is reasonable to approximate the labour share as 1.19. Given an efficiency term greater than 1, this implies an increasing marginal product of labour. Therefore, integrated studios could experience significant returns to scale by continuing to hire more workers.

Table 9:
Estimating The Industry Production Function, 1949-63

	Model 1	Model 2
	$lnQ = \beta 0 + \alpha_1 \bullet ln(K) + \varepsilon$	$lnQ = \beta 0 + \alpha_1 \bullet ln(K) + \alpha_2 \bullet ln(N) + \varepsilon$
β_0	5.55**	5.23**
	(14.60)	(6.27)
α_1	0.44**	0.46**
	(5.19)	(4.82)
α_2	-	0.05
	-	(0.44)
Number of observations	15	15
Number of years	15	15
R^2	0.67	0.68
F-statistic	26.97	12.75
Durbin-Watson	2.35	2.36

** = Significant at the 1 percent level.
***Notes**: Figures in parenthesis represent t-statistics. Cf. tab. 16 in app. IV for industry cost and output data.*
***Source**: US Dept. of Commerce,* Income and product accounts of the United States.

To approximate the post-divorcement production function the same process and data is used for the period 1949 to 1963. The results, which are summarised in table 9, show an increase in the capital share at a high significance level. Simultaneously, the labour share falls to an insignificant level during this period. The efficiency term has increased

substantially from $e^{1.06} = 2.89$ in the first period to $e^{5.55} = 257$.[194] Christopherson also shows that employment contracts were reduced to short-term arrangements, or subcontracting.[195]

Since there are 15 observations and 2 variables in the selected model, model 1, the Durbin-Watson critical values are 1.36 and 2.64 at 5 percent significance. Since the Durbin-Watson statistics for each model, 1.75 in the first and 2.35 in the second, are between these critical values, the null hypothesis of no autocorrelation is not rejected.

The Long-Run Industry Cost Function

To derive the long-run industry cost function, the work of Banker and Johnston is used.[196] Their approach emphasises the use of real outputs to use as cost drivers. Output in this model is measured as real gross sales. From 1929 to 1965, the United States Department of Commerce published the *National Income and Product Accounts*. Contained in these documents were 36 years worth of data on income and employment variables for 50 industry groups categorised into 11 broader sectors.[197] One of the industries listed within the service sector was motion pictures.

Although information on industry costs is not given directly, it is easily derived as the difference between corporate sales and corporate profits before tax.[198] To transform the costs into real terms, they are

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[194] The processing of inputs to production became a task for multiple specialized firms as opposed to the sole responsibility of the studio. Christopherson and Storper, 'Effects of flexible specialization', p. 334.
[195] ibid.
[196] Their analysis of costs in the airline industry gives a comprehensive overview of the cost accounting methods for deriving industry cost functions. Of course there are issues with assuming an industry cost function, since production occurs at the level of the firm, not the industry. However, the work of Banker and Johnston shows that reasonable estimates can be made of industry cost functions. Banker and Johnston, 'An empirical study of cost drivers', p. 576.
[197] US Dept. of Commerce, *Income and product accounts of the United States*, p. 89.
[198] Since the tax code for motion pictures varied considerably during the period, only earnings before deducting tax are used in the calculations.

affixed to 1948 dollars by dividing costs for each year by the Consumer Price Index of that year relative to the base year, 1948.[199] The base year of 1948 was chosen because it is the first year that a plausible change in the industry cost function might have occurred.[200]

A cost function is derived by regressing the real quantity of output against the real level of costs.[201] Depending on whether the industry exhibited increasing, constant or diminishing marginal costs will determine which of the three potential models in table 10 fits the data best. Model 1, which depicts constant marginal costs, has an f-statistic of 189.50, giving it the best statistical fit, a t-statistic on the sales variables of 10.14, and a Durbin-Watson statistic that passes the upper critical value for a bivariate regression with 20 observations, of 1.41. Since the studios continued to grow organically prior to intervention, a cost function exhibiting economies of scale seems appropriate. Table 10 shows the counterfactual corporate costs from fitting post-1948 real corporate sales to model 1.

[199] For all price normalizations, this work uses the CPI. In all but one instance it will fix the base year to 1948. The exception is for indices that involve television prices, for which reliable data is unavailable before 1950. Waterman advocates this adjustment rule. Waterman, *Hollywood's road to riches*, p. 58.
[200] The first financial divorcement occurs when RKO agrees to sell its holdings in Nov. 1948. Schatz, *Boom and bust*, p. 326.
[201] Cf. tab. 16 in app. V.

Table 10:
Estimating The Motion Picture Industry Cost Function, 1929-48

	Model 1	Model 2	Model 3
	$TC = \beta_0 + \beta_1 \bullet Q + AR(1) + \varepsilon$	$TC = \beta_0 + \beta_1 \bullet lnQ + AR(1) + \varepsilon$	$TC = \beta_0 + \beta_1 \bullet Q^2 + AR(1) + \varepsilon$
β_0	435.81**	-5,773.66**	943.93**
	(4.20)	(-6.82)	(16.20)
β_1	0.65**	987.37**	0.0002**
	(10.14)	(8.55)	(10.07)
AR(1)	0.50*	0.60**	0.44
	(2.29)	(2.77)	(2.14)
Number of years	20	20	20
R^2	0.96	0.96	0.95
F-statistic	189.50	182.56	148.33
Durbin-Watson	1.45	1.33	1.61

** = Significant at the 1 percent level.
* = Significant at the 5 percent level.
***Notes**:* Figures in parenthesis represent t-statistics. Cf. tab. 16 in app. V for industry cost and output data.
***Source**:* US Dept. of Commerce*, Income and product accounts of the United States*.

Table 11:
Estimating Counterfactual Industry Costs

	1	2	3	4 = 2 - 3
	Real corporate sales	Real actual corporate costs	Real counterfactual costs	Counterfactual cost savings
1945	2,107	1,789	-	-
1946	2,246	1,870	-	-
1947	2,090	1,848	-	-
1948	1,914	1,772	-	-
1949	1,879	1,750	1,661	89
1950	1,826	1,714	1,626	88
1951	1,672	1,579	1,526	53
1952	1,769	1,692	1,589	103
1953	1,670	1,598	1,524	74
1954	1,836	1,714	1,633	81
1955	2,044	1,932	1,768	164

***Notes**:* Ragged line indicates lapse from actual to counterfactual. All figures in millions of 1948 dollars.
***Sources**:* All data derived from US Dept. of Commerce*, Income and product accounts of the United States*, pp. 118-21, 142-5.

The Consumer Demand Function

The consumer demand function is estimated to complete the exhibitor surplus calculations §3.2. Litman generalises motion picture demand as equation 13.[202]

(13)

$$Q_D = f\ [P_{Tickets}\ (-),\ P_{Substitutes}\ (+),\ P_{Compliments}\ (-),\ Income\ (+),\ Tastes\ (+/-),\ Population\ (+),\ Time\ (+)]$$

Although Litman notes a positive income effect, this relationship is disputable due to the increase in motion picture demand during recessions when income is low.[203] Cameron suggests that film attendance could have been an inferior good due to the negative association it had with lower classes.[204]

Cameron empirically estimates demand using time-series data from 1975 to 1982. To account for cross-price elasticity of substitutes, such as sports event, and compliments, such as soda or petrol, he uses the general price level. Here, substitution with similar goods is already accounted for in the expenditure share of recreation. Expenditure share on motion picture admissions relative to all recreation can also be used as a proxy for tastes. Population need not be included since the demand function uses national real income instead of income per capita. Assuming the real wage is the price of leisure time, the value of time is already accounted for in real income, which is equal to total real wage compensation. Therefore, the demand function is specified as equation 14.

$$Q = X_{Tickets}\,(P_{Tickets},\ Income,\ ES) \qquad (14)$$

[202] Litman, *Motion picture mega-industry*, p. 244.
[203] During the Depression years 1929-33, expenditure on shoes and food consumed at home dropped 41 and 40 percent, respectively, whereas motion picture expenditures only dropped by 33 percent. Odlum, 'Financial organization', p. 24.
[204] Cameron, 'Supply and demand for cinema tickets', p. 49.

Table 12:
Admission Demand Data, 1935-88

	Q[a]	P_{1948}	GDP_{1948}[b]	CPI	ES[c]		Q[a]	P	GDP_{1948}[b]	CPI	ES[c]
1935	55	0.24	865	13.7	21.1	1962	25	0.73	3,072	30.2	4.4
1936	55	0.25	978	13.9	20.7	1963	22	0.82	3,207	30.6	4.1
1937	60	0.23	1,028	14.4	20	1964	20	0.92	3,392	31.0	3.7
1938	60	0.23	993	14.1	20.5	1965	20	1.01	3,610	31.5	3.5
1939	60	0.23	1,073	13.9	19.1	1966	19	1.09	3,845	32.4	3.3
1940	65	0.24	1,167	14.0	19.5	1967	18	1.2	3,943	33.4	3.2
1941	68	0.24	1,366	14.7	19.1	1968	19	1.31	4,133	34.8	3.1
1942	77	0.25	1,618	16.3	21.9	1969	18	1.42	4,262	36.7	3
1943	84	0.26	1,883	17.3	25.7	1970	18	1.55	4,270	38.8	2.9
1944	84	0.27	2,035	17.6	24.7	1971	16	1.65	4,413	40.5	2.7
1945	82	0.29	2,012	18.0	23.6	1972	18	1.7	4,648	41.8	3
1946	82	0.33	1,792	19.5	19.8	1973	17	1.77	4,917	44.4	3.5
1947	73	0.35	1,776	22.3	17.2	1974	19	1.87	4,890	49.3	4.1
1948	66	0.37	1,854	24.1	15.5	1975	20	2.05	4,880	53.8	3.8
1949	61	0.38	1,845	23.8	14.5	1976	18	2.13	5,141	56.9	4.1
1950	55	0.4	2,006	24.1	12.3	1977	20	2.23	5,378	60.6	3.9
1951	49	0.43	2,161	26.0	11.3	1978	23	2.34	5,678	65.2	3.1
1952	43	0.46	2,244	26.5	10.3	1979	22	2.52	5,855	72.6	3
1953	42	0.48	2,347	26.7	9.3	1980	20	2.69	5,839	82.4	2.7
1954	47	0.5	2,332	26.9	9.4	1981	21	2.78	5,987	90.9	2.3
1955	50	0.51	2,500	26.8	9.4	1982	23	2.96	5,871	96.5	2.7
1956	50	0.52	2,550	27.2	9.3	1983	23	3.15	6,136	99.6	2.4
1957	41	0.53	2,601	28.1	7.3	1984	22	3.34	6,577	103.9	2.3
1958	35	0.55	2,578	28.9	6.3	1985	20	3.51	6,849	107.6	2
1959	32	0.58	2,763	29.1	5.6	1986	20	3.67	7,087	109.6	1.9
1960	30	0.62	2,831	29.6	5.2	1987	21	3.91	7,313	113.6	1.9
1961	27	0.67	2,897	29.9	4.7	1988	21	4.11	7,614	118.3	1.7

[a] Average weekly attendance. [b] Billions of 1948 dollars. [c] Expressed as percentages.

***Sources**:* Ticket quantity, price and expenditure share data from Finler, *Hollywood story*, pp. 504-7; GDP data from Federal Reserve Bank of St. Louis; CPI from Bureau of Labor Statistics.

Using equation 14, time-series data from table 12 is inputted into a least squares regression. Ticket prices are β_1, income is β_2, the price index is β_3, and the expenditure share is β_4. A first-order autoregressive term, AR(1), is used to capture the underlying time trend that would

otherwise result in serial correlation. The regression results are in table 13.

Table 13:
Estimating The Admission Demand Function, 1935-88

MODEL	$lnQ = \beta_0 + \beta_1 \bullet lnP_{Tickets} + \beta_2 \bullet lnY + \beta_3 \bullet ES + AR(1) + \varepsilon$	
	Coefficient	t-statistic
β_0	7.28**	4.37
β_1	-0.34*	-2.08
β_2	-0.53*	-2.60
β_3	0.05**	4.96
AR(1)	0.86**	17.39
R^2	0.98	
Adjusted R^2	0.98	
F-statistic	350.30	
Durbin-Watson statistic	1.41	

** = Significant at the 1 percent level.
* = Significant at the 5 percent level.
***Sources**:* Ticket prices from Finler, *Hollywood story*, pp. 504-7; real income from Federal Reserve Bank of St. Louis; recreation expenditure share from Finler, *Hollywood story*, pp. 506-7.

The regression appears to fit the data well with an R^2 and adjusted R^2 of 0.98, indicating that the additional variables have been well selected. The income elasticity, β_1, is significant at the 5 percent level. Most importantly, the t-stat of the price elasticity is -2.08, which exceeds the critical value required for significance at the 95 percent confidence level. Therefore, the estimated price elasticity of -0.34 is significant. Substituting the individual values into equation 15 gives the fitted demand for each year. The AR(1) term can be eliminated since it is not structural and only accounts for underlying time trends.

$$lnQ = 7.28 - 0.34\ lnP_{Tickets} - 0.53\ lnY + 0.05ES \qquad (15)$$

The Producer Supply Function

As discussed in S3.2, using input prices and demand expectations as independent variables gives a relatively accurate estimation of what feature film output would have been from 1949 to 1955 under an integrated institutional structure. Table 14 shows the two models that were tested. Due to the implausibility of producers making output decisions solely based on cost factors, model 2 is used even though model 1 gives a better fit. Results for counterfactual feature films are in table 20 in appendix V.

Table 14:
Estimating Producer Supply Function, 1933-48

	MODEL 1	MODEL 2
	$Q = \beta_0 + \beta_1 \bullet lnC/F + AR(1) + \varepsilon$	$Q = \beta_0 + \beta_1 \bullet lnC/F + \beta_2 \bullet lnBO/F + AR(1) + \varepsilon$
β_0^a	680.49**	670.39**
	(12.88)	(18.09)
β_1^b	-159.92**	-216.27**
	(-3.80)	(-4.65)
β_2^c		72.26*
		(2.73)
AR(1)	0.45*	0.17
	(2.28)	(0.87)
R-squared	0.83	0.82
Adjusted R-squared	0.81	0.76
F-statistic	29.91	14.98
Durbin-Watson statistic	2.13	2.07

** = Significant at the 1 percent level.
* = Significant at the 5 percent level.
[a] Coefficient for output represented by annual features produced in the United States.
[b] Coefficient for real industry costs per feature: CPI-adjusted values of gross income less net profit divided by annual features.
[c] Coefficient for real box office receipts per feature: CPI-adjusted values of box office sales divided by annual features.
***Notes**:* Figures in parenthesis represent t-statistics. Cf. tab. 20 in app. V for results.

For model 2, β_1 is the coefficient for the variable representing real industry cost per feature and β_2 is the coefficient for real box office receipts per feature in the previous period.

Correcting Serial Correlation Misspecifications

The presence of serial correlation indicates that there is a lagging effect of past happenings on current data points. Technically, serial correlation can be defined as a systematic relationship between the error terms.[205] Since the analyses in this work are time-series, they are especially susceptible to the regression misspecifications that are caused by autocorrelation.

Two tests in particular can be performed to detect serial correlation. The first is the examination of the Durbin-Watson statistic, which is calculated as equation 16.

$$DW = \frac{\sum_{t=2}^{T} \left(\hat{\varepsilon}_t - \hat{\varepsilon}_{t-1}\right)^2}{\sum_{t=1}^{T} \hat{\varepsilon}_t^{\,2}} \qquad (16)$$

Where $\hat{\varepsilon}_t$ is the residual at time *t*. If this value is relatively close to the upper critical value, which is normally 2.0, then autocorrelation is unlikely to be present in the dataset. However, as this statistic deviates from 2.0, autocorrelation becomes more likely. For example, in the dataset examined for the original cost function before correction, the Durbin-Watson statistic was 0.74, indicating a substantial degree of serial correlation that needed correcting.

The second method for testing for autocorrelation is the Breusch-Godfrey test. After running this test, the observed R^2 term represents the test statistic to prove the null hypothesis, which is the nonexistence of

[205] Feinstein and Thomas, *Making history count*, p. 311.

serial correlation. In the results, the close to zero probability indicates the definitive presence of autocorrelation in the disturbance terms.[206] These two tests can be used complimentary to one another to affirm the existence of autocorrelation.

To eliminate the correlation between the coefficients and the disturbance terms, the equations are re-estimated using first-order autoregressive variables. This removes the endogenous determination between variables that is frequent among time-series analysis. The specific type of modification used here is a least squares with first-order autoregressive errors, or AR(1) terms.[207] The AR(1) term can be specified as equation 17.

$$AR(1) = u_t = \rho u_{t-1} + \varepsilon \qquad (17)$$

With $-1 < \rho < 1$.

[206] Feinstein and Thomas, *Making history count*, p. 316.
[207] Kunitomo and Yamamoto, 'Properties of predictors', p. 941.

Appendix IV:

Deriving the Event Impact Screener

The Event Impact Screener was used to find out which day of news had the largest impact on investor sentiment. Since investors in publicly traded companies hold claims on the firm's profits, they are the owners. Therefore, the aggregate expectations of investors can serve as a proxy for those of the defendants.

The Event Impact Screener uses three parameters as inputs. The first parameter is the observed is stock volume. Historically, when investors have perceived an event to be of importance, there will be more transactions of the shares affected by that event on the day that the news became public.[208] However, since the stocks used in this study vary in the number of shares outstanding, volume is measured as a relative variable by expressing it in terms of total shares outstanding, as is done in Equation 18.

$$V_{index}^{t} = \frac{\sum_{s=1}^{7} \frac{V_s^t}{Q_s^t}}{7} \qquad (18)$$

Expressing the index volume as a ratio, V^t_{index}, gives the ability to aggregate the daily volumes of each stock, V^t_s, by expressing them as percentages of the total amount of shares outstanding, Q^t_s. It also takes account of share dilution and repurchases that the company may have initiated over the period. Cready and Hurtt concluded that stock volume is the single best metric for analysing the impact of events.[209]

To get a reasonable idea of the uncertainty surrounding the industry on a given day a proxy for the aggregated stock volatility is also inputted. By using a simple average of the differences between a stocks

[208] Cready and Hurtt, 'Assessing investor responses', p. 892.
[209] ibid., p. 891.

daily highs and lows, Equation 19 gives an approximation for daily volatility, ν^{t}_{index}.

$$\nu^{t}_{index} = \frac{\sum_{s=1}^{7} \frac{P^{t}_{s-high} - P^{t}_{s-low}}{P^{t}_{s}}}{7} \qquad (19)$$

The third input is the average of each stock's beta adjusted daily returns.[210] Cready and Hurtt concluded that supplementing volume data with return-based data allows for a more robust test of the impact of an event, and that taken together, these were the two most important factors to observe when assessing the financial impact of an event.[211]

The formula for the Event Impact Screener is given by equation 12.

$$\varepsilon^{t}_{index} = (V^{t}_{index}) \bullet (r^{t}_{beta\text{-}excess})^{2} \bullet (\nu^{t}_{index}) \bullet 1{,}000{,}000 \qquad (20)$$

The index weights beta-excess returns, $r^{t}_{beta\text{-}excess}$, twice for two reasons: *(i)* in order to augment events that exclusively affect the industry, and *(ii)* to ensure that the values of ε^{t}_{index} are positive.[212]

[210] The beta-adjusted daily returns on the stocks can be observed directly in the Centre for Research in Security Prices (CRSP) Database of Chicago. Access to the CRSP Database is through the Wharton Research Data Services (WRDS). The exact definition used for the daily statistic is: 'the excess return of a specific issue less the average return of all issues in its beta portfolio each trading date'.
[211] Cready and Hurtt, 'Assessing investor responses', p. 906.
[212] The term is multiplied by 1,000,000 for practicality of graphical representation.

Appendix V:

Relevant Tables and Charts

Table 15:
95 Top-Grossing Feature Films Through 1953

Movie	Year	Unadjusted (millions of current dollars)	Rank	Deflator (CPI_{year} / CPI_{1948})	Adjusted (millions of 1948 dollars)	Rank	Cumulative probability
Gone with the Wind	1939	26.00	1	0.58	45.08	1	1.000
Greatest Show on Earth	1952	12.80	2	1.10	11.64	4	0.883
Quo Vadis	1952	10.50	3	1.10	9.55	9	0.764
Best Years of Our Lives	1947	10.40	4	0.93	11.24	5	0.865
Duel in the Sun	1947	10.00	5	0.93	10.81	6	0.842
Samson and Deliah	1950	9.00	6	1.00	9.00	10	0.725
This Is the Army	1943	8.50	7	0.72	11.84	3	0.892
Bells of St. Mary's	1946	8.00	8	0.81	9.89	7	0.787
Jolson Story	1947	8.00	9	0.93	8.65	13	0.698
Snow White	1937	7.15	10	0.60	11.97	2	0.897
David and Bathseba	1951	7.00	11	1.08	6.49	24	0.513
Ivanhoe	1952	7.00	12	1.10	6.37	25	0.502
Going My Way	1944	6.50	13	0.73	8.90	11	0.717
Snows of Kilimanjaro	1952	6.50	14	1.10	5.91	37	0.461
For Whom the Bells Toll	1943	6.30	15	0.72	8.78	12	0.708
Welcome Stranger	1947	6.10	16	0.93	6.59	23	0.522
Sergeant York	1941	6.00	17	0.61	9.84	8	0.784
Blue Skies	1946	5.70	18	0.81	7.04	18	0.563
Egg and I	1947	5.55	19	0.93	6.00	34	0.469
Leave Her to Heaven	1945	5.55	20	0.75	7.43	15	0.597
Big Parade	1925	5.50	21	0.73	7.57	14	0.609
Unconquered	1947	5.25	22	0.93	5.67	41	0.440
Yearling	1947	5.25	23	0.93	5.67	41	0.440
Meet Me in St. Louis	1945	5.20	24	0.75	6.96	20	0.555
Show Boat	1951	5.20	25	1.08	4.82	70	0.366
Life With Father	1947	5.10	26	0.93	5.51	47	0.426
The Outlaw	1948	5.08	27	1.00	5.08	59	0.388
Forever Amber	1947	5.05	28	0.93	5.46	48	0.421
Green Dolphin St.	1947	5.00	29	0.93	5.40	52	0.416
Jolson Sings Again	1949	5.00	30	0.99	5.06	61	0.387
Mrs. Miniver	1942	5.00	31	0.68	7.39	16	0.593

Razor's Edge	1947	5.00	32	0.93	5.40	52	0.416
Red Shoes	1949	5.00	33	0.99	5.06	61	0.387
Song of Bernadette	1943	5.00	34	0.72	6.97	19	0.556
Spellbound	1946	4.98	35	0.81	6.15	27	0.483
Since You Went Away	1944	4.95	36	0.73	6.78	21	0.539
King Solomon's Mines	1950	4.63	37	1.00	4.63	74	0.350
Notorious	1946	4.80	38	0.81	5.93	35	0.463
Yankee Doodle Dandy	1942	4.80	39	0.68	7.10	17	0.567
Battleground	1950	4.70	40	1.00	4.70	72	0.356
Annie Get Your Gun	1950	4.65	41	1.00	4.65	73	0.352
Green Years	1946	4.60	42	0.81	5.69	40	0.441
Anchors Away	1945	4.50	43	0.75	6.03	30	0.471
Bachelor and Bobbysoxer	1947	4.50	44	0.93	4.86	68	0.370
Easy to Wed	1946	4.50	45	0.81	5.56	46	0.430
Four Horsemen	1921	4.50	46	0.74	6.06	29	0.474
Great Caruso	1951	4.50	47	1.08	4.17	81	0.313
Paleface	1945	4.50	48	0.75	6.03	30	0.471
Random Harvest	1942	4.50	49	0.68	6.65	22	0.528
Road to Rio	1948	4.50	50	1.00	4.50	75	0.339
Road to Utopia	1945	4.50	51	0.75	6.03	30	0.471
Thrill of a Romance	1943	4.50	52	0.72	6.27	26	0.493
Till Clouds Roll by	1947	4.50	53	0.93	4.86	68	0.370
Valley of Decision	1945	4.50	54	0.75	6.03	30	0.471
Easter Parade	1948	4.50	55	1.00	4.50	75	0.339
Cheaper by the Dozen	1950	4.43	56	1.00	4.43	78	0.333
Two Years Before Mast	1946	4.40	57	0.81	5.44	50	0.419
Hucksters	1947	4.35	58	0.93	4.70	71	0.356
Harvey Girls	1946	4.35	59	0.81	5.38	54	0.414
Stage Door Canteen	1943	4.35	60	0.72	6.06	28	0.475
Lost Weekend	1946	4.30	61	0.81	5.31	56	0.408
Sailor Beware	1952	4.30	62	1.10	3.91	91	0.292
Cinderella	1950	4.28	63	1.00	4.28	79	0.321
Adventure	1946	4.25	64	0.81	5.25	57	0.403
Saratoga Trunk	1946	4.25	65	0.81	5.25	57	0.403
Streetcar Named Desire	1951	4.25	66	1.08	3.94	90	0.294
30 Seconds Over Tokyo	1944	4.23	67	0.73	5.79	38	0.450
Hollywood Canteen	1944	4.20	68	0.73	5.75	39	0.447
Three Musketeers	1948	4.20	69	1.00	4.20	80	0.315
Weekend at Waldorf	1945	4.20	70	0.75	5.62	44	0.436
Born Yesterday	1951	4.15	71	1.08	3.85	92	0.287

Father of the Bride	1950	4.15	72	1.00	4.15	85	0.311
Joan of Arc	1949	4.10	73	0.99	4.15	82	0.311
Johnny Belinda	1948	4.10	74	1.00	4.10	86	0.307
I Was a Male War Bride	1949	4.10	75	0.99	4.15	82	0.311
Margy	1946	4.10	76	0.81	5.07	60	0.387
Mother Wore Tights	1947	4.10	77	0.93	4.43	77	0.334
Snake Pit	1949	4.10	78	0.99	4.15	82	0.311
Cass Timberlane	1948	4.05	79	1.00	4.05	87	0.303
State Fair	1945	4.05	80	0.75	5.42	51	0.418
African Queen	1952	4.00	81	1.10	3.64	94	0.271
American in Paris	1951	4.00	82	1.08	3.71	93	0.277
Ben-Hur	1926	4.00	83	0.73	5.45	49	0.420
Dolly Sisters	1945	4.00	84	0.75	5.36	55	0.412
Emperor Waltz	1943	4.00	85	0.72	5.57	45	0.431
Holiday in Mexico	1946	4.00	86	0.81	4.94	63	0.376
Jumping Jacks	1952	4.00	87	1.10	3.64	94	0.271
Kid from Brooklyn	1946	4.00	88	0.81	4.94	63	0.376
Night and Day	1946	4.00	89	0.81	4.94	63	0.376
Reap the Wild Wind	1942	4.00	90	0.68	5.91	36	0.462
Red River	1948	4.00	91	1.00	4.00	88	0.299
Sands of Iwo Jima	1950	4.00	92	1.00	4.00	88	0.299
Singing Fool	1928	4.00	93	0.71	5.64	43	0.437
Smoky	1946	4.00	94	0.81	4.94	63	0.376
Ziegfeld Follies	1946	4.00	95	0.81	4.94	63	0.376

Descriptive Statistics of Revenue	
Mean	$6,343,686
Median	$5,457,623
Variance	19,772,714,235,943
Standard deviation	$4,446,652
Variance / Mean	3,116,912.4
Gini-coefficient	0.22

***Note**:* Cf. §2.1 for Gini-coefficient calculation methodology.
***Source**:* 'All-time top grossers', *Variety*, 21 Jan. 1953, p. 4.

Table 16:
Industry Income And Employment Data, 1945-55

	Full-time employees	Full time and part time	Active proprietors	Compensation of employees	Payrolls
1945	215	238	9	573,000	552,000
1946	225	253	9	702,000	679,000
1947	229	253	10	718,000	694,000
1948	225	249	11	682,000	655,000
1949	226	250	12	687,000	659,000
1950	224	248	12	687,000	651,000
1951	219	237	12	711,000	668,000
1952	216	239	12	722,000	684,000
1953	209	232	-	712,000	678,000
1954	206	229	-	750,000	709,000
1955	205	228	-	803,000	-
	Corporate sales	National income	Wages and salaries	Corporate capital consumption	Corporate income before taxes
1945	1,574,000	930,000	552,000	31,000	238,000
1946	1,817,000	1,133,000	679,000	36,000	304,000
1947	1,934,000	1,054,000	694,000	42,000	224,000
1948	1,914,000	893,000	655,000	54,000	142,000
1949	1,856,000	879,000	660,000	83,000	128,000
1950	1,826,000	830,000	658,000	71,000	112,000
1951	1,804,000	853,000	680,000	79,000	101,000
1952	1,945,000	852,000	697,000	80,000	84,000
1953	1,850,000	815,000	689,000	86,000	80,000
1954	2,049,000	895,000	723,000	101,000	136,000
1955	2,273,000	926,000	774,000	117,000	124,000
	Corporate taxes (derived)	Corporate income	Number of persons engaged in production	Annual earnings / worker	Net dividend payments
1945	139,000	99,000	222	2,567	35,000
1946	127,000	177,000	235	2,978	61,000
1947	90,000	134,000	237	3,031	59,000
1948	72,000	70,000	234	2,911	54,000
1949	62,000	66,000	235	2,933	60,000
1950	49,000	63,000	234	2,938	38,000
1951	56,000	45,000	233	3,049	55,000
1952	51,000	33,000	228	3,197	48,000
1953	45,000	35,000	221	3,265	33,000
1954	67,000	69,000	218	3,476	33,000
1955	56,000	68,000	216	3,757	26,000

***Notes**:* All headcount data is in thousands. All financial data is in thousands of current dollars.
***Source**:* US Dept. of Commerce, *Income and product accounts of the United States*.

Table 17:
Measures Of Industry Concentration

Company	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
Feature films produced											
Columbia	38	51	49	39	52	59	63	48	47	35	38
MGM	31	25	29	24	30	38	41	38	44	24	23
Paramount	23	22	29	25	21	23	29	24	26	17	20
RKO	33	40	36	31	25	32	36	32	25	16	13
20th Century Fox	27	32	27	45	31	32	39	37	39	29	29
United Artists	17	20	26	26	21	18	46	34	49	52	35
Universal	46	42	33	35	29	33	39	39	43	32	34
Warner Bros.	19	20	20	23	25	28	27	26	28	20	23
TOTAL 8	236	252	249	248	234	263	320	278	301	225	215
TOTAL US PRODUCED (Conant)	377	467	487	459	479	622	654	463	534	427	392
TOTAL US PRODUCED (Finler)	483	477	492	488	397	401	350	378	369	366	356
TOTAL WORLDWIDE	761	673	598	533	427	442	377	467	487	459	479
CR_8 (Features)	0.62	0.54	0.51	0.54	0.49	0.42	0.49	0.60	0.56	0.53	0.55
HHI_8 (Features)	529	408	349	386	329	251	320	470	421	401	410
Revenue (in millions of nominal dollars)											
Columbia	36	47	49	47	53	57	55	59	60	80	88
MGM	154	165	162	164	160	162	164	166	166	173	165
Paramount	158	194	187	170	79 [a]	82 [a]	95 [a]	105 [a]	110 [a]	107 [a]	113 [a]
RKO	96	120	123	110	97	47	58	61	0 [b]	0 [b]	0 [b]
20th Century Fox	178	190	174	163	170	151	151	100	114	116	121
United Artists	34	37	32	25	23	21	20	29	39	44	54
Universal	51	54	65	58	57	56	65	64	71	78	78
Warner Bros.	142	159	165	147	135	127	117	72	69	70	76
TOTAL 8	850	965	957	885	773	702	723	656	628	667	694
TOTAL US INDUSTRY	1574	1817	1934	1914	1856	1826	1804	1945	1850	2049	2273
CR_8 (Sales)	0.54	0.53	0.49	0.46	0.42	0.38	0.40	0.34	0.34	0.33	0.31
HHI_8 (Sales)	459	441	375	333	273	240	254	172	193	172	143

[a] These figures represent the income of Paramount's new production entity after divorcement.
[b] Although RKO went out of business in 1957, revenue figures for after 1952 were unavailable.
***Notes**:* To calculate the concentration ratios the revenue of the Big 8 is divided by the total US industry revenue. For feature film output the same is done using the data from Finler. The HHI is calculated by summing the squares of each company's market shares, in whole numbers. For example, if Columbia produces 10 percent of the 1945 industry output, its market share will be inputted as 10, as opposed to 0.10. The Department of Justice considers ratios above 180 to be concentrated.
***Source**:* Finler, *Hollywood story*, 1992, pp. 463-465.

Table 18:
Measures Of Industry Productivity

	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955
Employees	215	225	229	225	226	224	219	216	209	206	205
Theatres	20.5	19.0	18.6	18.4	18.6	19.1	19.0	18.6	18.3	18.9	18.7
$Wages_{1948}$	767	868	776	682	696	687	659	657	643	672	722
Domestic releases	377	467	487	459	479	622	654	463	534	427	392
Annual attendance	3,643	4,127	3,716	3,471	3,247	3,086	2,893	2,722	2,467	2,396	2,292
PR1	17.5	20.8	21.3	20.4	21.2	27.8	29.9	21.4	25.6	20.7	19.1
PR2	4.9	5.4	6.3	6.7	6.9	9.1	9.9	7.1	8.3	6.4	5.4
PR3	16.9	18.3	16.2	15.4	14.4	13.8	13.2	12.6	11.8	11.6	11.2
PR4	4.8	4.8	4.8	5.1	4.7	4.5	4.4	4.2	3.8	3.6	3.2
PR5	18.4	24.6	26.2	24.9	25.8	32.6	34.4	24.9	29.2	22.6	21.0
PR6	178	217	200	189	175	162	152	146	135	127	123

Productivity Ratios
PR1= films released / 10,000 industry employees
PR2= films Released / $10,000,000 real wages
PR3= 1,000 annual attendance / industry employee
PR4= annual attendance / $1 of real wages
PR5= films released / theatre
PR6= annual attendance / theatre

***Notes**:* Employees are in thousands; theatres are in thousands of 4-wall cinemas and drive-ins; wages are in millions of dollars; attendance is in millions.
***Source**:* Employee and wage data from US Dept. of Commerce*, Income and product accounts of the United States*; feature film and admissions data from Finler, *Hollywood story*, pp. 484-487, 500-503.

Table 19:
Exhibitor Input Prices

	Rent	Wage per employee	Advertising per picture	Tickets	Producer price index	Film rental rate	Average weekly attendance
1945	0.99	0.86	0.80	0.88	0.88	1.03	1.00
1946	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1947	1.03	1.02	1.18	1.06	1.23	1.04	0.89
1948	1.10	0.98	1.16	1.12	1.33	1.00	0.80
1949	1.15	0.98	1.56	1.15	1.26	1.01	0.74
1950	1.19	0.99	1.38	1.21	1.30	1.03	0.67
1951	1.24	1.07	1.78	1.30	1.46	1.05	0.60
1952	1.29	1.09	1.80	1.39	1.42	1.08	0.52
1953	1.36	1.11	1.67	1.45	1.40	1.11	0.51
1954	1.40	1.18	1.85	1.52	1.41	1.24	0.57
1955	1.42	1.26	1.90	1.55	1.41	1.15	0.61

***Notes**:* All indices normalized to 1946 when the basket is weighted.
***Source**:* The admission ticket, advertising, film rental rate and attendance indices are derived from Conant, *Antitrust in the motion picture industry*, pp. 4, 9, 170; wages are from US Dept. of Commerce*, Income and product accounts of the United States*; PPI and rent indices derived from *Bureau of Labour Statistics.*

Table 20:
Estimating Counterfactual Feature Film Releases

	1	2	3 = 2/1	4	5 = 4/1	6	7	8 = 2•7	9 = 6+8	10 = 6-8
	Actual features	Real industry costs[a]	Real industry costs per feature[a]	Real box office[a]	Real box office per feature[a]	Counterfactual features[b]	Standard error	2 Standard errors	CF upper bound	CF lower bound
1933	678	1,086	1.60	894	1.32	-	-	-	-	-
1934	641	1,151	1.80	932	1.45	-	-	-	-	-
1935	562	1,128	2.01	978	1.74	-	-	-	-	-
1936	509	1,332	2.62	1,085	2.13	-	-	-	-	-
1937	501	1,225	2.45	1,131	2.26	-	-	-	-	-
1938	489	1,449	2.96	1,133	2.32	-	-	-	-	-
1939	507	1,460	2.88	1,143	2.25	-	-	-	-	-
1940	480	1,546	3.22	1,265	2.64	-	-	-	-	-
1941	525	1,518	2.89	1,326	2.53	-	-	-	-	-
1942	522	1,470	2.82	1,511	2.89	-	-	-	-	-
1943	538	1,496	2.78	1,776	3.30	-	-	-	-	-
1944	455	1,694	3.72	1,836	4.04	-	-	-	-	-
1945	483	1,789	3.70	1,941	4.02	-	-	-	-	-
1946	477	1,870	3.92	2,091	4.38	-	-	-	-	-
1947	492	1,848	3.76	1,723	3.50	-	-	-	-	-
1948	488	1,772	3.63	1,506	3.09	-	-	-	-	-
1949	397	1,750	4.41	1,469	3.70	432	20	39	471	393
1950	401	1,714	4.27	1,376	3.43	451	16	33	484	418
1951	350	1,579	4.51	1,214	3.47	434	18	37	470	397
1952	378	1,692	4.48	1,133	3.00	436	18	35	471	401

1953	369	1,598	4.33	1,071	2.90	433	18	37	469	396
1954	366	1,714	4.68	1,100	3.01	414	21	42	456	371
1955	356	1,932	5.43	1,192	3.35	384	25	51	435	333
1956	383	2,089	5.45	1,235	3.22	391	23	46	437	344
1957	391	1,969	5.04	966	2.47	405	21	42	448	363

[a] Values in 1948 dollars.

[b] Counterfactual features are fitted values of estimated producer supply function with standard errors in col. 7.

***Source**:* See Finler, *Hollywood story*, pp. 484-7, 500-3.

Appendix VI:

The Eddie Marmix and C.J. Tevlin Feature Film Ledgers

Table 21:
MGM Feature Film Ledger, 1928-47

Date	Title	Cost	Domestic earnings	Foreign earnings	Total earnings	Profit-loss	Profit margin
1928-29	The Broadway Melody (HP)	379	2,808	1,558	4,366	1,604	423%
	Trail of '98 (HC/HL)	1,538	839	739	1,576	-756	-49%
	The Trial of Mary Dugan	402	1,087	347	1,434	421	105%
	A Woman of Affairs	383	850	520	1,370	417	109%
	The Pagan	293	639	713	1,352	562	192%
	Flying Fleet	385	658	628	1,286	443	115%
	The Divorce	341	842	376	1,218	335	98%
	Let Us Be Gay	257	829	370	1,199	527	205%
	Wild Orchids	322	622	543	1,165	380	118%
	Alias Jimmy Valentine	208	791	336	1,129	478	230%
	The Cameraman	362	362	435	797	67	19%
	Children Of Pleasure	299	260	115	375	-103	-34%
	Desert Nights	209	590	211	801	292	140%
	Desert Rider (LG)	50	91	61	152	32	64%
	The Kiss	257	518	387	905	448	174%
	Marianne	648	695	291	986	64	10%
	Masks of the Devil	305	584	260	844	248	81%
	Our Dancing Daughters	178	757	342	1,099	304	171%
	Show People	397	725	256	981	176	44%
	The Single Standard	336	659	389	1,048	333	99%
	Sioux Blood (LC)	41	98	64	162	49	120%

	Spite Marriage	282	345	556	901	197	70%
1929-1930	The Hollywood Revue (HP)	426	1,527	894	2,421	1,135	266%
	The Big House	414	1,279	436	1,715	462	112%
	Rogue Son	646	824	786	1,610	-109	-17%
	Anna Christie	376	1,013	486	1,499	576	153%
	Devil May Care	487	713	703	1,416	357	73%
	Dynamite	661	894	442	1,336	79	12%
	Romance	496	733	532	1,256	287	58%
	Madame X	183	915	339	1,254	586	320%
	Our Blushing Brides	337	874	337	1,211	412	122%
	Chasing Rainbows	357	708	361	1,069	249	70%
	Doughboys	276	428	386	814	160	58%
	Free And Easy	473	438	437	875	32	7%
	Girl Said No	278	676	196	872	245	88%
	His Glorious Night	210	589	137	726	202	96%
	It's A Great Life	345	526	254	780	67	19%
	The Mysterious Island (HC/HL)	1,130	523	203	726	-878	-78%
	Redemption	561	398	254	652	-215	-38%
	Strictly Unconventional (LG)	153	161	77	238	-22	-14%
	The Unholy Three	279	716	272	988	375	134%
	Wise Girls (LC)	100	280	87	367	96	96%
1930-31	Trader Horn (HC/HP)	1,322	2,180	2,011	4,191	1,305	99%
	Mata Harf	558	1,012	1,296	2,308	906	162%
	Min & Bill	327	1,223	537	1,760	731	224%
	Call Of The Flesh	464	619	1,003	1,622	285	61%
	Susan Lennox	580	806	700	1,506	364	63%
	Reducing	222	1,132	373	1,505	718	323%
	A Free Soul	529	889	533	1,422	244	46%
	Politics	292	1,081	286	1,367	564	193%
	Strangers May Kiss	417	980	292	1,272	313	75%
	Dance Fools Dance	234	848	420	1,268	524	224%

	Billy The Kid	605	709	131	840	-119	-20%
	A Gentleman's Fate	500	375	134	509	-216	-43%
	Inspiration	438	725	402	1,127	286	65%
	A Lady's Morals	604	320	441	761	-284	-47%
	Men Call It Love (LG)	180	306	80	386	39	22%
	New Moon	782	508	496	1,004	-243	-31%
	Parlor, Bedroom & Bath	194	476	509	985	299	154%
	Sidewalks Of New York	286	424	431	855	218	76%
	Stepping Out (LC)	165	340	116	456	103	62%
	Way For A Sailor (HL)	889	447	187	634	-606	-68%
1931-32	Tarzan The Ape Man (HP)	660	1,337	1,428	2,765	1,079	163%
	Hell Divers	821	1,244	917	2,161	458	56%
	Smilin Through (HC)	851	1,004	1,029	2,033	529	62%
	Emma	350	1,409	563	1,972	898	257%
	The Camp	356	1,098	633	1,731	631	177%
	Possessed	378	1,030	492	1,522	611	162%
	Prosperity	628	1,166	348	1,514	378	60%
	As You Desire Me	469	705	658	1,363	449	96%
	Letty Lynton	347	754	418	1,172	390	112%
	Private Lives	500	814	311	1,125	256	51%
	Beast Of The City	230	408	202	610	143	62%
	Downstairs	494	289	77	366	-286	-58%
	Fast Life	432	359	318	677	-7	-2%
	Freaks	316	289	52	341	-164	-52%
	The Guardsman	322	413	97	510	-98	-30%
	Guilty Hands (LC)	152	452	234	686	282	186%
	New Morals For Old (LG)	191	261	74	335	4	2%
	Phantom Of Paris	533	367	284	651	-243	-46%
	Red-Headed Woman	401	642	119	761	69	17%
	The Passionate Plumber	263	413	366	779	186	71%
	Speak Easily	420	459	283	742	33	8%

	The Squaw Man (HL)	731	464	235	699	-340	-47%
	West Of Broadway	585	332	134	466	-322	-55%
1932-33	Grand Hotel	700	1,235	1,359	2,594	947	135%
	Tugboat Annie (HP)	614	1,917	655	2,572	1,212	197%
	Viva Villa (HC)	1,022	941	1,028	1,969	157	15%
	Riptide	769	1,023	718	1,741	333	43%
	The White Sister	625	750	922	1,672	456	73%
	Hell Below	895	634	755	1,389	-52	-6%
	Rasputin & The Empress (HC)	1,022	677	702	1,379	-185	-18%
	Sadie McKee	612	838	464	1,302	226	37%
	Strange Interlude	654	957	280	1,237	90	14%
	Red Dust	408	781	442	1,223	399	98%
	Broadway To Hollywood (HL)	965	397	246	643	-510	-53%
	The Cat And The Fiddle	843	455	644	1,099	-142	-17%
	Fast Workers (LG)	525	193	88	281	-360	-69%
	Going Hollywood	914	620	342	962	-269	-29%
	Hold Your Man	266	654	419	1,073	433	163%
	Made On Broadway (LC)	143	307	138	445	141	99%
	Reunion In Vienna	478	379	264	643	-134	-28%
	What, No Beer?	270	344	289	633	132	49%
1933-34	Queen Christina	1,144	767	1,843	2,610	623	54%
	Dancing Lady	923	1,490	916	2,406	744	81%
	Treasure Island	825	1,308	1,100	2,408	652	79%
	Tarzan & His Mate (HC)	1,286	811	1,428	2,239	161	13%
	Forsaking All Others (HP)	382	1,399	800	2,199	1,132	296%
	Dinner At Eight	435	1,398	758	2,156	998	229%
	The Painted Veil	947	538	1,120	1,658	138	15%
	No More Ladies	765	1,117	506	1,623	166	22%
	Men In White	213	890	565	1,455	784	368%
	The Thin Man	231	818	605	1,423	729	316%
	Blonde Bombshell	344	531	230	761	122	35%

	The Chief (LG)	502	208	38	246	-366	-73%
	Operator Thirteen	880	619	391	1,010	-226	-26%
	The Women In His Life (LC)	125	230	114	344	76	61%
1934-35	Mutiny On The Bounty (HC/HP)	1,950	2,539	2,210	4,749	1,094	56%
	David Copperfield	1,073	1,716	1,348	3,064	734	68%
	The Merry Widow	1,605	861	1,898	2,759	-1	0%
	The Barretts Of Wimpole St	820	1,258	1,085	2,343	668	81%
	Naughty Marietta	782	1,058	999	2,057	407	52%
	Chained	544	1,301	687	1,988	732	135%
	Suzy	614	1,223	580	1,803	498	81%
	I Live My Life	586	921	557	1,478	384	66%
	West Point Of The Air	591	677	640	1,317	262	44%
	After Office Hours	366	759	522	1,281	402	110%
	Baby Face Harrington (LG)	172	230	102	332	33	19%
	One New York Night (LC)	132	280	230	510	188	142%
	Outcast Lady (HL)	595	285	192	477	-308	-52%
	Straight Is The Way (LC)	132	248	96	344	85	64%
1935-36	San Francisco (HP)	1,300	3,714	2,699	6,413	3,008	231%
	Rose Marie	875	1,695	1,820	3,515	1,488	170%
	The Broadway Melody of '36	1,062	1,655	1,216	2,871	691	65%
	China Seas	1,138	1,710	1,157	2,867	653	57%
	Camille (HC)	1,486	1,454	1,688	3,142	524	35%
	Libeled Lady	603	1,601	1,122	2,723	1,189	197%
	Anna Karenina	1,152	865	1,439	2,304	320	28%
	A Tale Of Two Cities	1,232	1,111	1,183	2,294	133	11%
	Wife Vs. Secretary	519	1,350	717	2,067	876	169%
	The Gorgeous Hussy	1,119	1,458	551	2,009	116	10%
	Exclusive Story (LC)	157	415	243	658	271	173%
	A Family Affair	178	373	129	502	153	86%
	Kind Lady (LG)	217	168	92	260	-72	-33%
	A Night At The Opera	1,057	1,164	651	1,815	90	9%

1936-37	The Great Zeigfeld	2,183	3,089	1,584	4,673	822	38%
	Maytime	2,126	2,183	1,823	4,006	594	28%
	The Good Earth (HC)	2,816	2,002	1,555	3,557	-496	-18%
	Saratoga	1,144	2,432	820	3,252	1,146	100%
	After The Thin Man (HP)	673	1,992	1,173	3,165	1,516	225%
	Captains Courageous	1,645	1,688	1,445	3,133	355	22%
	The Broadway Melody of '38	1,588	1,889	957	2,846	271	17%
	Born To Dance	1,422	1,632	781	2,413	141	10%
	A Day At The Races	2,016	1,602	703	2,305	-543	-27%
	Romeo & Juliet (HL)	2,066	962	1,159	2,121	-889	-43%
	Mama Steps Out (LG)	199	212	72	284	-26	-13%
	Parnell	1,527	992	584	1,576	-637	-42%
	Tarzan Escapes	1,063	1,001	1,150	2,151	369	35%
	Women Are Trouble (LC)	109	240	105	345	109	100%
1937-38	Test Pilot	1,701	2,431	1,472	3,903	967	57%
	Marie Antoinette (HC)	2,926	1,633	1,323	2,956	-767	-26%
	Girl Of The Golden West	1,680	1,597	1,285	2,882	243	14%
	Rosealie	2,096	1,946	933	2,879	-175	-8%
	A Yank At Oxford	1,374	1,291	1,445	2,736	513	37%
	The Firefly	1,495	1,244	1,430	2,674	163	11%
	Love Finds Andy Hardy (HP)	212	1,637	610	2,247	1,345	634%
	Conquest (HL)	2,732	730	1,411	2,141	-1,397	-51%
	Three Comrades	839	1,193	850	2,043	472	56%
	Double Wedding	678	1,314	727	2,041	683	101%
	The Chaser (LC)	161	220	102	322	27	17%
	Judge Hardy's Children	182	578	323	901	422	232%
	The Women Meny Marry (LG)	174	229	95	324	30	17%
	You're Only Young Once	202	363	309	672	240	119%
1938-39	Boystown (HP)	772	2,828	1,230	4,058	2,112	274%
	Goodbye Mr. Chips	1,051	1,717	1,535	3,252	1,305	124%
	Sweethearts	1,966	2,017	1,230	3,247	12	1%

	The Wizzard Of Oz (HC/HL)	2,777	3,522	1,524	5,046	57	2%
	The Citadel	1,012	987	1,611	2,598	983	97%
	The Great Waltz	2,260	1,627	1,964	3,591	54	2%
	Too Hot To Handle	1,564	1,627	769	2,396	-31	-2%
	Out West With The Hardys	317	1,568	626	2,194	1,209	381%
	Andy Hardy Gets Spring Fever	317	1,560	602	2,162	1,176	371%
	The Hardys Ride High	269	1,496	634	2,130	1,195	444%
	Adventures of Huck Finn	512	1,246	532	1,778	642	125%
	Broadway Serenade	1,284	617	617	1,234	-511	-40%
	A Christmas Carol (LG)	289	232	51	283	-144	-50%
	Ice Follies of '39	1,108	725	448	1,173	-343	-31%
	Idiot's Delight	1,519	1,167	545	1,712	-374	-25%
	Maisie	238	557	206	763	258	108%
	Shining Hour	1,068	942	425	1,367	-137	-13%
	Stablemates	495	1,305	515	1,820	760	154%
	Tarzan Finds A Son	898	1,039	1,049	2,088	528	59%
	They All Come Out (LC)	199	224	101	325	-7	-4%
	Young Dr Kildare (LC)	199	606	272	878	367	184%
	Gone With The Wind	2,472	30,015	18,694	48,709	16,222	656%
1939-40	Boomtown (HP)	1,614	4,567	1,716	6,283	2,751	170%
	Babes In Arms	748	2,311	1,024	3,335	1,542	206%
	Northwest Passage (HC/HL)	1,687	2,404	981	3,385	-768	-46%
	Andy Hardy Meets The Debutante	436	1,945	678	2,623	1,409	323%
	New Moon	1,487	1,290	1,237	2,527	211	14%
	Waterloo Bridge	1,164	1,727	1,217	2,944	655	56%
	Ninotchka	1,365	1,250	1,598	2,848	554	41%
	The Women	1,688	1,691	724	2,415	210	12%
	Another Thin Man	1,107	1,523	700	2,223	394	36%
	I Love You Again	1,025	1,538	615	2,153	461	45%
	At The Circus	1,359	853	480	1,333	-492	-36%
	Balalaika	1,795	926	1,153	2,079	-486	-27%

	The Captain Is A Lady (LG)	260	184	85	269	-105	-40%
	Judge Hardy's Children	274	1,442	603	2,045	1,118	408%
	The Mortal Storm	1,045	1,159	643	1,802	108	10%
	Phantom Riders (LC)	217	285	172	457	72	33%
	Pride And Prejudice	1,437	1,001	848	1,849	-241	-17%
	Strange Cargo	1,252	1,311	603	1,914	21	2%
	Susan And God	1,103	81	279	360	-433	-39%
1940-41	Strike Up The Band (HP)	854	2,265	1,229	3,494	1,539	180%
	The Philadelphia Story	914	2,374	885	3,259	1,272	139%
	Men Of Boystown	862	2,009	1,157	3,166	1,269	147%
	Ziegfeld Girl (HC)	1,468	1,891	1,210	3,101	532	36%
	Blossoms In The Dust	1,112	1,660	1,652	3,312	925	83%
	They Met In Bombay	1,380	1,554	961	2,515	350	25%
	Life Begins For Andy Hardy	401	1,684	810	2,494	1,324	330%
	Billy The Kid	1,411	1,943	914	2,857	247	18%
	Andy Hardy's Private Secretary	329	1,526	876	2,402	1,334	405%
	Escape	1,205	1,357	1,007	2,364	345	29%
	The Big Store	850	789	525	1,314	33	4%
	Blonde Inspiration (LG)	251	169	70	239	-112	-45%
	Comrade X	920	1,520	559	2,079	484	53%
	Flight South	831	1,445	847	2,292	707	85%
	Go West	1,168	896	514	1,410	-206	-18%
	I'll Wait For You (LC)	210	209	138	347	2	1%
1941-42	Mrs. Miniver (HP)	1,344	5,358	3,620	8,978	4,831	359%
	Honky Tonk	899	3,168	1,087	4,255	2,057	229%
	Babes On Broadway	955	2,363	1,496	3,859	1,720	180%
	Rio Rita	900	1,927	1,293	3,220	1,340	149%
	Tarzan's New York Adventure	707	1,770	1,602	3,372	1,416	200%
	Woman Of The Year	1,006	1,935	773	2,708	753	75%
	Tarzan's Secret Treasure	978	1,425	1,826	3,251	1,271	130%
	Tortilla Flat	1,201	1,865	746	2,611	542	45%

	Johnny Eager	651	1,996	1,103	3,099	1,428	219%
	Ship Ahoy	1,037	1,831	676	2,507	654	63%
	Courtship Of Andy Hardy	338	1,551	858	2,409	1,319	390%
	Her Cardboard Lover	979	637	336	973	-348	-36%
	I Married An Angel (HC/HL)	1,492	664	572	1,236	-725	-49%
	Joe Smith, American	236	487	221	708	222	94%
	Kid Glove Killer (LC)	199	336	214	550	161	81%
	Mokey (LG)	353	179	98	277	-205	-58%
	Nazi Agent	277	319	371	690	176	64%
	Pacific Rendezvous	225	253	154	407	23	10%
	Shadow Of The Thin Man	821	1,453	848	2,301	769	94%
	Two-Faced Woman	1,247	875	925	1,800	-62	-5%
	We Were Dancing	1,085	581	498	1,079	-409	-38%
	A Yank On The Burma Road	300	355	197	552	64	21%
1942-43	Random Harvest (HP)	1,210	4,650	3,497	8,147	4,384	362%
	For Me And My Gal	841	2,894	1,477	4,371	2,098	249%
	Somewhere I'll Find You	1,060	2,885	1,129	4,014	1,749	165%
	The Human Comedy	1,005	2,824	1,034	3,858	1,531	152%
	Dubarry Was A Lady	1,296	2,572	924	3,496	857	66%
	Presenting Lilly Mars	1,045	2,216	1,039	3,255	1,211	116%
	Keeper Of The Flame	1,172	2,190	1,032	3,222	1,040	89%
	Standby For Action (HC)	1,403	2,013	1,185	3,198	786	56%
	Bataan	958	2,049	1,068	3,117	1,140	119%
	A Yank At Eton	751	1,542	1,135	2,677	1,101	147%
	Andy Hardy's Double Life	369	1,782	865	2,647	1,499	406%
	Hitler's Madman	406	305	202	507	-95	-23%
	Journey For Margaret	484	779	755	1,534	561	116%
	Omaha Trail (LG)	436	293	130	423	-161	-37%
	A Stranger In Town (LC)	276	404	225	629	144	52%
	Tennessee Johnson (HL)	1,042	570	114	684	-637	-61%
1943-44	Bathing Beatuy	2,361	3,284	3,608	6,892	2,132	90%

	The White Cliffs Of Dover	2,342	4,045	2,249	6,294	1,784	76%
	Thousands Cheer	1,568	3,751	2,135	5,886	2,228	142%
	A Guy Named Joe	2,627	3,970	1,393	5,363	1,066	41%
	Dragon Seed (HC)	3,070	3,033	1,594	4,627	-281	-9%
	Gaslight	2,068	2,273	2,350	4,623	947	46%
	Madame Curie	1,938	2,575	2,035	4,610	1,086	56%
	Two Girls & A Sailor	1,420	2,852	1,724	4,576	1,726	122%
	Leslie Come Home (HP)	666	2,613	1,904	4,517	2,249	338%
	Girl Crazy	1,469	2,608	1,163	3,771	1,068	73%
	Andy Hardy's Blonde Trouble	723	1,697	736	2,433	956	132%
	Dr Gillespie's Criminal Case (LC)	340	510	272	782	179	53%
	Lost Angel	452	1,437	721	2,158	1,032	228%
	Meet The People (HL)	1,302	670	290	960	-717	-55%
	Song Of Russia	1,828	1,845	1,884	3,729	782	43%
	Swing Fever (LG)	808	513	215	728	-341	-42%
	Swing Shift Maisie	535	1,186	233	1,419	447	84%
1944-45	The Valley Of Decision (HP)	2,165	4,566	3,530	8,096	3,480	161%
	Anchors Aweigh	2,580	4,498	2,977	7,475	2,123	82%
	Thrill Of A Romance	1,410	4,338	3,682	8,020	3,259	231%
	Meet Me In St Louis	1,885	5,016	1,550	6,566	2,359	125%
	Thirty Seconds Over Tokyo	2,924	4,472	1,950	6,422	1,465	50%
	National Velvet	2,770	3,678	2,162	5,840	765	28%
	Mrs. Parkington	1,574	3,062	2,569	5,631	2,195	139%
	Son Of Lassie	1,266	2,499	1,881	4,380	1,577	125%
	Kismet (HC)	2,942	1,957	1,977	3,934	-643	-22%
	Music For Millions	1,744	2,341	1,504	3,845	824	47%
	An American Romance (HL)	2,480	1,433	597	2,030	-1,752	-71%
	Between Two Women	436	1,896	386	2,282	1,184	272%
	Bewitched	139	392	138	530	205	147%
	The Clock	1,560	2,173	610	2,783	217	14%
	Main Street After Dark (LC/LG)	100	328	-	328	115	115%

	The Picture Of Dorian Gray	1,918	1,399	1,576	2,975	-26	-1%
	The Thin Man Goes Home	1,401	1,770	1,044	2,814	501	36%
1945-46	The Green Years (HP)	2,280	4,222	2,432	6,654	1,941	85%
	Weekend At The Waldorf	2,561	4,364	1,800	6,164	1,474	58%
	Adventure (HC)	3,478	4,236	1,848	6,084	478	14%
	Easy To Wed	1,683	4,028	1,610	5,638	1,779	106%
	The Ziegfeld Follies of '46	3,403	3,569	1,775	5,344	-269	-8%
	The Harvey Girls	2,931	4,112	1,063	5,175	263	9%
	The Postman Always Rings Twice	1,683	3,741	1,345	5,086	1,626	97%
	Two Sisters From Boston	2,223	3,334	1,127	4,461	605	27%
	They Were Expendable	2,933	3,109	1,238	4,347	-101	-3%
	our Vines Have Tender Grapes	1,372	2,770	1,426	4,196	1,407	103%
	Faithful In My Fashion (LG)	680	486	140	626	-307	-45%
	The Hidden Eve (LC)	588	472	463	935	18	3%
	Yolanda And The Thief (HL)	2,444	1,221	570	1,791	-1,644	-67%
1946-47	The Yearling (HC)	3,883	4,768	2,831	7,599	451	12%
	Till The Clouds Roll By	3,316	4,748	1,976	6,724	732	22%
	Holiday In Mexico	2,345	3,766	1,957	5,723	910	39%
	Fiesta (HP)	2,395	2,546	3,089	5,635	1,170	49%
	Sea Of Grass	2,349	3,150	1,539	4,689	742	32%
	The Hucksters	2,439	3,635	810	4,445	412	17%
	Undercurrent	1,644	2,828	1,409	4,237	1,001	61%
	The Secret Heart	1,735	2,591	1,309	3,900	891	51%
	No Levae No Love	1,778	2,891	894	3,785	626	35%
	High Barbaree	2,173	2,231	852	3,083	-149	-7%

***Note**:* All earnings data in thousands of current dollars.
***Source**:* Glancy, *MGM film grosses, 1924-1948: The Eddie Mannix ledger*. Available on microfiche for ‘MGM film grosses’.

Table 22:
RKO Feature Film Ledger, 1929-51

Date	Title	Cost	Domestic earnings	Foreign earnings	Total earnings	Profit - loss	Profit margin
1929-1930	Rio Rita (HC) (HF)	678	1,775	625	2,400	935	138%
	Hit the Deck	542	980	152	1,132	145	27%
	Street Girl	211	806	198	1,004	500	237%
	The Cuckoos	407	662	201	863	130	32%
	The Vagabond Lover	204	671	85	756	335	164%
	Seven Keys to Baldpate	251	437	80	517	100	40%
	Love Come Along	220	366	112	478	90	41%
	The Case o Sg.t Grischa (HL)	467	407	49	456	-170	-36%
	Loving the Ladies	207	370	58	428	65	31%
	Shooting Straight	238	378	40	418	30	13%
	Conspiracy (LG)	118	107	31	138	-50	-42%
	He Knew Women (LC)	103	161	32	193	0	0%
	Runaway Bridge (LC)	103	160	44	204	15	15%
1930-31	Check and Double Check (HP)	967	1,751	59	1,810	260	27%
	Cimarron (HC)(HL)	1,433	1,208	261	1,469	-515	-36%
	Half Shot at Sunrise	529	658	271	929	40	8%
	Dixiana	747	500	280	780	-300	-40%
	Hook, Line and Sinker	287	595	185	780	225	78%
	Sin Takes a Holiday	450	463	160	623	-40	-9%
	Young Donovan's Kid	279	445	173	618	-100	-36%
	Cracked Nuts	261	505	112	617	150	57%
	Neau Ideal	707	390	185	575	-330	-47%
	The Silver Horde	423	418	144	562	-100	-24%
	Everything's Rosie (LC)	140	205	70	275	35	25%
	The Gay Diplomat (LG)	184	96	35	131	-115	-63%
	Millie	605	564	71	635	30	5%

1931-32	Bird of Paradise (HC)	752	503	250	753	-250	-33%
	The Lose Squadron	621	691	203	894	-82	-13%
	The Common Law (HP)	339	573	140	713	150	44%
	Born to Love	338	452	197	649	90	27%
	Lady with a Past	541	475	120	595	-140	-26%
	What Price Hollywood	416	430	141	571	-50	-12%
	Peach O'Reno	293	461	109	570	90	31%
	Girl Crazy	532	432	123	555	-150	-28%
	Caught Plastered	281	442	107	549	90	32%
	Devotion	394	448	94	542	-40	-10%
	Ghost Valley (LG)	41	74	27	101	20	49%
	Partners (LC)	33	82	27	109	30	91%
	A Woman Commands (HL)	415	186	56	242	-265	-64%
1932-33	King Kong (HC) (HP)	672	1,070	1,777	2,847	1,310	195%
	The Conquerors (HL)	619	462	124	586	-230	-37%
	A Bill of Divorcement	250	383	148	531	110	44%
	The Animal Kingdom	458	439	89	528	-110	-24%
	Hold 'Em Jail	408	416	95	511	-55	-13%
	Double Harness	329	379	114	493	10	3%
	Melody Cruise	163	316	169	485	150	92%
	Diplomaniacs	242	323	138	461	65	27%
	The Most Dangerous Game	219	263	180	443	75	34%
	The Phantom of Crestwood	187	348	88	436	100	53%
	After Tonight	355	250	130	380	-100	-28%
	Bring 'Em Back Alive	889	692	352	1,044	155	17%
	Come On Danger	31	79	27	106	30	97%
	Cross Fire (LC) (LG)	26	74	24	98	30	115%
	Lucky Devils	117	179	106	285	65	56%
1933-34	Little Women (HP)	424	1,397	673	2,070	849	200%
	Flying Down to Rio (HC)	462	923	622	1,545	480	104%
	The Life of Vergie Winters	331	506	148	654	87	26%

	Hips Hips Hooray	336	435	190	625	8	2%
	Son of Kong	269	331	285	616	133	49%
	Spitfire	223	492	112	604	113	51%
	Of Human Bondage	403	540	137	677	16	4%
	The Lost Patrol	262	629	303	932	271	103%
	Morning Glory	239	377	205	582	115	48%
	Stingaree	408	368	195	563	-49	-12%
	Bachelor Bait (LC)	120	168	27	195	-3	-3%
	Becky Sharp	1,024	672	464	1,136	112	11%
	Man of Two Worlds (HL)	388	194	114	308	-220	-57%
	Two Alone (LG)	236	125	39	164	-158	-67%
	Wild Cargo	642	498	244	742	100	16%
1934-35	Robetta (HP)	610	1,467	868	2,335	770	126%
	The Gay Divorcee	520	1,077	697	1,774	584	112%
	The Little Minister	648	723	381	1,104	-9	-1%
	The Last Days of Pompeii (HC)	818	819	741	1,560	98	12%
	The Informer	243	455	495	950	325	134%
	The Three Musketeers	512	451	449	900	55	11%
	Star of Midnight	280	655	256	911	322	115%
	Anne of Green Gables	226	573	220	793	272	120%
	Alice Adams	324	574	196	770	164	51%
	Break of Hearts	427	437	258	695	16	4%
	Captain Hurricane (LG)	208	124	26	150	-126	-61%
	Enchanted April (HL)	346	127	38	165	-260	-75%
	Gridiron Flash (LC)	78	167	32	199	43	55%
1935-36	Top Hat (HP)	609	1,782	1,420	3,202	1,325	218%
	Follow the Fleet	747	1,532	1,175	2,707	945	127%
	Swing Time (HC)	886	1,624	994	2,618	830	94%
	Mary of Scotland	864	791	485	1,276	-165	-19%
	The Ex-Mrs. Bradford	369	730	354	1,084	350	95%
	In Person	493	496	219	715	147	30%

	The Bride Walks Out	289	502	168	670	164	57%
	I Dream Too Much	627	391	249	640	-350	-56%
	Annie Oakley	354	435	185	620	147	42%
	A Woman Rebels	574	347	236	583	164	29%
	Dancing Pirate	690	375	330	705	15	2%
	His Family Tree (LG)	127	89	27	116	-65	-51%
	Second Wife (LC)	68	140	57	197	58	85%
	Sylvia Scarlett (HL)	641	321	176	497	-363	-57%
1936-37	Shall We Dance (HP)	991	1,275	893	2,168	413	42%
	A Damsel in Distress	1,035	1,010	455	1,465	-65	-6%
	Vivacious Lady	703	1,042	436	1,478	230	33%
	Bringing Up Baby	1,073	811	459	1,270	-250	-23%
	That Girl from Paris	534	683	380	1,063	101	19%
	The Toast of New York (HL)	1,072	846	202	1,048	-530	-49%
	Sea Devils	477	580	360	940	155	32%
	The Woman I love	725	553	230	783	-266	-37%
	New Faces of 1937	728	650	125	775	-258	-35%
	Winterset	407	467	215	682	-2	0%
	Make a Wish	726	531	280	811	85	12%
	Rainbow on the River	996	705	391	1,096	100	10%
	Too Many Wives (LG)	105	92	30	122	-35	-33%
	You Can't Buy Luck (LC)	806	137	38	175	24	3%
1937-38	Story of V. and I. Castle	1,196	1,120	705	1,825	-50	-4%
	Stage Door	952	1,250	512	1,762	81	9%
	Carefree (HC)	1,253	1,113	618	1,731	-68	-5%
	Joy of Living	1,086	722	415	1,137	-314	-29%
	Having a Wonderful Time	966	771	237	1,008	-267	-28%
	Radio City Revels	810	565	185	750	-300	-37%
	Mother Carey's Chickens	358	543	160	703	110	31%
	Life of the Party	489	457	127	584	-111	-23%
	Sky Giant	181	370	148	518	165	91%

	Wise Girl	448	328	162	490	-114	-25%
	Breaking the Ice	Principal	416	209	625	68	-
	Fisherman's Wharf	Principal	343	162	505	45	-
	Fit for a King	Loew	356	137	493	55	-
	Gun Law (LC)	78	230	52	282	104	133%
	Hawaii Calls	Principal	454	211	665	82	-
	Hitting a New High (HL)	727	305	183	488	-431	-59%
	Living on Love (LG)	112	106	29	135	-28	-25%
	Quick Money (LG)	120	102	33	135	-37	-31%
	The Saint in New York (HP)	128	250	210	460	195	152%
	Snow White and the 7 Dwaarfs	Disney	996	3,850	4,846	380	-
	Victoria the Great	Imperadio	240	1,187	1,427	100	-
1938-39	Gunga Din (HC)	1,915	2,012	2,225	4,237	702	37%
	Bachelor Mother (HP)	509	1,170	805	1,975	827	162%
	Love Affair	860	975	775	1,750	221	26%
	Fifth Avenue Girl	607	950	420	1,370	314	52%
	In Name Only	722	926	395	1,321	155	21%
	Room Service (HL)	884	665	210	875	-330	-37%
	Five Came Back	225	441	280	721	265	118%
	The Mad Miss Manton	383	496	220	716	88	23%
	Pacific Liner	241	318	190	508	87	36%
	The Great Man Votes	265	337	95	432	-10	-4%
	Bad Lands (LG)	84	108	33	141	-6	-7%
	A Man to Remember	118	293	123	416	146	124%
	Rookie Cop (LC)	77	108	54	162	18	23%
1939-40	Hunchback of Notre Dame (HC)	826	1,530	1,625	3,155	100	12%
	My Favorite Wife (HP)	921	1,452	605	2,057	505	55%
	Irene	578	845	775	1,620	367	63%
	Lucky Partners	733	880	510	1,390	200	27%
	The Primrose Path	702	898	302	1,200	110	16%
	Nurse Edith Cavell	508	462	620	1,082	38	7%

	That's Right, You're Wrong	271	926	92	1,018	219	81%
	Vigil in the Night	920	666	338	1,004	-327	-36%
	Swiss Family Robinson	681	587	303	890	-180	-26%
	Allegheny Uprising	696	660	90	750	-230	-33%
	Abe Lincoln in Ill. (HL)	1,004	535	131	666	-740	-74%
	Marshal of Mesa City (LC)	75	166	52	218	58	77%
	Pinocchio	Disney	1,663	1,575	3,238	-94	-
	Sixty Glorious Years	Imperadio	133	848	981	49	-
	Triple Justice (LG)	85	110	19	129	-5	-6%
1940-41	Kitty Foyle (HP)	738	1,710	675	2,385	869	118%
	Tom, Dick and Harry (HC)	806	1,223	405	1,628	234	29%
	The Devil and Miss Jones	664	921	500	1,421	117	18%
	Mr. and Mrs. Smith	743	981	419	1,400	75	10%
	Sunny	676	560	536	1,096	7	1%
	You'll Find Out	371	855	175	1,030	167	45%
	No, No Nanette	570	490	450	940	-2	0%
	They Knew What They Wanted (HL)	781	577	355	932	-291	-37%
	A Girl, A Guy and a Gob	412	578	270	848	49	12%
	My Life With Caroline	503	530	300	830	-32	-6%
	The Reluctant Dragon	Disney	460	500	960	-17	-
	Six Gun Gold (LC) (LG)	49	98	15	113	22	45%
1941-42	Suspicion (HC) (HP)	1,102	1,306	919	2,225	440	40%
	Citizen Kane	840	990	300	1,290	-160	-19%
	Look Who's Laughing	358	1,193	81	1,274	353	99%
	Joan of Paris	666	503	647	1,150	105	16%
	Dangerous Moonlight	310	167	870	1,037	417	135%
	The Tuttles of Tahiti	847	612	355	967	-170	-20%
	Playmates	388	728	94	822	48	12%
	Syncopation	567	565	190	755	-87	-15%
	My Favorite Spy	565	628	117	745	-62	-11%
	Valley of the Sun	646	475	240	715	-158	-24%

	Ball of Fire	Goldwyn	1,856	785	2,641	-147	-
	Come On Danger (LG)	49	81	15	96	14	29%
	Dumbo	Disney	1,020	1,145	2,165	-5	-
	Fantasia	Disney	780	1,340	2,120	-60	-
	The Little Foxes	Goldwyn	1,317	850	2,167	-140	-
	Sing Your Worries Away (HL)	402	168	58	226	-255	-63%
	Thundering Hoofs (LC)	44	81	26	107	25	57%
1942-43	Mr. Lucky (HP)	842	2,770	865	3,635	1,673	199%
	Hitler's Children	205	2,655	700	3,355	1,210	590%
	Behind the Rising Sun	239	1,985	805	2,790	1,480	619%
	Once Upon a Honeymoon (HC)	1,441	1,805	720	2,525	282	20%
	The Sky's the Limit	871	1,410	775	2,185	625	72%
	Bombardier	907	1,870	415	2,285	670	74%
	Flight for Freedom	1,042	1,493	490	1,983	315	30%
	Forever and a Day	518	875	1,070	1,945	16	3%
	Seven Days Leave	618	1,145	630	1,775	673	109%
	The Navy Comes Through	700	1,236	526	1,762	542	77%
	Avenging Rider (LC) (LG)	35	98	24	122	47	134%
	Bambi	Disney	1,270	1,685	2,955	40	-
	Cat People	147	360	175	535	183	124%
	I Walked With a Zombie	156	356	140	496	181	116%
	The Leopard Man	155	303	100	403	104	67%
	Magnificent Ambersons (HL)	1,125	650	170	820	-620	-55%
	Pride of the Yankees	Goldwyn	3,332	855	4,187	-213	-
	Red River Robinhood (LC)	35	94	31	125	49	140%
	Saludos Amigos	Disney	515	620	1,135	24	-
	They Got Me Covered	Goldwyn	2,181	1,165	3,346	-150	-
1943-44	Show Business	809	1,950	880	2,830	820	101%
	The Lady Take a Chance	664	2,275	560	2,835	627	94%
	Tender Comrade (HP)	789	1,927	725	2,652	843	107%
	Government Girl	716	1,735	300	2,035	700	98%

	Step Lively (HC)	1,055	1,470	502	1,972	260	25%
	Higher and Higher	709	1,405	495	1,900	499	70%
	Bride By Mistake	656	1,452	360	1,812	600	91%
	The Fallen Sparrow	542	1,267	467	1,734	710	131%
	Marine Raiders	897	1,335	260	1,595	175	20%
	The Iron Major	612	1,270	90	1,360	258	42%
	Curse of the Cat People	212	268	102	370	35	17%
	Days of Glory (HL)	958	486	305	791	-593	-62%
	The Ghost Ship (LC)	116	272	130	402	105	91%
	Gildersleeve on Broadway (LG)	159	213	37	250	8	5%
	Gildersleeve's Ghost (LG)	185	224	26	250	-20	-11%
	North Star	Goldwyn	1,870	1,175	3,045	-220	-
	The Seventh Victim	130	220	68	288	59	45%
	Tarzan's Desert Mystery	Lesser	910	1,405	2,315	175	-
	Up in Arms	Goldwyn	3,015	1,700	4,715	-310	-
1944-45	The Enchanted Cottage (HP)	982	1,932	893	2,825	881	90%
	Back to Bataan	1,252	2,035	755	2,790	450	36%
	Those Endearing Young Charms	843	1,805	395	2,200	644	76%
	Tall in the Saddle	694	1,840	585	2,425	980	141%
	Experiment Perilous	1,273	1,215	816	2,031	70	5%
	None But the Lonely Heart	1,343	1,336	636	1,972	-72	-5%
	Murder, My Sweet	479	1,150	565	1,715	597	125%
	China Sky	651	1,295	315	1,610	395	61%
	The Master Race	343	770	205	975	53	15%
	Having Wonderful Crime (HL)	734	705	145	850	-165	-22%
	Belle of the Yukon	International	1,505	650	2,155	23	-
	The Body Snatcher	221	317	230	547	118	53%
	Casanova Brown	International	2,398	880	3,278	-27	-
	It's a Pleasure	International	2,010	1,215	3,225	30	-
	Nevada (LC)	133	388	93	481	178	134%
	Princess and the Pirate	Goldwyn	2,985	1,950	4,935	-5,255	-

	Tarzan and the Amazons	Lesser	1,045	1,540	2,585	227	-
	Three Caballeros	Disney	1,595	1,760	3,355	18	-
	Woman in the Window	International	2,010	1,315	3,325	26	-
	Zombies on Broadway (LG)	200	240	32	272	-6	-3%
1945-46	Bells of St. Mary's (HP)	1,549	7,950	3,200	11,150	3,715	240%
	The Spanish Main (HC)	2,115	3,385	2,450	5,835	1,485	70%
	The Spiral Staircase	968	2,690	1,260	3,950	885	91%
	Without Reservations	1,683	2,750	680	3,430	342	20%
	Till the End of Time	1,030	2,565	600	3,165	490	48%
	Johnny Angel	652	1,900	735	2,635	1,192	183%
	From This Day Forward	959	1,630	710	2,340	362	38%
	Badman's Territory	841	1,840	500	2,340	557	66%
	Heartbeat	1,560	1,650	685	2,335	126	8%
	Cornered	728	1,335	480	1,815	413	57%
	Along Came Jones	International	2,655	830	3,485	36	-
	Bedlam	264	257	98	355	-40	-15%
	Isle of the Dead	246	266	117	383	13	5%
	The Kid from Brooklyn	Goldwyn	3,960	1,530	5,490	-300	-
	Make Mine Music	Disney	2,085	1,190	3,275	-40	-
	Mama Loves Papa (LG)	159	248	75	323	65	41%
	Man Alive (HL)	738	534	111	645	-305	-41%
	The Stranger	International	2,000	935	2,935	30	-
	Tarzan & the Leopard Woman	Lesser	1,185	1,425	2,610	230	-
	Tomorrow Is Forever	International	3,040	1,355	4,395	25	-
	The Truth About Murder (LC)	150	233	92	325	63	42%
	Wonder Man	Goldwyn	3,270	1,650	4,920	-266	-
1946-47	Notorious (HP)	2,376	4,850	2,300	7,150	1,010	43%
	Sinbad the Sailor	2,459	2,875	2,075	4,950	90	4%
	The Farmer's Daughter	2,315	3,455	875	4,330	167	7%
	It's a Wonderful Life (HC)	2,857	3,260	1,000	4,260	-525	-18%
	Sister Kenny	1,705	1,695	620	2,315	-660	-39%

	The Locket	1,022	1,530	580	2,110	65	6%
	Nocturne	694	1,578	462	2,040	568	82%
	They Won't Believe Me	1,161	1,320	700	2,020	80	7%
	Trail Street	719	1,385	500	1,885	365	51%
	Honeymoon (HL)	1,739	1,500	375	1,875	-675	-39%
	Best Years of Our Lives	Goldwyn	7,675	-	7,675	-660	-
	Child of Divorce (LG)	220	212	100	312	-20	-9%
	Song of the South	Disney	3,515	1,300	4,815	-175	-
	Sunset Pass (LC)	145	275	85	360	76	52%
	Tarzan and the Huntress	Lesser	1,160	1,375	2,535	175	-
1947-48	Bachelor & the Bobby Soxer	1,961	4,200	1,350	5,550	700	36%
	Fort Apache	2,164	3,165	1,275	4,440	445	21%
	Tycoon (HC)	3,209	2,825	1,000	3,825	-1,035	-32%
	I Remember Mama (HL)	3,068	2,810	750	3,560	-1,040	-34%
	Mr. Blandings Builds His Dream House	2,052	2,740	800	3,540	-225	-11%
	Crossfire (HP)	678	2,320	725	3,045	1,270	187%
	The Miracle of the Bells	2,267	2,170	465	2,635	-640	-28%
	Out of the Past	1,134	1,240	625	1,865	90	8%
	If You Knew Susie	1,644	1,405	435	1,840	-490	-30%
	Magic Town	1,863	1,570	255	1,825	-350	-19%
	The Bishop's Wife	Goldwyn	3,460	1,150	4,610	-255	-
	Fun and Fancy Free	Disney	2,040	1,125	3,165	-100	-
	Guns of Hate (LC) (LG)	142	213	25	238	5	4%
	Night Song (HL)	1,887	1,195	375	1,570	-1,040	-55%
	Secret Life of Walt Mitty	Goldwyn	3,580	1,875	5,455	-260	-
	Tarzan and the Mermaids	Lesser	1,050	975	2,025	105	-
1948-49	Every Girl Should Be Married (HP)	1,263	2,850	665	3,515	775	61%
	Good Sam	1,894	2,815	625	3,440	265	14%
	Rachel and the Stranger	1,421	2,380	465	2,845	395	28%
	Blood on the Moon	1,488	2,115	525	2,640	235	16%
	Station West	1,511	1,375	340	1,715	-490	-32%

	The Window	696	850	625	1,475	210	30%
	The Velvet Touch	1,589	1,070	350	1,420	-735	-46%
	The Boy With Green Hair	1,068	1,120	250	1,370	-420	-39%
	The Set-Up	567	825	385	1,210	35	6%
	Adventure in Baltimore	1,422	875	150	1,025	-875	-62%
	Best Years of Our Lives	Goldwyn	2,625	4,450	7,075	-225	-
	Design for Death (LG)	201	70	-	70	-193	-96%
	Enchantment	Goldwyn	1,510	750	2,260	-230	-
	Joan of Arc	Sierra	2,525	3,500	6,025	-50	-
	Melody Time	Disney	1,810	750	2,560	-125	-
	Mourning Becomes Electra (HC) (HL)	2,342	185	250	435	-2,310	-99%
	So Dear to My Heart	Disney	2,200	575	2,775	-190	-
	A Song is Born	Goldwyn	2,265	925	3,190	-225	-
	Tarzan's Magic Fountain	Lesser	900	950	1,850	70	-
	Variety Time (LC)	51	246	54	300	132	259%
1949-50	She Wore a Yellow Ribbon	1,857	2,750	1,000	3,750	100	5%
	Mighty Joe Young (HC) (HL)	2,345	1,925	1,250	3,175	-675	-29%
	The White Tower	1,575	1,285	900	2,185	-600	-38%
	The Big Steal	922	1,425	425	1,850	180	20%
	Bride for Sale	1,019	1,410	375	1,785	-30	-3%
	Holiday Affair	1,135	1,250	375	1,625	-300	-26%
	Stromboli	847	560	1,025	1,585	-200	-24%
	Wagon Master	848	1,125	300	1,425	-65	-8%
	The Secret Fury	963	850	450	1,300	-300	-31%
	Where Danger Lives	948	840	450	1,290	-450	-47%
	Cinderella	Disney	4,225	2,850	7,075	-425	-
	Ichabod and Mr. Toad	Disney	1,200	425	1,625	-130	-
	Make Mine Laughs (LC)	63	230	50	280	90	143%
	My Foolish Heart	Goldwyn	1,825	850	2,675	-235	-
	The Outlaw	Hughes	2,150	-	2,150	-155	-
	Rider from Tucson (LG)	150	140	20	160	-70	-47%

	Roseanna McCoy	Goldwyn	1,900	525	2,425	-180	-
	Savage Splendor (HP)	202	500	500	1,000	250	124%
	Tarzan and the Slave Girl	Lesser	800	925	1,725	40	-
1950-51	Treasure Island	1,384	2,100	2,000	4,100	25	2%
	The Thing	1,257	2,000	750	2,750	35	3%
	Payment on Demand (HP)	966	1,525	800	2,325	230	24%
	Never a Dull Moment	1,322	1,375	450	1,825	-350	-26%
	Best of the Badmen	833	1,050	600	1,650	-25	-3%
	My Forbidden Past (HC)	1,439	1,100	475	1,575	-700	-49%
	Born to be Bad	1,126	950	475	1,425	-475	-42%
	Walk Softly, Stranger (HL)	1,438	825	600	1,425	-775	-54%
	Sealed Cargo	1,301	825	375	1,200	-675	-52%
	Gambling House	698	600	250	850	-225	-32%
	Cry Danger	Olympic	850	250	1,100	85	-
	Edge of Doom	Goldwyn	685	475	1,160	-130	-
	Footlight Varieties (LC)	75	155	65	220	35	47%
	Gun Play (LG)	93	125	20	145	-25	-27%
	Kon-Tiki	Lesser	850	700	1,550	235	-
	Mad Wednesday	Hughes	550	450	1,000	0	-
	Our Very Own	Goldwyn	2,400	1,100	3,500	-325	-
	Saddle Legion (LG)	105	125	20	145	-35	-33%
	Tarzan's Peril	Lesser	750	925	1,675	80	-
	Vendetta	Hughes	610	400	1,010	0	-

***Note**:* All earnings data in thousands of current dollars.
***Source**:* Jewell, *RKO film grosses, 1929-1951: the C.J. Tevlin ledger*: Available on microfiche for 'RKO film grosses'.

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