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Managing uncertainty in creative industries: film sequels and Hollywood's profitability, 1988-2015

John Sedgwick, Michael Pokorny and Peter Miskell

Abstract

The film industry is characterised by high levels of uncertainty, yet the firms that dominate global film distribution have remained remarkably stable over the last century. The ability to transform uncertainty into risk, and to manage these risks effectively, has arguably been the outstanding achievement of major American film studios since the 1920s. This article examines how the risk management strategies of these firms have evolved over time, with a particular focus on the growing prevalence of sequels during the last 30 years. We analyse data on the box-office earnings and budgets of over 4000 films released between 1988 and 2015, and find that sequels have become an increasingly important source of industry profits since c.2000. We place this trend in historical context, and argue that while sequels themselves are not new, their role within film portfolios has changed, and that this represents a distinctive approach to risk management within the industry.

Keywords: creative industries; film industry; sequels; uncertainty; risk management.

1 Introduction

Film, like other sectors of the creative economy, is often described as being characterised by uncertainty of demand (Caves, 2000; De Vany, 2004). While large numbers of new products are launched into the market each year, the popularity of these films is highly uneven, with a few hit productions typically dominating box-office takings. Yet neither producers nor consumers can reliably predict which films will become each season's hits (De Vany and Walls, 1996). It is an industry, in screenwriter William Goldman's well-worn phrase, in which 'nobody knows anything' (Goldman, 1984: 39). To understand how firms can operate a sustainable business model under such circumstances it is useful to draw on the distinction, first made by Chicago economist Frank Knight in the 1920s, between 'risk', which is measurable and therefore manageable, and 'uncertainty', which is inherently unpredictable and not subject to measurement (Knight, 1921; 2012). A key challenge for the major film studios has been to convert the uncertainty of film production into a set of risks that can be managed. Since the 1920s they have achieved this by constructing annual portfolios of films, the objective of which is not so much to maximise the returns on each film in the portfolio but rather maximise the returns on the portfolio as a whole, with the clear expectation that many films, if not the majority, will generate losses. Such film portfolios will typically exhibit high

levels of diversification, in terms of film budgets, genres, stars, directors, screenwriters, and so on. It is via this diversification process that some control can be exercised over the uncertainty of film production, in much the same way that a traditional investment portfolio is constructed with a view to managing risk. A more detailed discussion of these ideas can be found in Sedgwick and Pokorny (1998) and Pokorny and Sedgwick (2010).

However, the recent history of Hollywood seems to have confounded this account of film risk and uncertainty. In recent decades the annual lists of top grossing films have hardly been an eclectic (and unpredictable) mix of movies drawn from different sections of diversified film portfolios, but instead have been dominated by established movie franchises. While film sequels have by no means removed uncertainty from film production, their prevalence would suggest that they have come to be seen as a more reliable source of revenue (and profit) than other releases. Perhaps there are people in the industry who do know something after all?

Alongside the literature on uncertainty in the creative industries have been attempts to identify the characteristics of popular media content. A key idea here is the need for films (like other cultural products) to balance the simultaneous demand for the familiar and the novel. While consumers seek novelty, ‘they also want novelty to be accessible and familiar’ (Lampel, Lant and Shamsie, 2000: 266). The paradox, as Derek Thompson puts it, is that ‘people crave new products, ideas and stories, provided they are just like the products, ideas and stories they already know’ (Thompson, 2017: 284). The task facing content creators in this context is not to keep generating an infinite variety of media product on the assumption that some (unknown) proportion of them will become spectacularly successful, but rather to carefully design content that is ‘optimally new’ and which therefore has a stronger likelihood of success.

In this paper we explore the extent to which film sequels and franchises have become the film industry’s preferred method of generating ‘optimally new’ content, and whether the construction of multi-part film franchises is coming to replace the diversified film portfolio as the key mechanism by which risk is managed. We do this through a detailed analysis of films released between 1998 and 2015, and by locating this analysis within a wider historical context.

2. The context

A portfolio approach to film production rests on two types of knowledge - the *ex-ante* premise that some films lose money; and the *ex-post* identification of which films these are. During the studio era of film production, when big budget films regularly made losses, this dilemma was resolved by studios making sufficient number of middle and low budget films to absorb the losses incurred through big budget production (Sedgwick and Pokorny, 1998; Pokorny

and Sedgwick, 2010). Accordingly, although studios could not be labelled risk loving, accepting losses was an integral aspect of studio production - they certainly were not averse to the prospect of making losses with individual pictures.

This portfolio strategy of spreading risk was based upon the constantly high level of demand for films *per se*, with cinema audiences peaking in 1946 (US Department of Commerce). It was not that big budget films were not popular. They mostly were. It is rather that they were not always sufficiently popular to cover their costs of production and distribution. Or to put it differently, the extent of the market including foreign sales was not sufficient to support them as lone entities but was sufficient to allow middle budget films to make profits on a consistent basis.

The post-war period saw the studio system metamorphose into one in which studios no longer made all of the films they distributed; rarely took a full risk exposure on the films they invested in; and, finally, no longer owned and managed cinema chains. During the years 1946 to 1965, box-office declined in value by two-thirds, with consumers now largely attracted *en masse* to big budget productions. As a consequence, film revenues becoming increasingly unequally distributed, with Gini-coefficient values rising markedly over the period (Sedgwick, 2002; Pokorny and Sedgwick, 2010). These changes brought about by the decline in audience numbers, required the studios to amend their strategic thinking. No longer could they rely on middle-budget film revenues to cover the losses of big budget production. Indeed, it was film consumers who could be labelled as loss averse in that they were increasingly prepared only to go to the cinema to watch films that were highly likely to please them – a cinema of attractions, as opposed to a cinema of habit. They had become more discriminating. Habitual consumption of relatively low budget entertainment shifted from the big screen to the small.

If the sharp decline in cinema attendances posed a major strategic threat to the industry in the 1950s and 1960s, from the 1970s onwards film distributors were able to derive new revenue streams from ancillary markets. The emergence of film distribution through video (and later DVD) or via cable TV, pay-per-view or terrestrial television served as a complement to, rather than a substitute for, theatrical revenues. As each new release channel became established, it added to the overall market size, such that by the mid-2000s a typical film earned only around 20% of revenues from theatrical (cinema) release (Waterman, 2005). The expansion of these post-theatrical release channels has meant that big budget films are now much more likely to be able to cover their costs (albeit over a slightly longer time frame) and thus a strategy of concentrating film production on a smaller number of high profile films has become more viable. It is important to note here that not all films stand to benefit equally

from the revenue opportunities opened up by these markets. Theatrical release continues to perform the vital function of revealing audience preferences for individual films, with the movies that are hits with cinema audiences also dominating market shares in subsequent release windows. For producers and distributors the task of creating a hit movie may not have become any easier, but the life cycle (and thus the earning capacity) of such films has been extended.

Under these conditions it is not difficult to understand why the focus of the industry may have tilted increasingly towards what March (1991) calls the *exploitation* of successful filmic properties, at the expense of *exploration* or experimentation in identifying new content within diversified portfolios. Sequels can be seen as a classic expression of product exploitation, and in the marketing literature they have been interpreted as brand extensions, extending the success of the parent film and reducing the risks of film production (Hennig-Thurau *et al*, 2009). The literature is consistent on the box office and profit enhancing impact of sequels (Basuroy and Chatterjee, 2008, Hennig-Thurau *et al*, 2007, Walls, 2009, Terry *et al*, 2009, Terry *et al*, 2010). However, given the general trend of sequels generating lower returns than parent films and previous sequels, the implication is that sequels tend to generate lower satisfaction levels amongst consumers. Hence, there are implications for the manner in which sequels need to be marketed and promoted (Moon *et al*, 2010, Sood and Drèze, 2006).

The proliferation of sequels can be dated from the turn of this century. It is a new phenomenon in movie history, in that while batches of like-films can be identified during earlier periods, these were rarely the most high profile, big budget releases, but were more likely to be the kinds of mid-budget productions which the industry saw as a relatively reliable source of profit. Examples from the 1930s and 1940s include the *Andy Hardy* films, the *Thin Man* series, and the run of *Tarzan* films – all of which were released by MGM, though the *Tarzan* franchise was taken on by RKO in the early 1940s (Glancy, 1992; Jewell, 1994). Perhaps an exception from the studio-era is the famous set of nine musicals starring Fred Astaire and Ginger Rogers released between 1933 and 1939, which while not strictly sequels in that they did not share the same narrative lineage nor characterisation, they had in common a particular musical style and gender relationship between the two leading stars. Whilst initially highly profitable and popular, these films, in keeping with the literature referenced above, ultimately succumbed to a life-cycle process of rising costs and falling revenues and most interestingly, for our purposes, did not lead to copy-cat behaviour on the part of rival studios. Not until the *James Bond* films made by Eon Productions for United Artists in the 1960s do we see the emergence of a big budget film franchise of the type that is now common, but this remained atypical within the industry for several decades. By way of contrast, the rise in the number of sequels from 2000 onwards was evident across several

major studios and associated strongly with their increased profitability, in which the usual risk-return investment relationship became inverted.

The growing prominence of sequels among each season's major film releases has been an on-going source of comment in the trade press. A *Variety* article from 2006 presented the apparent puzzle concisely:

Hollywood is well aware of the perils of the franchise biz: spiralling production, talent and marketing costs; thumbs-down reviews from jaded critics and bloggers who like to grouse that Hollywood has no original ideas; and the nagging concern that a character arc will be stretched so thin it will sabotage a popular library title. Despite these fears, the studios are producing a staggering number of sequels (McNary, 2006).

A decade later, the same questions were still being posed:

Hollywood's reliance on franchises has increased dramatically in the last 15 years. But box office data highlights the risk associated with pursuing endless sequels: a majority of franchises head downhill after the first movie (Dawson, 2016).

Our paper addresses this puzzle in a number of ways. First, it focuses on film profitability, not just box office revenue, as the key measure of film performance. Second, it compares the profitability of sequels not to that of their 'parent' films, but to the wider body of original movies released alongside them. This is important as films which spawn sequels tend to be only the most successful hits, and are thus atypical. It is perfectly conceivable that even if sequels show declining profitability over time, they are still much more profitable than the average film release. Finally, our analysis focuses on individual distributors, allowing comparisons to be drawn between the investment strategies of different firms, rather than treating Hollywood as a homogeneous entity.

3 The Dataset

Altogether, 13,646 films were released in North America (that is, US and Canada – hereinafter referred to as the US market) between 1988 and 2015. The focus of this article will be the financial performance of 4,622 films produced by the 'major' Hollywood studios/distributors. Table 1 lists the studios from which these films emanated.

Insert table 1 about here

These films represent 33.9% of all 13,646 films generating US box-office over the period 1988 to 2015, generating 91.5% of US box-office over the period. Thus, we will assume hereinafter that the performance of the majors, as defined above, provides an accurate barometer of the performance of the whole (North American) market, given the extent to

which these majors dominate the market. The data is supplied by Nielsen EDI/Rentrak, which serves the entertainment industry with performance metrics.¹

For those films for which production budget estimates are available, estimates of film profits can be derived, and in particular, estimates of profits generated from theatrical release in the US. In order to estimate profits generated in North America, from theatrical release, it is first necessary to estimate the worldwide BO generated by a given film. This then allows for the estimation of the proportion of box-office revenue generated in North America, and hence the estimation of the proportion of film production costs attributable to North American release.

The dataset does not contain data on overseas box-office revenues, although it does contain data on UK box-office for those films released onto the UK market. There are two websites that contain data on overseas box-office – boxofficemojo.com and worldwideboxoffice.com. These websites produced data on overseas box-office for 78.2% of the 4,622 major films. However, coverage over the data period was variable. In particular, data were available for 97.6% of the films released from 2000 onwards, but only for 56.2% of the films released prior to 2000. Thus, the problem occurs for the films released over the earlier period, and we therefore estimated overseas box-office for those films for which data was unavailable.

The approach taken was as follows: Of the 2,171 films released prior to 2000, 537 of these films were not released in the UK and no overseas box-office data were available on these films from [boxofficemojo](http://boxofficemojo.com) and [worldwideboxoffice](http://worldwideboxoffice.com). Hence it was assumed that these films generated zero overseas box-office. Therefore, of the 1220 films for which overseas box-office data were available, $1220 - 537 = 683$ films had data on overseas box-office. However, of these 683 films 39 did not receive a UK release – that is, these films generated overseas box-office (from [boxofficemojo](http://boxofficemojo.com) or [worldwideboxoffice](http://worldwideboxoffice.com)) but were not released in the UK. That left 644 films for which data were available on both US and UK box-office and overseas box-office. A regression was therefore run on Real overseas box-office on real US and UK box-office (all measured in US dollars) in order to generate an equation that could be used to estimate overseas revenues on the basis of the US and UK revenues generated by a given film. The resulting equation generated a R^2 value of 0.828 (with real UK box-office raised to the power of 1.5 to resolve a non-linearity problem in the original regression). This equation was then used to estimate real overseas box-office for those major films for which data were available on both US and UK films but not on overseas box-office.

The next issue is the proportion of total film revenues that can be attributed to theatrical release. Our starting point is data presented in Vogel (2015), Table 4.6 (p. 110). This shows

¹ Nielsen EDI was sold to Rentrak in 2010.

the proportion of film revenues attributable to theatrical release, in 5 year intervals, from 1985 to 2005, with an additional observation for 2007. The trend was a broadly declining one, and annual estimates of this proportion were generated by fitting a straight line to the data in Table 4.6 and interpolating this proportion for each year from 1988 to 2007. The result is the assumption that the proportion of total film revenues attributable to theatrical release declined from 0.43 in 1988 to 0.21 in 2007. However, it would now appear that a trend has begun to emerge of home entertainment expenditures moving away from film viewing to newer forms of home entertainment such as Netflix (Wallerstein, 2016), implying that the proportion of film revenues attributable to theatrical release has increased since 2007. Using data supplied by Nash Information Services LLC on film revenues derived from domestic and international video results in the assumption that the proportion of film revenues attributable to theatrical release increases from 0.21 in 2008 to 0.25 in 2015.

Next, we require the proportion of box-office revenues that revert back to the studios/distributors in the form of film rentals. Such estimates are provided by Vogel (2015, Table 4.3, p 100). These proportions, while exhibiting a small degree of year to year variation, are relatively stable, and we have used the annual average of 0.416 to translate box-office revenues into film revenues.

The final issue in deriving estimates of film profits and film rates of return is a methodology for estimating film distribution costs. The approach we adopt follows the approach developed in the appendix to Pokorny and Sedgwick (2010). That is, we assume that a film's distribution costs are related directly to the film's production budget and the subsequent film rentals that are generated. That is, we have, for film i :

$$D_i = \alpha C_i + \beta R_i \quad (1)$$

where D_i is the US distribution cost of film i , C_i is the production cost of film i , attributable to US release, and R_i are the film rentals derived from US release. The issue, then, is the derivation of values for the parameters, α and β . The methodology for deriving these estimates is discussed in detail in the appendix to Pokorny and Sedgwick (2010), resulting in a value for α of 0.07 and of β of 0.40.

Thus, in summary, the profits attributable to theatrical release in the US generated by film i , P_i , are derived as:

$$P_i = R_i - (C_i + D_i) \quad (2)$$

And hence the rate of return of film i , RoR_i , is derived as:

$$RoR_i = \frac{R_i - (C_i + D_i)}{(C_i + D_i)} \quad (3)$$

In summary, these estimates are obtained by first deriving data on overseas box-office income, thereby allowing film costs to be allocated as between domestic and overseas release. Domestic rental incomes were then estimated from the domestic box-office data, itself moderated by the knowledge that rental incomes deriving from theatrical release were a declining proportion of total rental incomes, given the growth in ancillary markets over the 28-year data period. This allows costs to be allocated between theatrical and non-theatrical exhibition. Estimates were also made of film distribution costs. All data were deflated to 2005 prices using the US Consumer Price Index. Given these US profit estimates, film rates of return can then be derived as the ratio of the profits derived from US theatrical release to total film costs attributable to US theatrical release.

4 Some Broad Trends in the Film Market

Figure 1 presents a scatter diagram of the profits generated by these films from US theatrical exhibition against the production budgets of these films, all in 2005 prices. The titles of a number of these films are also shown and captures the essentials of the of the risk environment of film production. High budgets cannot guarantee high profits, but rather generate an environment in which profitability is highly variable. A further aspect of Figure 1 is that the high budget/high profit films would appear to be dominated by films produced in the latter half of the data period, with a high proportion of these being sequels.

Insert figure 1 about here

In order to examine the time trends in profitability, annual aggregate rates of return can be derived. That is, for any year the annual rate of return to theatrical exhibition in the US can be derived as the sum of the US profits across all films released in that year, expressed as a percentage of total costs (the sum of production and distribution costs attributable to US theatrical exhibition). However, given the relatively limited coverage of production cost estimates in the dataset, the focus will be just on the annual profitability of the major studios/distributors.

Finally, the films of the majors for which budget estimates are available (and hence profitability estimates can be derived) account for 27.3% of the films distributed over the period (ranging from 54.1% in 1990 to 14.9% in 2014), and 85.8% of box-office (ranging from 96.0% in 2001 to 71.9% in 2009).

Insert figure 2 about here

Figure 2 shows these annual rates of return, together with the percentage of profitable films each year, from which the clear feature is the strong profitability performance from 2000 onwards, where annual rates of return trend upwards, commensurate with an increasing proportion of film outputs that were profitable. Indeed, from 2009 over 80% of the films released by the majors were profitable. This performance is in contrast to the performance in the late 1980s and the 1990s, when annual rates of return were relatively low, volatile, with only around a half of film outputs achieved profitability. It is the nature of the performance prior to 2000 that would generally be interpreted as characterising the financial and risk environment of the film industry, and why the performance post-2000 can be seen, historically, to represent such a clear break with the past.

During the period under investigation, the total number of films released onto the North American market increased from 322 in 1988 to 707 in 2015, an increase of 120%. By contrast the number of films released by the majors declined by 23%, from 165 films in 1988 to 127 films in 2015. That is, by 2015 the majors accounted for just 18% of film releases, declining from 51% in 1988. Yet, as has been shown the average the proportion of box-office accounted for by the majors was virtually unchanged over the period, averaging over 90%. The explanation for this is that average real North American box-office revenues rise during this period from \$36.2m to \$73.5m.

Insert figure 3 about here

These changes have occurred within an environment in which a declining proportion of film income is derived from theatrical exhibition, from about 43% in 1988 to just 25% in 2015², and in which the contribution of foreign markets has increased from 45% of worldwide theatrical revenues generated by the majors in 1988 to 61% in 2015. Indeed, as Figure 3 illustrates, the strong growth in overseas box-office has more than compensated for the decline and stagnation of domestic box-office since the turn of the century. It is this consistent domination of the domestic market and the increasing presence in overseas markets that forms the starting point for explaining the profitability performance of the majors, as reflected in Figure 2.

Over the period, the majors have increased the average real budgets of their films by 150%, from \$20.1m in 1988 to \$50.3m in 2015 (2005 prices). Of course, a strategy of simply increasing real production budgets, of itself, is no guarantee of improved profitability performance. Indeed average production budgets increased consistently during the 1990s and yet, as is clear from Figure 2, profitability performance during this period was volatile. It

² See Appendix and Vogel (2015).

would appear that, at least in the second half of the data period, the more focused approach to film production, resulting from the production of fewer but more highly budgeted films, generated impressive profitability performance. The issue, then, is what specific strategies were employed that appeared to have so markedly reduced the risk associated with film production?

Insert figure 4 about here

In discussing Figure 1, one strategy that was alluded to was the apparent growing reliance on sequels. Figure 4 shows the proportions of annual production budgets that were allocated to the production of sequels together with the proportions of annual profits that were accounted for by sequels. Thus, in the first half of the data period there was an overall decline in the investment in sequels, from a high of 20.9% of budgets in 1990 to just 7.6% in 1999.

Investment grew strongly thereafter, and by the end of the data period sequels accounted for over a third of production budgets. However, it is the profitability performance of sequels throughout the entire period that is the most noteworthy, with sequels contributing a higher proportion to profits than the proportion of budgets that they absorbed in all but four years (1993, 1996, 1998 and 2014).³ In the last year of the data period – 2015 – sequels accounted for over 50% of the profits of the majors. Equivalently, sequels generated higher rates of return each year than the rates of return of all other films, apart from these four years. Over the whole data period sequels absorbed 20.3% of budgets and accounted for 30.4% of profits, these percentages being 10.5 and 20.6 in the first half of the data period and 25.9 and 35.1 in the second half. Indeed, when comparing the average (real) production budgets of sequels with the average budgets of all other films, the average budgets of sequels have increased four-fold whereas the average budgets of all other films have increased at about half of this rate.

The production of remakes is a further strategy that Hollywood has used in an attempt to exploit past successes. However, the aggregate performance of remakes has been far less important to overall profitability than that of sequels. Remakes have consistently accounted for less than about 10% of production budgets over the entire period, also generating a similar

³ The somewhat more volatile investment and profitability performance of sequels during the 1990s is consistent with the findings of Ravid (1999). While Ravid only examined sequel production as a peripheral issue, and only covered the period 1991 to 1993, the conclusion was that during this period sequel production did not appear to be a potentially important and viable film production strategy.

proportion of aggregate profits. At best, remakes can be interpreted as a fairly reliable, but relatively unimportant, source of profits.⁴

A final strategy that can be considered as reflecting a relatively conservative approach to film production relates to the production of films rated as G, PG or PG13. Such films accounted for 80% of film budgets in the last five years of the data period, whereas they accounted for just 50% of budgets over the first five years of the period. The profit contribution of these films generally equalled or exceeded that of their budgetary allocation, although in the last five years of the data period the profit contribution fell just short of the budgetary allocation (77% of profits from 80% of budgets). In aggregate these films absorbed 70.1% of production budgets over the whole period and accounted for 76.4% of profits, these %ages being 57.4% and 70.5% for 1988 to 2001, and 77.3% and 79.1% for 2002 to 2015. G, PG, PG13 rated films have always tended to be the major source of Hollywood profits, which is confirmed by the current dataset, and we can simply conclude here that the studios have continued to expand their investment in such films, although resulting in only a relatively marginal increase in their profit contribution. Of course many of these films will also have been sequels.

5 The Profitability Performance of Distributors

The aggregate analyses of contemporary Hollywood presented in Figures 1 to 4 suffer from an ‘illusion of aggregation’, in the sense that they are derived from aggregating across the distributors, whereas the specific investment decisions are taken at the level of the firm. Consequently it is misleading to evaluate the outcomes of these investment decisions without examining their impact on the individual distributors. We will here therefore explore these film investment decisions at the distributor level.

We begin by presenting a summary of profitability performance of the 10 largest of the major producers (by US box-office market share), shown in Table 2. In general, annual rate of return performance for each of the majors was relatively volatile, and so we have ‘smoothed’ the data by dividing the 28-year data period into seven 4-year sub-periods. Table 2 also shows the average production budgets (in 2005 prices) in each of the 7 data periods.

Insert table 2 about here

⁴ Bohnenkamp et al (2015) draw a similar conclusion, arguing that remakes perform little better than equivalent non-remakes, although it would appear that remakes are somewhat less risky than other forms of film production, but otherwise offer little in the form of any strategic advantages.

The first row of the table presents summary data across all the major studios/distributors. Thus rate of return performance improves over the data period (apart from the slight dip in performance from 1992-1995 to 1996-1999, consistent with the somewhat more volatile rate of return performance in the first half of the data period compared to the second, as reflected in Figure 2). Average real production budgets increase steadily over the period. In terms of the individual studios, MGM stands out clearly as the poorest performer. Rate of return performance of MGM films is highly volatile, even allowing for the smoothing effect of the 4-year sub-periods, with losses generated over the first two sub-periods. Overall, their rate of return performance is substantially lower than market performance, as are average film budgets - from 2011, MGM's films have been distributed by Sony, and are here included under Sony's outputs from this date. By contrast, Lionsgate, a new entrant and a similarly low budget producer, experiences broadly increasing rate of return performance over the data period, notwithstanding the losses generated in its first data period of 1996-1999. New Line, again a relatively low budget producer, exhibits strong rate of return performance, and in aggregate matches market performance, although its rate of return performance is relatively volatile. (New Line was absorbed into Warner Bros. from 2008). The last of the 'small' producers - Miramax - was the lowest budget producer of all the majors. Although generating losses in the first two data periods, it matched market performance in the following two periods before declining in the last two periods. (Although Miramax was sold to Disney in 1993, it operated independently of Disney, until the founding partners - Bob and Harvey Weinstein - left the company in 2005).

The remaining six majors in Table 2 are all large producers. Aggregate average budgets are broadly similar, although Disney expanded its average budgets markedly towards the end of the data period. Aggregate rate of return performance are comparable across the producers, with Twentieth Century Fox and Disney exhibiting superior performance and Warner Bros. the poorest performance.

As suggested earlier in the paper, a more formal and detailed approach to examining studio performance is to examine annual performance, rather than the four-year periods in Table 2, and to interpret the annual film outputs of a given film studio as analogous to an investment portfolio, where the assets in this portfolio are each of the films, with this portfolio diversified across a range of dimensions, such as film budget, genre, director, actors, etc. The objective then is to maximise the rate of return on the portfolio, with the diversification process a means of controlling the risk on the portfolio. Thus, for each of the distributors the annual rate of return on its portfolio can be calculated as the ratio of the total profits generated by the portfolio to the total costs of film production - the sum of production and distribution costs.

Given distributor annual rate of return performance, it is of interest to determine the manner in which this performance responds to overall market performance – that is, to distinguish between the extent to which the annual variation in rate of return performance can be explained by general market conditions and the extent to which it can be interpreted as being specific to each distributor. Such an approach can be interpreted as being analogous to the single index models from the finance/portfolio theory literature.

A summary of distributor performance can then be derived by regressing each distributor's annual portfolio rate of return on the market rate of return, as shown in Figure 2 above (although here we will define the market rate of return as the aggregate rate of return of all major distributors excluding each given distributor, in turn). These regressions, then, Specifically, we have for distributor i :

$$r_{it} = \alpha_i + \beta_i r_{mt} + \varepsilon_{it} \quad (1)$$

where r_{it} is the rate of return on distributor i 's film portfolio in year t , α_i is the constant term – the average annual rate of return generated by distributor i , independent of market movements, β_i measures the extent to which distributor i 's rate of return responds to the market rate of return, r_{mt} , (the annual rate of return generated by all the films released by the major distributors, excluding distributor i) and ε_{it} is the residual term.

There are three statistics that are generated by the estimation of Equation (1) that are of interest – the estimated values of α_i and β_i (and their statistical significance) and the value of R^2 . Table 3 produces these estimates for each of the main distributors.⁵

Insert table 3 about here

We begin with an interpretation of the estimated constant terms. In the case of both Lionsgate and MGM these constants are negative and highly significant. The implication is that both of these distributors achieve poorer aggregate performance than the remainder of the majors. The positive and highly significant constant term for Disney implies superior aggregate performance, which is also the case for both Paramount and Twentieth Century Fox. In terms of the slope coefficients – the β terms – these are all insignificantly different from 1, apart from Lionsgate and New Line. The implication is that the trend performances of these distributors are comparable to that of the market. In the case of Lionsgate the relatively large

⁵ These regression equations were tested for non-linearities using Ramsey's RESET test. Evidence of non-linearity was identified in the cases only of Lionsgate and Paramount, but in order to allow the direct interpretation of the coefficients in these equations and to compare the results across the distributors these regressions were left in their linear form.

coefficient – it is significantly greater than 1 – implies that Lionsgate’s performance improves over the data period, in comparison to market performance, and reflects the fact that Lionsgate exhibits very poor performance in the early years of its data period, but improves markedly thereafter. In the case of New Line its performance is unrelated to market performance, and reflects highly variable year-to-year performance in comparison to the remainder of the market.

The R^2 values are all of the order of 0.5, implying that market movements explain about a half of annual rate of return variation across the major distributors, the remaining variation being specific to each distributor. The two exceptions to this generalisation are New Line and Miramax, in both cases generating very low R^2 values. These low values derive from the fact that annual rate of return performance for these two distributors varied markedly more than market performance, implying that market movements had little impact on annual rate of return performance, the annual variation in rates of return for these distributors being essentially specific to the distributors.

Insert table 4 about here

We can next examine the role that sequels played in annual rate of return performance for each of the distributors. Table 4 shows, for each distributor, the percentage of production budgets and profits accounted for by sequels, for each of the seven 4-year sub-periods shown in Table 2, together with the rates of return generated by sequels and the rates of return generated by all other film outputs – non-sequel films. The first row of the table presents aggregate data across all the majors. The data are clear with regard to the importance that sequels have played in aggregate – apart from a slight decline in the investment in sequels in the mid to late 1990s, investment has increased over the period, accounting for nearly a third of production budgets in the last data period. The profit contribution of sequels exceeded the proportion of budgets allocated to sequels in all data periods, with a steady increase in rate of return performance over the period, and sequels outperformed non-sequel films in all periods. However, at the individual distributor level a much more variable picture emerges. In the case of the larger distributors, Paramount, Twentieth Century Fox and Warner Bros. were the market leaders in sequels investment, with more modest investment levels undertaken by Sony, Universal and in particular Disney. In terms of the smaller distributors Miramax stands out as a very modest investor in sequels, with Lionsgate and New Line investing substantially in sequels (although in the case of Lionsgate this is attributable to very high investment in the last data period), with MGM more or less matching aggregate market investment.

With regard to the profitability of sequels, in general this reflects market profitability, although with markedly more variability at the distributor level. Thus in the case of the larger

distributors, the profit contribution of sequels exceeded the proportion of budgets absorbed by sequels in all data periods, apart from the late 1990s in the case of Paramount and Sony, Sony and Disney (marginally) in the late 2000s, and Universal in the early 1990s, where sequels generated losses. The aggregate rates of return of sequels in the case of the larger distributors were broadly similar, ranging from 62.3% (Sony) to 76.8% (Disney). In the case of the smaller distributors performance was far more mixed. Aggregate rate of return performance ranged from 46.3% (MGM) to 86.1% (Lionsgate). MGM exhibits volatile performance, with sequels accounting for 152.9% of aggregate profits, reflecting the fact that much of MGM's non-sequel output generated losses over the period (the negative percentage contribution of sequels to profits in both 1988-1991 and 1992-1995 is reflection not of sequels making losses in these periods, but rather that total output generated losses, and hence the positive contribution made by sequels appears as a negative percentage). Miramax also exhibits volatile sequels performance, but this is presumably a function of only limited investment in sequels and hence the 'hit' and 'miss' nature of the process from period to period.

Finally, we can consider a more fully specified model of distributor rate of return performance, at the level of the individual film. Thus, a range of factors can be identified that might impact upon film rate of return performance. These would include real film budget, film quality, the success of the film in overseas markets, and promotional activity at the point of film release. Given the secular trend in film financial performance that appears to be present in Figure 2 a film's year of release might also impact on financial performance. It is within such a framework, then, that the relative performance of sequels can be evaluated (for a comparable approach see, for example, Heath, *et al*, 2015).

Insert table 5 about here

The resulting film rate of return regressions, across all major distributors, and for each of the individual distributors, are shown in Table 5. Note that in the case of film budget the natural logarithm is used in order to resolve non-linearity in the original regression. In the case of film budget, the argument here is that higher budgeted films tend to generate lower rates of return, *cet par*. As is implicit from Figure 1, higher budget films certainly do not necessarily generate higher profits than lower budget films, and indeed many higher budget films only generate relatively modest profits and hence lower rates of return.

The measure used for film quality here is the consumer film ratings available on the Internet Movie Database website (IMDb). Success in overseas markets is measured by the proportion of film revenues generated in overseas (non-North American) markets. Promotional activity at film release is measured by the number of cinemas in which the film was shown on its opening weekend. The secular trend in film rates of return is measured simply by the film's

year of release. Finally, the impact of sequels is measured by a simple binary variable, with 1 denoting that a film is a sequel and 0 otherwise.

The results of the regressions confirm in all cases the negative impact that film budgets have on film rate of return, the positive impact of quality (IMDb Rating), and of both overseas revenues and initial promotional activity (Opening Theatres). In the case of any secular impact on film rates of return, this would appear to be largely absent, except in the case of Sony where a modest positive impact is in evidence, and Warner Bros. where a weak and negative impact is suggested. Thus, the apparent secular increase in film financial performance reflected in Figure 2 would appear to be more likely the result of the marked improvement in film performance in overseas markets over time (Figure 3) than any secular effect *per se*. The final variable, then, is the sequels dummy variable. In aggregate (the 'All Majors' regression) this variable is strongly and positively significant, consistent with the results in Table 4. Similar effects are in evidence in the cases of Lionsgate, MGM, New Line, Disney and Warner Bros., with a weaker effect in the case of Paramount. However, in the cases of Miramax, Sony, Twentieth Century Fox and Universal sequels would not appear to outperform other film outputs.

6 Discussion

From the data presented in this paper, it is apparent that big budget production is no longer as prone to loss-making as was the case during the heyday of the studios. Consistent with the temporal pattern of film profitability identified in Figure 2, films found in the north-east quadrant of Figure 1 were more likely to have been released after 2000, than earlier. From this year onwards Figure 2 shows that an increasing proportion of films released by the studios became profitable, reaching two-thirds of the sample population by 2015. During the same years studio rates of return on film investments rose steadily to reach remarkable levels. Compared to the state of the film industry in 1965, the difference is dramatic. Reflected in our methods, the major cost accounting changes that takes place between these two junctures is the attribution of production and distribution costs to alternative consumer platforms. First, the willingness of the TV Networks in the United States to screen film releases of recent vintages on prime time weekend slots from the late 1960s for significant rents, followed a decade or so later by the introduction and rapid diffusion of new home-based film consumption technologies, contributed significantly to the turn-around in the fortunes of the film industry. During the period of this investigation only 20 to 25% of revenues accrued to the theatrical release sector (see Appendix).

Tables 1 and 2 investigate the differential performance of individual studios during the 28-year period. Not surprisingly, some studios outperform the studio average consistently, while others are not so consistent and, or, do not perform as well. The impact of sequels on corporate performance is assessed in Table 4, the outcome of which is that many of the consistent high performers identified in Tables 1 and 2 also pursue successful sequel strategies. Furthermore, it is clear from Table 4 that the production of sequels enhances studio profitability and may thus be considered, given the reduced annual production of films and their rising budgets, as a strategy devised to narrow consumer risk by reducing the element of unexpected surprise. We interpret this as evidence of a partial shift away from broad, diversified production portfolios as the principal mechanism for managing risk within the industry, towards the construction of a more narrowly conceived set of pictures intended to achieve what Thompson (2017) refers to as ‘optimally new’ content.

However, when these issues are examined at the individual distributor level, a more nuanced picture emerges. From the regressions in Table 5, sequels production in the case of Miramax, Sony, Twentieth Century Fox and Universal did not generate significantly superior financial performance. In the case of Miramax this presumably results from the relatively low level of investment in sequels, and hence the limitations on risk diversification across the sequels produced. In the cases of Sony and Universal the financial performance of sequels is relatively volatile. In these four cases, once account is taken of the range of factors that might impact on film financial performance, the production of sequels did not generate significantly superior performance. Nevertheless, industry-wide, the consistent financial success that accompanied the release of sequels was sufficient to bring about rising investment in sequel acquisition (Table 4).

Table 5 draws attention to those factors determining the rates of profitability over the period. Confirming, previous research identified earlier in the paper, negative coefficient values associated with production budgets suggests that sequels were subject to a life cycle process, in which the relative profitability of films in sequel lineages declined over time. However, when Table 5 is read in conjunction with Figure 3, the negative budgetary effect is more than compensated for by the growth in foreign markets, particularly from 2000 onwards. This access to foreign markets required films that were universal in appeal, leading the studios to acquire intellectual properties that had both sequel potential and cross-cultural attributes. It is noticeable that some of the most successful franchises in our data period (such as the *Lord of the Rings*, *Harry Potter*, and to a lesser extent the movies associated with the *Marvel* cinematic universe) were based on stories and characters already well known to international audiences and which featured leading stars from outside the United States. These are productions which score highly on the international orientation index which Miskell (2016)

showed to be strongly associated with a film's propensity to attract international audiences in the studio era.

We can also speculate with regard to the implications that this might have for pricing strategies. Traditionally, in an era when film success was much less predictable, and film portfolios much more diversified, admission prices had to be kept low to encourage wide consumption across the portfolio, allowing the hit films to emerge via a process akin to experimentation. In the current environment in which film releases are treated as 'events', and film producers are confident of the success of each of their releases, there are clear opportunities for engaging in price discrimination – to charge higher admission prices for more popular films. In the past such a pricing strategy would have been considered counter-productive, for two reasons. First, because it would discourage wide consumption across film portfolios, and encourage much more targeted and strategic film consumption decisions, and second, because discriminatory pricing would send out unintended quality signals, implying that lower priced films are of lower quality. A further consequence of such a strategy is that high price films would raise consumer expectations concerning the film consumption experience, consequently reducing the difference between expected and actual experience, thereby increasing the incidence of disappointment. None of these justifications for uniform pricing has the force that it once had, and we could speculate that we might increasingly observe price discrimination at the point of theatrical release, where distributors and exhibitors can behave as profit rather than revenue maximisers. Indeed, the fact that theatre admissions have been declining since 2002, and real admission prices increasing would be consistent with such a strategy. Declining theatre admissions are no doubt in part a function of film consumption occurring increasingly in ancillary markets but may also be a reflection of more strategic and targeted film consumption decisions. This would then allow exhibitors to increase admission prices, and particularly so for the high demand films.

7 Conclusion

The notion that Hollywood has become increasingly reliant on sequels as a source of profits is neither unexpected nor original. However, it is notable. Attention is drawn to the historical specificity of this phenomenon: whereas big budget films during the 1930s and 40s were loss leaders, with studio profitability dependent upon annual portfolio of releases, today it is largely derived from big budget event movies, and in particular lineages of film sequels. The grounds for these claims are based upon a quantitative analysis of major studio production over the 28 year period, 1988 to 2015.

One interpretation of these findings would be that the major distributors have adopted increasingly risk-averse release strategies, while at the same time benefiting from a market

environment that has seen the reach of films expand, both in international markets and through the availability of non-theatrical platforms, leading to improved profitability performance. For audiences this has meant an environment in which choice is restricted, and the unanticipated, ‘surprising’ film experience less likely to occur.

An alternative interpretation would be that, faced with movie audiences that have become more selective in their viewing and therefore much less likely to sample from a broad range of films on a weekly basis, the strategy of constructing broad and diversified film portfolios has become less effective as a risk management strategy. It is no longer the case that a large volume of (typically profitable) mid-budget pictures can offset the potential losses of big-budget releases whose popularity is more uncertain. While the overall size of the market for filmed entertainment has continued to grow since the 1980s, this growth has been predicated on an ability to extend the life cycle of individual pictures beyond their initial theatrical release. The most successful (big budget) films are the prime beneficiaries of this market growth. Distributors have therefore reduced the breadth of their film portfolios, and concentrated their marketing efforts on a narrower range of films that stand the best chance of winning audience approval, by combining elements of novelty within familiar and well established subject matter. While some studios have proved more successful than others in this process, our evidence suggests that all have increasingly come to rely on sequels as a means of generating content that is ‘optimally new.’

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