

## **Movie Advertising and the Stock Market Valuation of Studios**

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## Abstract

Major studios typically launch fewer than twenty motion pictures per year, so the financial performance of a single movie release can have a major effect on the studio's profitability. The Efficient Capital Markets hypothesis posits that the stock market would recognize such an impact. In this paper we study how single movie releases impact the investor valuation of the distributor. We analyze the change in post-launch stock price of a movie, and predict the direction and magnitude of excess returns based on the expectation built up for that movie. That expectation is set, in part, by media support, i.e. highly advertised movies are expected to draw larger audiences than others. By using an event study methodology, we isolate the impact of a movie launch on studio stock price, and track the determinants of that change.

We examine a comprehensive dataset from 1995-1998 comprising over 300 movies released by the largest studios, including variables such as their media expenditures, production budget, MPAA ratings, opening and total gross revenues, critical ratings, number of screens at opening and beta excess stock return.

Our results indicate that there exists a clear *interaction* between the marketing support received by a movie and the direction and magnitude of its excess stock return post launch. Movies with above-average advertising have lower post-launch stock returns than films with below-average advertising. Our findings also suggest that movies that are hits at the box office may result in a lowering of stock price if they had high media support, on account of high expectations build-up prior to launch. Thus pre-launch advertising plays a dual role of informing consumers about a movie's arrival as well as helping investors form expectations about the studio's profit performance.

Key Words: advertising, stock market valuation, marketing-finance interface, stock return modeling, motion pictures

## Movie Advertising and the Stock Market Valuation of Studios

### Introduction

The motion picture industry is among the largest and highest-profile industries in the world. In the US alone, box office receipts crossed \$9.4 billion in 2004, making it the most successful year in its one-hundred year history. The industry has grown steadily over the past few decades, in terms of attendance growth as well as product investment. According to the Motion Picture Association of America (MPAA), the average marketing cost of a new feature film was \$39.05 million for the year 2003. Given that 194 films were released in that year by MPAA member studios, the estimated advertising and other marketing expenditures in this industry were about \$7.5 billion.

Given that most studios released between 10 and 22 movies in a typical year (Table 1), and that only a handful of these turn out to be profitable, a single movie can have a potentially large impact on the annual profit of the studio. Indeed, in this industry there are new-product launches every week, and the product life cycle for each of these products is only a few weeks. Thus, the success (failure) of a single movie at the box office may result in an increase (decrease) of the stock price of the releasing studio, given the weight of a single launch event on studio bottom lines. As an example, Pixar's recent launch of "*The Incredibles*" was followed by an increase of \$3.59 per share (about 10%) in its stock price in just one day, pushing the stock to its highest-ever value (Variety.com). On the flip side, the commercial failure of "*Treasure Planet*", a \$140 million animated feature that grossed just \$16 million, caused Disney to lower its 2002

earnings estimates, and the failure of their movie “*Alamo*” in 2004 was followed by a drop of 34 cents in its stock price (Forbes.com).

Insert Table 1 here

Despite such anecdotal evidence of a single hit or flop changing the valuation of a studio, little or no research has addressed this issue. In particular, we do not know the relationship between pre-launch advertising spending and post-launch movie performance and stock returns. Indeed, while advertising may be necessary to generate sufficient consumer demand for the new product, it may also raise investor expectations and thus impact post-launch stock returns. Our paper will use the Efficient Capital Markets Hypothesis (Fama 1970) to study the interaction effects of advertising support for the movie with movie profitability. In what follows, we describe the industry background and formulate hypotheses. We then present a methodology and data to test our hypotheses. We draw our conclusions and discuss limitations and areas for future research.

## **Conceptual Development**

### *Background*

The efficient capital markets hypothesis (ECM hereafter) states that stock prices instantaneously and completely incorporate all information that may affect the future cash flow of the firm. Thus, in the case of movies, a commercial hit should increase stock prices, and a flop should cause them to fall. However, the production and release of a

movie is a lengthy process, and a movie script, cast, budget and production team may be known months before the release of a movie. Studio executives discuss their release plans and financial expectations with Wall Street analysts up to one year in advance. Industry publications such as Variety.com provide detailed reports on recently announced films. For example, a search for the movie studio Columbia Pictures on IMDB.com (December 1 2005) revealed 22 movies currently in production by the studio, including projects recently announced, such as *The Da Vinci Code*. Furthermore, sneak previews for critics as well as audiences, advertising and press leaks help investors form expectations about the upcoming movie's box office revenues, and therefore, the releasing studio's future financial performance. Thus, the expectation of a potential blockbuster hit could cause a rise in studio stock prices well before the actual release of the movie.

There has been considerable past research in marketing on movie box-office predictions. Several empirical models (e.g. Sawhney and Eliashberg 1996, Neelamegham and Chintagunta 1999, Ainslie, Dreze and Zufryden 2005) and experimental models (e.g. Eliashberg et al 2000) have been developed for the prediction of movie attendance. In addition, past research has identified critics as both influencers and predictors of attendance (Eliashberg and Shugan 1997, Basuroy, Chatterjee and Ravid 2003). Thus stock analysts have access to several indicators to form and improve their financial projections for studios.

All these forecasts, however, are conditional on information available prior to movie release, and we would therefore expect them to be adjusted, based on the movie's opening-weekend results. The first weekend is particularly important in the motion picture business, especially for movies that are subsequently defined as blockbusters

(Sawhney and Eliashberg 1996). Indeed, for movies released between 1995 and 1998, the first weekend accounted for 24% on average of the total gross of a movie. Thus, we would expect a correction in the forecasts based on first-weekend box office receipts. Extending this argument, we also expect to see a correction in studio stock prices, as investors update their expectations of studio performance based on the opening-weekend box office.

### *Movie Performance and Studio Stock Price*

Expected movie performance (and thereby the expected performance of studio stock) prior to launch is based on factors such as critical reviews (often available a few days before launch), production budget, star cast, track records of the producer/director, past studio history, time of launch, advertising budget, width of launch (number of screens), and genres (Prag and Casavant 1994). Virtually all of this information is publicly available, through industry related websites and trade publications. While media spending numbers are generally not known, the intensity of spending may be experienced first-hand in the weeks leading up to movie release.

If markets are efficient, all this information would have been incorporated into the studio's pre-launch stock price, without bias. Hence, the excess stock return immediately after the movie launch should be the result of only the actual movie performance *relative* to its pre-launch prediction (after controlling for other coincidental extraneous events in the same time period). Thus, we hypothesize that a movie with high pre-launch

expectations that flops<sup>1</sup> should cause the stock price of the studio to fall. Conversely, a movie with low expectations that succeeds should cause the studio stock price to rise.

### *The Role of Advertising*

On an average, 80% of a movie's advertising budget is used in the weeks leading up to the launch (Vogel 2004). Given that advertising is a major source of information for the public about the impending arrival of a movie, it is generally accepted that this expenditure has a significant role in a movie's success, and will therefore be a significant variable in analysts' prediction of movie gross. The importance of advertising was confirmed in empirical studies by Prag and Casavant (1994) and Zufryden (1996). While exploring the determinants of movie revenues, these authors find that advertising 'pays off' in terms of higher box office revenues. A recent paper by Elberse and Eliashberg (2003) also lends support to the predictive power of advertising. Furthermore, advertising also plays a part in increasing the saliency of the movie in the minds of both moviegoers as well as investors following the studio (Squire 2004). In conclusion, movies with high advertising support would be expected to have higher revenues, a priori.

The impact of advertising on stock prices has recently been recognized in marketing (Joshi and Hanssens 2005, Rao et al 2004). Advertising expenditures can have a both direct (advertising affecting a firm's intangible value) and indirect (advertising acting through increases sales revenues and profits) impacts on stock prices and these impacts manifest themselves over 6-8 months (Joshi and Hanssens 2005). Furthermore, this impact may be moderated by the type of branding strategy that firms use (Rao et al

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<sup>1</sup> In what follows we use the terms *success* and *failure (or flop)* to mean profitable and not profitable respectively. In our study, a movie is regarded as being profitable if its US Box Office Gross exceeds its production and advertising costs. By this definition, only 32% percent of movies in our database succeed.

2004). Applying these findings to the motion picture industry, we would expect an indirect impact of advertising on stock prices. Insofar as pre-launch movie advertising raises investor expectations about the product's financial performance, we would expect that studios supporting movies with above-average advertising expenditures would experience small or insignificant stock-price changes post launch. Indeed, highly advertised movies are unlikely to be ' sleeper ' hits, i.e. movies that have gradual sales build up and peak three to six weeks after launch (Sawhney and Eliashberg 1996). Thus the movie's anticipated performance would be incorporated into stock prices prior to launch. In addition, pre-launch predictions are more likely to be accurate given that advertising spending is a key predictor of opening revenues (Elberse and Eliashberg 2003), leaving little room for correction. We may even observe a negative stock return post-launch if high pre-launch advertising leads to excessive performance expectations that are rarely achieved. On the other hand, for movies with below-average advertising, we expect a higher magnitude excess return post-launch. We also expect the sign of the return to be correlated with movie success, i.e. positive for hits and negative for flops.

Based on these arguments, we advance the following two hypotheses, which are parsimoniously represented in Figure 1:

*H1: Movies that receive above-average advertising support will have a post-launch excess stock return that is smaller in magnitude than movies that receive below-average advertising support.*

*H2a: Movies with above-average advertising that succeed (flop) will have non-significant (negative) post-launch excess returns.*

*H2b: Movies with below-average advertising that succeed (flop) will have positive (negative) post-launch excess returns.*

Insert Figure 1 here

### *Research Methodology*

Predicting the actual value of stock-price corrections post-launch is not a straightforward task. The level of corrections made by investors can depend on numerous factors, both internal and external to the firm (studio) under consideration<sup>2</sup>. One way around this problem is the use of Event Study analysis (Ball and Brown 1968). This method eliminates the dependence on accounting information - assuming that markets are efficient<sup>3</sup> -, and allows for an inference of cause and effect in a quasi-experimental setting. We will use event study methodology to analyze the impact of opening weekend. By considering the excess return of the studio stock for the week after the opening weekend of the movie, we ensure that the observed change in excess return is due to investor's adjustment of their performance forecast for that movie, and its financial impact on the studio<sup>4</sup>. The excess return for a stock is the ex-post return of the stock

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<sup>2</sup> In what follows we use the terms 'firm' and 'studio' interchangeably.

<sup>3</sup> Indeed, all event studies are joint tests of the hypothesis under consideration as well as the efficiency of capital markets.

<sup>4</sup> Any movies for which the distributing studio had a major announcement (unrelated to the movie) in the week prior to the opening weekend or the week following release are omitted from our analysis. We use the WSJ index to search for references to the studio.

during the course of the event window, less the normal expected return assuming that the event had not taken place (Srinivasan and Bharadwaj 2004).

The excess/abnormal return for a stock is calculated as follows:

$$\varepsilon_{it} = R_{it} - \alpha_i - \beta R_{mt} \quad (1)$$

where  $R_{it}$  is the period  $t$  return on stock  $i$ ,  $R_{mt}$  is the period  $t$  return on the market portfolio, and  $\alpha$ ,  $\beta$  are the standard parameters in the market model. The excess return is then aggregated over the length of the window after the event to arrive at cumulative excess return (CAR henceforth). The statistical significance of the excess return is calculated by dividing the CAR by its standard error.

### *Data*

Past research on movie box office revenue has identified several variables that impact box office revenue, and hence the excess return. These variables are listed in Table 2. By using the event study methodology, we can predict which of these variables will be expected to have an impact on post-launch stock price. Indeed, under the efficient-markets hypothesis, any variable that remains unchanged before and after launch can be theorized to have no impact on post-launch excess return, and vice versa.

Insert Table 2 here

Variables such as MPAA ratings (G, PG, PG 13, etc), genre (action, romance, comedy, etc), critical reviews, production budget, time of launch (seasonality), star and director power, distributing studio and sequel are known before launch, and do not

change after the movie is launched. Furthermore, by considering only widely launched movies in this study, we ensure that the number of theatres (or launch screens) are the same pre and post launch. Thus, these variables remain unchanged after the movie is launched, and would not lead to any post-launch revenue forecast correction. Instead, information related to these variables is expected to be incorporated into stock prices efficiently, and thus, we would not expect them to have any effect on post-launch excess returns.

On the other hand, we hypothesize that advertising expenditures, profit, opening gross and competition play a role in determining the excess return post-launch. Opening gross and profits are estimated by analysts based on other variables (such as the ones noted above), and the opening-weekend actual box office gross will lead to corrections in these forecasts. Similarly, the impact of advertising expenditures on these final movie revenues and profits will only be known once the opening weekend has passed. Finally, while analysts know in advance the launch dates of movies, only after the opening weekend would they be able to fully analyze the effect of competition on movie revenues. Thus, the performance of competition is also expected to play a role in determining excess return.

We collected data on all movies launched by the major studios from 1995 to 1998. Variables such as number of opening screens, total box office revenue (\$), production budget (\$), opening weekend revenue (\$), MPAA Rating, distributor and opening date are publicly available on websites such as IMDB.com and The-Numbers.com. Movie rating data was obtained from the TVGEN and Blockbuster websites, giving us 3 different critical ratings for the movie (TVGEN (scale 1-4), Maltin

(scale 1-4) and Blockbuster (scale 1-5)). The ratings were converted to a common scale and then averaged. Total media expenditure for the movie was obtained from CMR<sup>5</sup>. These data include total dollar value of media expenditure across 11 different media, for the movie in question. Finally, data on studio excess returns are available from the COMPUSTAT/CRSP database. We collected daily ‘beta’ excess returns (as defined above in equation 1) for seven major film distribution companies covering the thirteen major studios. Table 3 shows the studios in our dataset, along with parent companies. Returns were computed for the week (Monday through Friday) following the theatrical release of the movie.

Insert Table 3 here

The database was edited to ensure that no studio-specific extraneous events were present that could bias the results. Thus, we eliminated movies that involved multiple studios (e.g. *Titanic*), as well as movies whose release dates coincided with other major, but unrelated announcements by the distributing studios. Only movies with wide release (over 1000 screens at launch) were considered. Finally, any movie with incomplete data on variables such as production budget, advertising or stock return was also omitted from our dataset. These qualifications resulted in a database of 204 movies with full data, released between 1995 and 1998.

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<sup>5</sup> CMR (Competitive Media Reporting) is a division of TNS Media Intelligence

### *Model Development*

To test our proposed hypotheses H2, we need to estimate a relationship of the form:

$$\frac{\partial(CAR_i)}{\partial(PROFIT_i)} = \alpha_0 + \alpha_1 * AD_i \quad (2)$$

which implies that the marginal effect of profit on excess return is a function of the advertising support ( $AD_i$ ) received by movie  $i$ . Therefore the CAR response model should include an interaction term ( $AD*PROFIT$ ). The model also includes the advertising terms  $AD$  and  $AD^2$ , which capture the main and decreasing-returns effects of advertising, as well as  $PROFIT$  to capture the direct effect of profit.

With regard to advertising support, we analyze our data in two ways. First, we use de-meaned advertising expenditures ( $AD$ ) as above. This allows us to classify movies as above-average and below-average in media support<sup>6</sup>. Secondly, we use media dollars spent per launch screen ( $AD\_INTENSITY$ ), which provides an estimate of the advertising support relative to the distribution of the product. For example, a movie released in 2000 screens with an advertising budget of \$10 million would have the same advertising intensity as that of a movie released on 1000 screens with \$5 million in advertising support. The  $AD\_INTENSITY$  measure was demeaned as well, thereby allowing us to classify movies as receiving above average or below average advertising support relative to distribution.

We define the profit ( $PROFIT$ ) made by a movie as its total US gross (\$) minus the production and media costs. This is a straightforward definition of net income which, in the motion picture industry, is not announced by the studios for individual releases.

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<sup>6</sup> Classification as above median and below median does not significantly change our results.

The actual calculation of accounting profit is fairly complex, even with the availability of all relevant costs and income, as described below.

A movie earns revenue from box-office receipts, foreign box office, home video sales, pay-per-view, TV rights (cable and network), merchandising, and, lately, related video games. Of that revenue, the studio receives varying percentages, depending on prior agreements. Similarly, the production or “negative<sup>7</sup>” cost is one of many cost elements, with post-production costs, media, promotion, bonuses, screening and other costs still to come. Furthermore, studios have non-linear payment agreements with exhibitors, whereby studios typically take 90% of box office receipts (after covering exhibitor screening costs, called the *Nut*<sup>8</sup>) in the first two weeks, and this percentage gradually decreases with time.

Given these industry procedures, our simple movie profit metric is adequate for answering our research questions. Indeed, industry publications, including Kagan: *Motion Picture Investor*, indicate that domestic box office receipts should approximate the negative cost for a movie to break even<sup>9</sup>. We apply a more stringent definition of breakeven (or profit) by including media expenditures along with negative costs.

These data are used to estimate our model, with CAR as the dependent variable:

$$\begin{aligned} \text{CAR}_i = & \alpha_0 + \alpha_1 (\text{PROFIT}_i) + \alpha_3 (\text{THEATRES}_i) + \alpha_4 (\text{AD}_i) + \alpha_5 (\text{AD}_i)^2 + \alpha_6 \\ & (\text{BUDGET}_i) + \alpha_7 (\text{CRITIC}_i) + \alpha_8 (\text{OPEN\_GROSS}_i) + \alpha_9 (\text{AD}_i * \text{PROFIT}_i) + \alpha_{10} (\text{MPAA}_i) \\ & + \alpha_{11} (\text{COMP}_i) + \alpha_{12} (\text{SEQUEL}_i) + \varepsilon_i \end{aligned} \quad (3)$$

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<sup>7</sup> *Negative Cost* is an industry term, and covers the cost of production, excluding gross participation, studio overhead, and capitalized interest. See Vogel (2004) for further details.

<sup>8</sup> The *Nut* includes location rent, telephone, electricity, insurance and mortgage payments.

<sup>9</sup> Our results are not be sensitive to this definition of profits, under the assumption that industry analysts recognize the relationship between opening weekend gross and final movie profits.

,where

$CAR_i$  = Cumulative Abnormal Return for movie i, calculated as in equation (1)

$PROFIT_i$  = Total US Gross – (Production Budget + Media Budget), in \$

$THEATRES_i$  = Number of screens at launch

$AD_i$  = Demeaned total media (advertising and promotion) for the movie, in \$.

$BUDGET_i$  = Movie production budget, in \$

$CRITIC_i$  = Average of Blockbuster, Maltin and TVGEN critical ratings

$OPEN\_GROSS_i$  = Opening weekend gross for movie, in \$.

$MPAA_i$  = Series of dummy variables representing the MPAA rating for the movie.

$COMP_i$  = Cumulative opening weekend box office revenue (\$) for all other movies released on the same day as movie I, to capture effect of competition.

$SEQUEL_i$  = Dummy variable, taking the value 1 if movie i is a sequel.

## **Results**

We first estimate the difference in excess returns for movies that were supported with above-average media spends, compared to those with below-average media spends. This difference has a t-statistic of 2.10, which is statistically significant at  $p < .05$ . The absolute values of the means are .01126 (for 134 movies with below-average media spend) and .00761 (for 70 movies with above-average media spend), with an average difference in CAR of 0.00365. Thus, the stock market displays larger post-launch

adjustments for lesser-hyped movies (i.e. as defined by lower media spend for that movie) than for movies that have been well advertised, which is consistent with our hypothesis H1.

Next, the model in equation (3) was estimated using OLS. We assessed the degree of collinearity by estimating the Variance Inflation Factors (VIF). As none of the VIFs exceeded the value 10, we conclude that collinearity among the estimates is negligible<sup>10</sup>.

The parameter estimation results are displayed in Table 4. Overall, the model explains a respectable 21% of the variance in CAR. We obtain the same substantive results (sign and significance of key coefficients) by using either AD or AD\_INTENSITY as an explanatory variable. For the sake of brevity, we will only discuss the coefficients from the AD\_INTENSITY regression.

Insert Table 4 here

As per our expectations, the coefficients for THEATRES, RATINGS, BUDGET and SEQUEL are not significantly different from zero. Contrary to our expectations, the coefficients for OPEN\_GROSS and COMP (competition) are insignificant as well. Insofar as the opening weekend gross is consistent with pre-launch expectations, we would find no effects of that variable on excess return. The OPEN\_GROSS variable would be significant only if its actual post-launch value was different from the predicted pre-launch level. To test this hypothesis, we re-estimated the above equation using the shock to opening gross rather than the gross itself. First, the expected value for opening gross is obtained from

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<sup>10</sup> Detailed results available on request.

$$\begin{aligned}
OPEN\_GROSS_i = & \beta_0 + \beta_1 * THEATRES_i + \beta_2 * BUDGET_i + \beta_3 * AD\_INTENSITY_i \\
& + \beta_4 * SEQUEL_i + \beta_5 * CRITIC_i + \beta_6 * MPAA_i + \beta_7 * STAR_i + \beta_8 * GENRE_i \\
& + \beta_9 * AD\_INTENSITY^2 + \varepsilon
\end{aligned}
\tag{4}$$

The  $R^2$  for this regression was 0.59. The prediction error from this equation measures the shock to opening gross (OPEN\_SHOCK), which was then used in equation 5.

$$\begin{aligned}
CAR_i = & \alpha_0 + \alpha_1 (PROFIT_i) + \alpha_3 (THEATRES_i) + \alpha_4 (AD_i) + \alpha_5 (AD_i)^2 + \alpha_6 (BUDGET_i) \\
& + \alpha_7 (CRITIC_i) + \alpha_8 (OPEN\_SHOCK_i) + \alpha_9 (AD_i * PROFIT_i) + \alpha_{10} (MPAA_i) + \alpha_{11} \\
& (COMP_i) + \alpha_{12} (SEQUEL_i) + \varepsilon_i
\end{aligned}
\tag{5}$$

This model, shown in Table 5, has a comparable  $R^2$  of 0.22. Furthermore, the coefficients for OPEN\_SHOCK (shock to opening gross) as well as PROFIT are both significant. The coefficient for competitors is still insignificant, thus we conclude that competitive movies have been incorporated into the expected opening gross, and thus do not affect excess return post launch.

Insert Table 5 here

As expected, opening weekend revenue surprises affect stock price. Thus, investors react to previously unexpected commercial success. In addition, the positive PROFIT effect implies that, while actual profits (in the accounting sense) may not be realized for several months from the release date of the movie, the stock market anticipates the future profit figure based on first weekend collections, and appropriately

adjusts the studio stock price. In combination, the stock market incorporates both short term shocks and long run profit outlook.

Media expenditures (AD\_INTENSITY) have a positive effect on stock prices, with decreasing returns to scale (negative and significant AD\_INTENSITY<sup>2</sup>). This is expected because media is known to drive box office revenues (Zufryden 1996). Further, about 20% of media expenditures are typically made after launch, and thus are not included in the investor pre-launch expectation. The significance and sign of the profit and advertising intensity terms imply that the direct effect of these two variables is obtained as expected.

We also find that the AD\_INTENSITY\*PROFIT interaction term is significant and negative. This implies that movies with below-average advertising that are hits, cause a positive stock return. Similarly, flops with above-average advertising lead to a drop in stock returns. Finally, hit movies with above-average advertising expenditures *can* have a negative effect on excess return, depending on the size of the profits and advertising spending. Such a negative excess return may result from a pre-launch overestimation of movie revenues, caused by intense advertising. This high revenue anticipation leads to higher pre-launch stock price, which is then corrected once opening weekend box office returns are available

To illustrate the impact of the advertising and profit interaction, we simulated a scenario for a hypothetical movie with above-average advertising (ranging from \$50m to \$100m, over 2000 theatres), whose profit performance ranges from (-\$9m to -\$3m). The CARs are displayed in Figure 2. As can be seen, CARs are always negative for losses, as can be expected. The higher the advertising intensity, the lower the CAR effect.

Insert Figure 2 here

Overall we find broad support for our hypotheses H2a and H2b. Media support, while affecting the box office performance of a movie, also has an impact on studio stock price. Highly promoted movies have a lower (in magnitude) abnormal stock return than movies with lesser media spend. Indeed, the impact of media may be overestimated at times, which may lead to a downward correction of stocks post launch.

### **Simulation and Managerial Implications**

Our findings enable us to simulate the impact of advertising and movie performance on the stock price of a given studio. As in our hypotheses, we analyze four scenarios, with high and low levels of advertising support and movie success or failure leading to post-launch excess returns. We assume that a movie is produced with a budget of \$40 million (the average in our database is \$39m). The movie is then launched on 2000 screens in the US (average 1955), and supported with either \$10m or \$50m in advertising (average \$13m). Let us further assume that if advertising spending is below-average (\$10M), the movie grosses either \$120m (hit) or \$36m (flop).

The advertising support will have the dual effect of drawing consumers to the movie, as well as raising the saliency and the pre-launch expectation of the movie. Past research has found that pre-launch advertising is effective in the first week of the launch, while word-of-mouth effects are predominant thereafter (Elberse and Eliashberg 2003).

Further, in our dataset, the opening weekend accounted for about 25% of the total US gross for a movie. Using the scenario and assumptions developed above, the same hypothetical movie would have a US box office gross of \$129.88m or \$45.88m if supported with high advertising (\$50M)<sup>11</sup>.

We can now calculate the excess stock return associated with the four scenarios developed. The results of the simulation are displayed in Figure 3. This simulation highlights the double effect of advertising of raising movie saliency in the minds of potential viewers (captured by increased box office revenues for above-average advertised movies) as well as its effect on stock excess return through its interaction with eventual movie profitability. A ‘sleeper’ hit (movie with below-average advertising that succeeds, e.g. *The Blair Witch Project*) leads to a positive excess return of 0.0216. However, box office revenues are \$10m less than under a high-advertising intensity scenario. In contrast, a highly advertised hit leads to a negative excess return of -.0038. It is important to note that this negative value is obtained for the set of assumptions we make. Indeed, if the assumed production budget is reduced to \$30m, then we would obtain a positive excess return for this scenario as well (though its magnitude would be less than that obtained for the ‘sleeper’ hit). This example highlights our finding that the negative excess return is a function of the direct effects of profit and advertising, as well as the interaction effect.

Insert Figure 3 here

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<sup>11</sup> This follows from our calculated advertising elasticity of 0.28 from equation (4), which is comparable in magnitude to elasticities found in past research (0.26 by Elberse and Eliashberg 2003).

## Conclusions

In this paper we relate marketing actions to their financial consequences within the context of the movie industry. In analyzing the impact of a single new product release (movie) on studio stock price, we demonstrate the *indirect* effect of advertising (Joshi and Hanssens 2004) on firm value, whereby advertising impacts stock prices through its effect on sales. Our results indicate that excess stock returns post launch are a function of the performance of the movie, as well as expectations of that performance that were built up prior to release. We theorize that media spending by studios for movie promotion drives that expectation build up, and analysts predict stock market reactions based on media data. Findings indicating a lower magnitude of excess returns for highly advertised movies, and the downward adjustment of post-launch stock for highly advertised hits lend credence to our hypotheses.

Our findings point to questions left unanswered in this research. Despite our comprehensive motion-picture database, there remains an opportunity to analyze the effect of variables such as limited release, movie piracy, lead actor/actress endorsement for the movie, etc. It would also be interesting to study heterogeneity across studios, which we were unable to do in this study due to lack of sufficient data across all studios. Finally, in the future, we plan to extend our work to study how the stock market reacts to movies that eventually give rise to sequels. It would be interesting to analyze the relationship between positive excess returns post-launch for successful movies and the possibility of a sequel being made for that movie.

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**Table 1: Movie Studio Market Shares and Gross Box Office Collections for 2004**

<b>Distributor</b>	<b>Market Share</b>	<b>Total Gross \$mm</b>	<b>2004 Movies</b>	<b>Average Gross/Movie \$mm</b>
Sony	14.30%	\$1,345.40	18	\$74.74
Warner Bros.	13.00%	\$1,223.80	22	\$55.63
Buena Vista	12.40%	\$1,166.90	20	\$58.35
DreamWorks	9.90%	\$936.70	10	\$93.67
20th Century Fox	9.90%	\$929.50	14	\$66.39
Universal	9.80%	\$919.30	14	\$65.66
Paramount	6.70%	\$635.10	14	\$45.36
New Line	4.40%	\$418.80	10	\$41.88
Miramax	4.00%	\$374.00	13	\$28.77
Lions Gate	3.20%	\$302.90	18	\$16.83
MGM/UA	2.10%	\$199.00	15	\$13.27
Fox Searchlight	1.90%	\$174.50	10	\$17.45
<b>TOTAL</b>	<b>91.60%</b>	<b>\$8,625.90</b>	<b>178</b>	<b>\$48.46</b>

**Table 2: Hypothesized Impact of Variables Pre and Post Launch**

Variable	Impact on Stock Price Before Launch	Impact on Excess Return Post-Launch
Advertising	+	+
Profit	+	+
Opening	+	+
Competition	-	-
Theatres	+	0
Reviews	+	0
MPAA	+/-	0
Genre	+/-	0
Production Budget	+	0
Star Power	+	0
Studio	+/-	0
Sequel	+	0
Seasonality	+/-	0

\*Impact of these variables on pre-launch stock price is estimated by analysts

Note: '+', '-' and '0' denote positive, negative and zero expected impact. We use +/- to denote an impact whose direction cannot be predicted.

**Table 3: Movie Studios and Parent Companies**

<b>Studio</b>	<b>Parent Corporation</b>	<b>Stock Symbol</b>
20th Century Fox	News Corp.	FOX
Metro Goldwyn Mayer	MGM*	MGM
United Artists		MGM
Sony Corp	Sony Corp	SNE
Columbia Pictures		SNE
Warner Bros	AOL Time Warner	AOL
New Line		AOL
Buena Vista	Disney	DIS
Touchstone		DIS
Miramax		DIS
Dimension Films		DIS
Paramount	Viacom	VIA
Universal Studios	Vivendi Universal	V

\*MGM was acquired by Sony in 2004.

**Table 4: Estimation Results**

<b>Variable</b>	<b>Coefficient*</b>	<b>Std. Error</b>	<b>t-Statistic</b>
C	-0.009	0.007	-1.25
PROFIT	<b>0.771</b>	<b>0.268</b>	<b>2.87</b>
THEATRES	0.151	0.771	0.19
AD_INTENSITY	<b>0.265</b>	<b>0.130</b>	<b>2.26</b>
AD_INTENSITY <sup>2</sup>	<b>-0.036</b>	<b>0.017</b>	<b>-2.09</b>
BUDGET	-1.598	0.848	-1.87
CRITIC	5.860	5.642	1.03
OPEN_GROSS	-0.711	2.684	-0.26
AD_INTENSITY*PROFIT	<b>-0.239</b>	<b>0.101</b>	<b>-2.36</b>
MPAA	3.873	4.990	0.77
COMP	1.116	1.091	1.02
SEQUEL	8.233	7.198	1.14

\*\*Coefficients in bold are significant at the 0.05 level

**Table 5: Estimation Results using Shock to Opening Gross**

Variable	Coefficient*	Std. Error	t-Statistic
C	-0.009	0.007	-1.25
PROFIT	<b>0.510</b>	<b>0.083</b>	<b>6.33</b>
THEATRES	0.166	0.767	0.21
AD_INTENSITY	<b>0.280</b>	<b>0.140</b>	<b>2.04</b>
AD_INTENSITY <sup>2</sup>	<b>-0.033</b>	<b>0.170</b>	<b>-1.99</b>
BUDGET	-1.591	0.848	-1.87
CRITIC	5.467	5.644	0.97
OPEN_SHOCK	<b>0.211</b>	<b>-0.103</b>	<b>-2.11</b>
AD_INTENSITY*PROFIT	<b>-0.483</b>	<b>0.201</b>	<b>-2.44</b>
MPAA	3.873	4.990	0.77
COMP	1.103	1.096	1.00
SEQUEL	8.377	7.520	1.11

\*\*Coefficients in bold are significant at the 0.05 level

**Figure 1**

**Hypothesized Abnormal Returns**

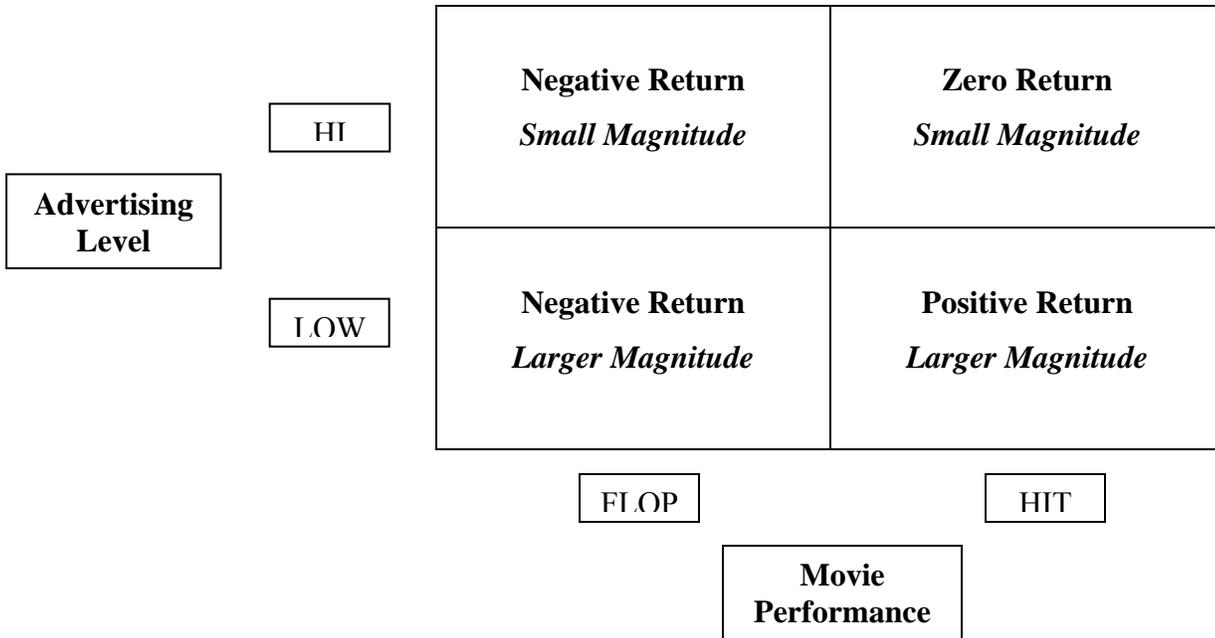
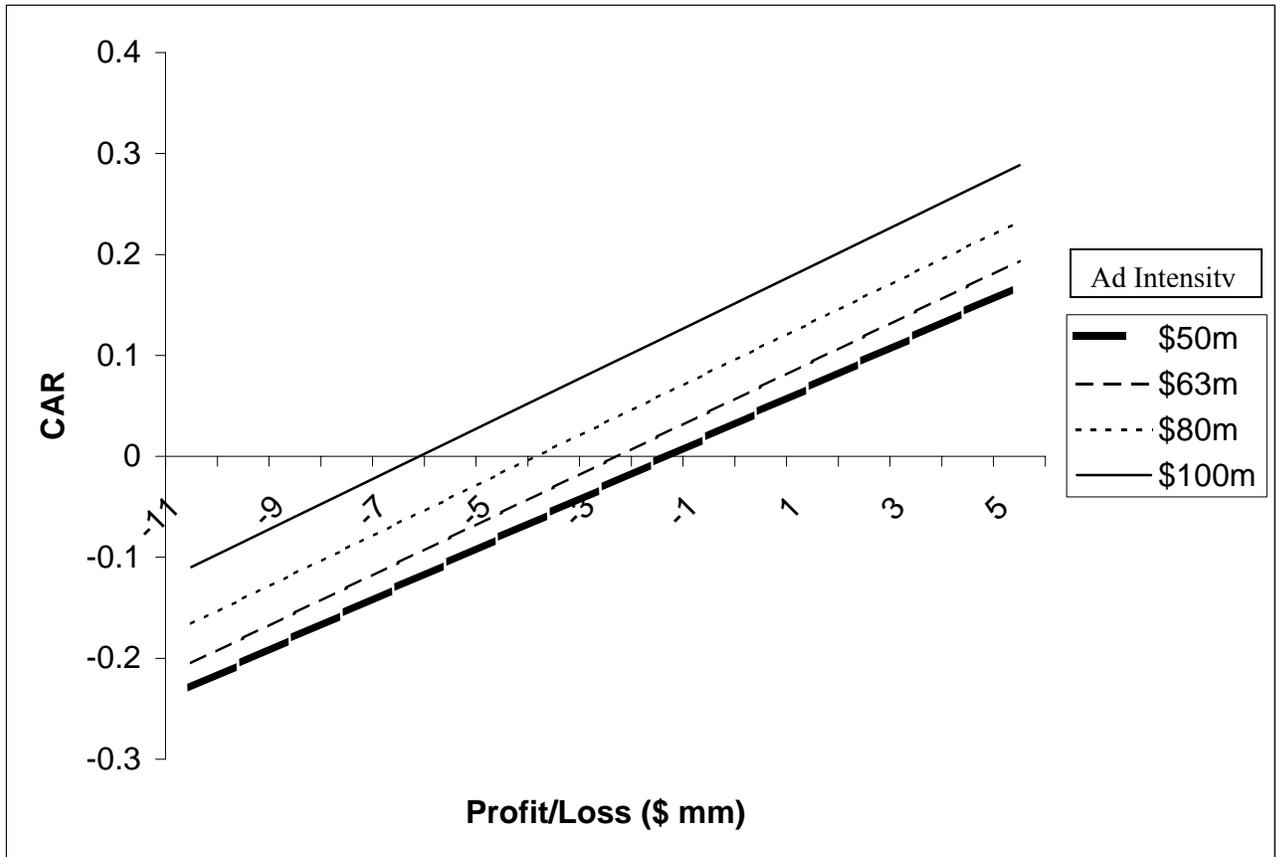


Figure 2

CAR Simulation for Movies with Above-Average Advertising



**Figure 3**

**Abnormal Return Simulation for Hypothetical Movie**

<b>Advertising Level</b>	\$50m	<i>Box Office Revenue: \$39m</i> <i>Excess Return: -.0812</i>	<i>Box Office Revenue: \$130m</i> <i>Excess Return: -.0038</i>
	\$10m	<i>Box Office Revenue: \$36m</i> <i>Excess Return: -.0052</i>	<i>Box Office Revenue: \$120m</i> <i>Excess Return: .0126</i>
		<b>FLOP</b>	<b>HIT</b>
		<b>Movie Performance</b>	