

# A Note on the Success of Media Investments: No Predictability, Pure Luck

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As a general rationale, the national motion picture industry is highly influential in society by reflecting cultural identity and by shaping and spreading norms, ideas, and trends. Furthermore, this industry is economically very important. Movie project budgets mount up to double-digit size, with a huge potential for ancillary products and movie theatre revenues (Meiseberg et al. 2008). Accordingly, there is a large body of literature in marketing dealing with success factors of movies and other media investment projects.

Marketing research claims to have developed both forecasting models and decision-support tools that predict screen success and improve management decisions in the movie industry (e.g., Neelamegham and Chintagunta 1999, Eliashberg et al. 2000, Shugan and Swait 2000, Elberse 2013). Usually this strand of research tries to find determinants of economic success of movies by running models with historical data. As independent regressors, various kinds of quantitative or qualitative information have been used. Quantitative information often comes in the form of hard facts, like movie budgets, star involvement, or marketing and advertising spending. Qualitative information includes movie team members' backgrounds, alleged creative team processes, past movie popularity with critics or amateur communities and so forth (e.g., Moon et al. 2010).

The findings of such research are challenged by research from a different perspective: Using both economic reasoning and statistical arguments, the latter denies the existence of formulas for generating success in the movie industry. De Vany and Walls (1999) document that the mean economic success of movies is obviously determined by only a few blockbusters. According to their research the distribution of box-office revenues belongs to a Levy probability distribution, which has a heavy upper tail. Their parameter estimates of the asymptotic upper tail index reveal that the variance of box-office revenue is infinite. This implies that movies are not only very risky projects, but also that there must not be an average to which movie revenues converge. Movie revenues can diverge over all possible values of outcomes. To put it differently: the average of the economic success (or failure) of movies depends to a large extent on the emergence of a few blockbusters, but these extreme successes are extremal events in the upper tail of the probability distribution with chances of occurrence being extremely small. In effect, the observable average success (or failure) of movies is largely driven by rare, extremal events. This has the consequence that mean and variance of the distribution must not converge over time to an attractor.

That is, already the statistical analysis of De Vany and Walls (1999) contradicts proposed results of studies conducted in marketing research. It implies that the information cascade which brings about the success or failure of a movie is a complex stochastic process that cannot be directed by managerial actions. Following De Vany and Walls, therefore, the decision-support tools that marketing research has developed can neither predict success nor improve management decisions in the movie industry. The same holds for film revenue forecasts which are commonly said to have zero precision.

Any sound marketing research attempt to establish determinants of movie success by running regressions with historical data, which statistically sometimes is said to require a normal distribution of variables. However, the movie industry is also a small sample business. Blockbuster movies are rare events, which by definition cannot be created by focusing on success factors for the statistical artefact of the average movie. From an economic perspective, blockbusters are the consequence of some kind of innovation incorporated in movie creation. Since landing a blockbuster hit is an extremal event in a small sample, historical data and experience can logically not be used as a recipe for the success of new movie projects in the future. Likewise, often movies that were considered a sure thing turned out to be ten ton turkeys, meaning they totally flopped at the box-office. “Waterworld” is a famous example. (De Vany and Walls 1999, Meiseberg et al. 2008).

While De Vany and Walls’ (1999) argument is straightforward and empirically valid, the unpredictability of media investments can also and more generally be explained by the efficient markets hypothesis applied to the case of media companies. The efficient markets hypothesis (Fama 1970) states that asset prices contain all available and relevant information for anticipating future prices. As the prevailing asset prices fully reflect the available information, no investor can earn an abnormal economic profit. Based on the amount of the information set, the weak, semi-strong and strong form of efficiency have been distinguished. The information set of the weak efficiency form contains past asset prices, the semi-strong form in addition all publicly available information and the strong form adds insider information. As stocks of media companies are traded on exchanges and trading on insider information is legally prohibited, stock prices of media companies contain all publicly available information and, hence, follow a random walk:

$$p_{t+1} = p_t + \varepsilon_{t+1},$$

where  $p_t$  denotes the stock price and  $\varepsilon_{t+1}$  the unpredictable component.<sup>1</sup> Only unpredictable events, company-specific and economy-wide, can affect the next period’s stock price. Consequently, stock price changes and in turn the success of media investments are not predictable because the content of the information set is publicly available.<sup>2</sup> Our argument will not be undermined by marketing researchers’ attempt to capture the determinants of economic successes of movies because the future stream of explanatory variables, like any future event, cannot be known with certainty. It can only be predicted on the basis of publicly available information. The only information which can alter the stock

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<sup>1</sup> A martingale is another way to state formally the markets efficiency hypothesis. The martingale is less restrictive with respect to the properties of shocks than the random walk. However, martingale and random walk reach the same conclusion concerning the unpredictability of next period’s stock price.

<sup>2</sup> Despite the popularity of the market efficiency hypothesis it is not the only explanation for the behavior of stock prices. A large part of the behavioral finance literature comes to different conclusions compared with the implications of the efficient markets hypothesis (see, for example, Shleifer 2000).

price are unpredictable events. This is just another way of saying that stock price changes are not forecastable.

What are the differences between De Vany and Walls' and our line of argument? Both have in common the finding that the success of media investments is not predictable. While De Vany and Walls' argument is based on a single project's probability distribution, our approach relies on the efficient markets hypothesis. In doing so, we provide a more general line of argument by considering media investments as part of exchange listed companies. From the investors' point of view, companies can be regarded as a portfolio consisting of different activities, including the risky media investment business, to reduce unsystematic risk. While investments in the portfolio makes sense in case the stock price compensates for the risk premium, investments in single projects are unpredictable and bear in addition to the systematic risk component the unsystematic, diversifiable risk. Hence, the perspective taken by De Vany and Walls to look at individual movie projects only is overly pessimistic because it overlooks the compensating and diversifying effects these investments have in the context of a firm portfolio with other investments.

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