

Behind the Box Office:
Directorial Influence on Film Revenue in the United States Entertainment
Industry

Senior Thesis by Elizabeth Healy
Advised by Professor Anne Preston

May 1, 2024

ACKNOWLEDGMENTS

I would first like to thank my parents and family for their continuous and unconditional support throughout my academic journey. In particular, I am deeply appreciative of my dad who instilled the love of movies that sparked the idea for this paper.

In addition, I would like to thank the Economics Department of Haverford and Professor Anne Preston, without whom this thesis would never have been possible. I am forever grateful to have had the opportunity to work under Professor Preston: her guidance, mentorship, extensive economics knowledge, and most importantly her time and patience were immeasurable to this process.

ABSTRACT

This paper investigates the link between director quality and box-office success in terms of domestic gross values and IMDb ratings for films released from 2002-2016 in the United States. The analysis utilizes two measures of director quality: a summation of the domestic gross from all of the producer's films 15 years prior to the current one and the number of accumulated awards received in the 15 years prior to the film. I ultimately find that for every 1% increase in director quality with respect to previous monetary success, there is an increase between 0.0289% and 0.0307% on domestic gross of the film. However, quality in terms of previous critical success has no effect on domestic gross. In addition, being a first-time director leads to a decrease in domestic gross, having previous acting experience leads to a decrease, and being a female director leads to a decrease in domestic gross. When looking at the director quality effect on IMDb rating, for every one-unit increase in the number of director awards and nominations there is a rating increase between 0.0183 and 0.0270 points. Previous box-office success has no effect on the IMDb rating. Additionally, being a first-time director, enrolling in film school, and having more years of industry experience increases ratings, while an increase in director age decreases ratings.

TABLES OF CONTENTS

I. INTRODUCTION	4
II. LITERATURE REVIEW	
2.1 Managerial Analysis	6
2.2 Application of Sports	8
2.3 Analysis of Film Success	10
2.4 Contributions to Existing Literature	12
III. DATA	
3.1 Data Collection	13
3.2 Description of Variables	14
3.3 Summary Statistics	15
IV. METHODOLOGY	
4.1 Base Model	21
4.2 Extensions and Controls	22
4.3 Robustness Checks	23
V. RESULTS	
5.1 Overview	24
5.2 Effect on Domestic Gross	25
5.3 Effect on IMDb rating	27
5.4 Director Specific Control Results	29
5.4.1 Domestic Gross	
5.4.2 IMDb Rating	31
VI. DISCUSSION	33
VII. CONCLUSION	34
VIII. APPENDIX	37
IX. REFERENCES	39

I. Introduction

Think about your all-time favorite movie. Now, exactly why is it your favorite movie, is it the plot? Is it the cinematography? Is it the star-studded cast? It is some indescribable feeling? It is something else entirely? Is it some combination of all of these?

If you were to ask 10 people, 100 people, or 500 people this question, you would presumably have close to 100% unique answers. How then, do specific films become blockbusters, award winners, or cult-favorites?

To emphasize my point, let's look at a simple case study involving two movies: *Goodfellas* and *The King of Comedy*. Both are dramas directed by Martin Scorsese, starring Robert De Niro, and released within a couple of years of each other. You might reasonably guess these movies are similar in their acclaim, however, the former grossed over \$46 million in revenue, while the latter barely reached \$2 million at the box office. The question is why: why did one movie earn 23 times the other; why is one movie considered one of the all-time best movies and the other barely recognizable?

You might sensibly say the reason for the discrepancy is the plot, but then what about *Deep Impact* and *Armageddon*, two films released in the same year, both sporting a star-studded cast and known for their almost identical plotlines? Why then was *Armageddon* the highest-grossing film of 1998? Why not *Deep Impact*?

Or say it boils down to the director of the film. Take *Bottle Rocket* and *The Royal Tenenbaums*. Both are Wes Anderson films, yet the former received only one critic award, while the latter collected a hefty 11 awards and a whopping 46 nominations.

Evidently, it is difficult to pinpoint the keys to success for a film. But, in a nearly 28-billion-dollar industry, finding the answer is an extremely lucrative task. This is where

economics comes into the equation. With economics, statistically significant correlations between film inputs and outputs can be studied, demystifying the secrets of cinema. It can answer questions such as what is causing audiences to flock to specific films, how can a studio garner financial success at the level of a blockbuster, and which directors are considered masters of their craft? The final question is of utmost importance, for a director is the leader, decision-maker, and overall maestro of a film. They shape and transform the final product for theaters. Undoubtedly, viewers are drawn in by their favorite actor or actress, but these big names are hand-selected by the director, combining talent in a way that complements the script and creates onscreen dynamics between these stars. Even the cinematography, the score, the color scheme, and the staging are all manipulated by the director. Thus, the question becomes does their input truly make or break a film?

This paper will seek to answer this question. It will bridge economics and film to study the impact of a high-quality visionary in the position of director. It will do so by employing a dataset of American domestic films to examine the outputs of film revenues and critical acclaim. Section II discusses the existing literature and how this paper utilizes and contributes to this landscape. Section III describes the dataset and variables. Section IV describes the motivation for the methodology and the equations. Section V provides results from the empirical analysis. Section VI provides a discussion of the results and Section VII concludes on the findings of this paper and the future direction of this research.

II. Literature Review

2.1 Managerial Analysis

Roberts & Shaw (2022) stated that in a successful organization, “there is a logic as to how the pieces fit together” (Roberts & Shaw, 2022). The goal of a manager is to put the pieces of the organizational puzzle together in a way that best suits the needs of the firm and maximizes some level of profits. Managerial inputs that maximize the output of workers can range from industry expertise to personality traits and even measures of intelligence. The common thread among these economic studies is that link from manager inputs to a performance-related metric of the workers they are overseeing.

In a seminal paper on the topic of managerial analysis, Lazear et al. (2014) examined not only how supervisors enhance worker productivity, but importantly by how much. They exploited the newer realm of technology-based services within the customer transaction sector that allows for both repeated action work, small teams, and a monitoring aspect for worker output. The work investigated a theoretical framework of three questions: do bosses matter in terms of output, is there heterogeneity among boss quality, and is the effect of a boss persistent or does it deteriorate when the worker relationship ceases? Their study found a plethora of important results including bosses at the 90th percentile of quality increasing productivity by over six units per hour, on average, compared to bosses at the 50th percentile or mid-range of quality. In addition, having a better boss decreases the likelihood of leaving a position at a specific firm and worse bosses decrease retention of workers. Arguably, the most pertinent conclusion is that of ability matching in the workforce: “the value of bosses is maximized by assigning the better bosses to the better worker” (Lazear et al., 2014).

Relevant literature has continued to validate the claims found by Lazear et al., pushing the research to look at a more diverse set of outcomes. One of these common avenues of investigation is job retention rates, which can be a proxy for productivity as it is a strain on a firm to continue hiring and retraining employees. Carter et al. (2019) pushed the envelope on this research, looking at not only the effect of leadership ability on employee turnover but also factoring in race and ability metrics. Utilizing data from officers and lieutenants on active duty, they found that the effect of quality bosses is universal, however, amplified slightly for high-achieving individuals. Although conclusive on bosses influencing their employees, the research in this field has yet to determine the true cause of the effect i.e., is there a positive influence on retention from high-performing bosses or a negative impact from low-performing bosses (Carter et al., 2019).

Other literature points to a boss's style of managing as the main predictor of success in motivating employees. Using a series of equations that include an increasing number of firm characteristics including a firm fixed effect, they are able to determine the explanatory power of CEOs. The study finds that managers impact firms both economically and in terms of policy decisions (Bertrand & Schoar, 2003). Another branch of explanation is the allocation of time, which is done by splitting CEOs into two groups: leaders, who effectively work with large groups at a time, and managers who hold meetings on an individualized basis. These two groups spent their time quite differently and while neither is superior to the other, the analysis found that productivity issues were due to mismatches between the CEO's style and employees' preference for leadership (Bandiera et al., 2020). Dessein et al. (2022) investigate the effect of volatility of the local environment, defined as conditions in the market, specific customer preferences, or the regulation occurring in the region, for a firm. They find that firms with a more centralized,

leadership structure are more apt to respond to volatility and, vice versa, that volatility breeds a centralization of the firm and forces more internal coordination (Dessein et al., 2022). In any case, the literature backs up the conclusion that quality bosses are integral to an efficient workplace.

2.2 Application of Sports

Sports economics is another sector that has benefitted from the concept of managerial analysis. Although not entirely the same concept, the idea of having a leader, either a coach, manager, or owner, is central to the success of sports teams. Understanding who is the right fit and how best to lead an athletic team is the key to winning percentages, playoff contention, and revenue generation. Even teams with players considered the best of the best struggle when coaches are not effective in their strategy of play and organizing of players. Thus, sports have applied the concept of productivity analysis to discover who best fills the roles of managers and coaches.

One avenue of this research is looking at increasing the efficiency of a team which is a strong predictor of team success. Frick and Simmons (2008) used salary as a proxy for manager success and tested whether soccer managers are increasing their team's efficacy and thus more likely to produce wins. Through the use of professional German soccer, it was found that hiring a better manager with a higher salary does reduce team inefficiency, justifying the investment for soccer clubs. In addition, they made claims of the continued compounded effects of experience as managers with greater win records in the past continued to decrease inefficiencies in the future, which means the team's ability to improve their technical skills and mesh well on the field was superior. They concluded that spending on player and head coach talent "combine effectively to reduce technical inefficiency and improve league performance" (Frick & Simmons,

2008). While this was a step in the right direction, they made many assumptions about what a decreased level of efficiency means for a team. Team owners and sports fans alike are concerned with how to predict success, and how to know which team will have what it takes to win a championship. Thus, the outcome that is most pertinent in the realm of sports is win percentages and playoff contention.

Muehlheusser et al. (2018) investigated how a successful manager impacts the win percentage of a team. Using the same German professional soccer league and a plethora of data points from season to season, the authors found that managers had significant explanatory power when it came to points gained from wins. Taking it a step further, the study attempts to parse out the direct effect of solely the managers. It is found that top-percentile managers have more effect than low-level managers and a manager's ability based on past performance can predict subsequent performance. In addition, they investigated how previous success as a player increased the likelihood of success as a coach. Managers were even seen to influence the style of play of the team, which could explain by what means managers are affecting a team's win ability (Muehlheusser et al., 2018).

Goodall et al. (2011) correlated player brilliance with win percentage and playoff success later as a coach. They explained that leaders, specifically coaches in the National Basketball Association, draw on their technical ability to more effectively coach players. This brilliance, however, was not solely a measure of how long a coach themselves was in the league, but their playing excellence, meaning the best coaches are not just those who have played, but the stars of the game. These stars were able to increase their win percentage as well as survive more rounds of playoffs, all of which were seen immediately in their first year of coaching. The literature offered a few explanations for why this effect takes place. The first is that the ex-player stars

have a deep knowledge of the game that cannot be replicated by simply watching because they understand winning strategies in a more hands-on way. Secondly, their credibility was enhanced by their success. Finally, hiring a star as a coach, signals to better players that the team is serious about improving their playoff contention (Goodall et al., 2011).

Once again, the literature draws conclusions that quality coaches and managers are impactful when it comes to team success, even going so far as to pinpoint the exact inputs of quality.

2.3 Analysis of Film Success

Through sports economics, the idea of applying managerial economics spread to other domains. The entertainment industry picked up the concept and applied it to film and television media. Previously, the literature in this industry was focused on predicting revenues based on the macroeconomy and how cyclical movements in the industry could predict trends for individual productions (Chisholm, 2005). This idea has been around since the post-World War II era when the economic decline and the serious sentiment of America sent film attendance plummeting. Research has even discussed how film success has solely to do with word-of-mouth advertising because it is an experience good (Liu, 2006). All of these factors were about the environment of the film, but the film industry has recently been able to look inwardly for explanations of success.

Similar to sports economic analysis, industry giants in the film sector concern themselves with the ability to predict success because they want to create a blueprint for blockbusters. Thus, unsurprisingly, the literature on film analysis focuses on box-office revenues as the main dependent variable. The determinants to this success, however, include almost all of the normal

inputs for a film: cast, director, genre, producer, film content, inclusion of the offensive and explicit, and type and amount of marketing.

Garcia-del-Barrio and Zarco (2016) utilized films from the late nineties to the early two-thousands to look at how quality signals as well as offensive content positively or negatively affect the financial success of a film. The quality of the movie, as measured by the intersection of critical acclaim of cast members and the budget of the film, is a major factor in the revenue generation of a film. In addition, comedy is king when it comes to making sales, but sex does not sell tickets. Offensive content was linked to a decrease in box-office revenue, save for violence which continued to attract audiences (Garcia-del-Barrio & Zarco, 2016).

Kang et al. (2022) similarly investigated the financial impact of film content, however, did so with the production budget sectioned into three categories (small, medium, and large) to determine which threshold best balances financial input with financial output. Contrary to popular belief, the authors focus on medium budgets as opposed to large budgets and “suggest that small/medium-budget movie producers should focus on the production of family-friendly movies and avoid offensive content” (Kang et al., 2022). Again, creating the narrative that films are successful when they can reach the largest audience, not when the audience is subjected to outrageous content.

Elberse (2007) attempted to answer the principal question of how tying big-name actors and actresses to a production draws audiences and increases financial success. The study used a novel look at casting announcements during the production process of a film. In this event study, they “reexamine[d] the impact of talent on movies’ theatrical revenues... extending current research by analyzing what determines the magnitude of that effect” (Elberse, 2007). In line with the hypothesis, positive casting announcements, defined as the addition of a star which is an

actor or actress that has previously held two leading roles in a film, saw an indirectly positive effect on box-office revenues, and negative announcements garnered the opposite. The study's "estimates suggest that the average star in the sample is 'worth' approximately \$3 million in theatrical revenues" (Elberse, 2007). In practice, stars are certainly increasing the chance of a film reaching blockbuster revenue levels, but at what cost? The literature wonders whether the calculated gross effects of stars warrant their inclusion due to the necessary bump in production budget needed to convince star-power to sign onto a cast.

2.4 Contribution to Existing Literature

Previous literature has supported the claim that leaders do matter. Whether it be in terms of managerial analysis in the workplace, sports, or even higher education (Vogel, 2022), the consensus remains that there is value in a quality leader at the helm. Statistically significant relationships between varying independent variables that define leadership ability and the output and efficiency of a team have persisted in a wide range of economic environments and literature.

In the field of entertainment economics, literature has concluded that the success of a film is not dependent on a random factor, instead it can be predicted and replicated. Macroeconomic factors have long been influencing the demand for films, and research has illustrated that the production inputs have a strong effect on how a film will fare at the box office.

This paper aims to add to the existing literature by working at the intersection between these two classifications of research. It will enforce the idea that the inputs of a film matter when explaining what generates blockbuster-level revenue. However, it will do so in a novel way by looking at the specific impact of a director on success. The research will frame this methodology in a way that mirrors managerial analysis, equating a director to a manager and a cast and crew

to a workplace team. It will employ specific robustness checks and controls from sports economic literature.

In addition, this study will do what previous research has failed to do in terms of adequate and relevant controls. The use of revenues as a dependent variable is sensible in terms of data collection, however, the input price expressed by the production budget is a variable that strongly and directly explains revenue. Thus, this paper will look at gross revenue, while controlling for the amount of money inputted into a film.

III. Data

The analysis will examine if directors are positively impacting the outcome success of a film, holding all else equal. In order to conduct this analysis, I extract from a multitude of sources to create a working set of independent and dependent variables. The sources are all online databases that enable up-to-date and exhaustive information. The analysis is conducted at the film-level; thus, the unit of observation is each individual film. The analysis includes years in the first portion of the twenty-first century, from 2002 to 2016. The data collected is information on each film including the inputs of production as well as measures of the outcomes of success. The analysis includes only United States domestic films produced in English.

3.1 Data Collection

The bulk of the data was drawn from an online database called www.Kaggle.com, which is a division of Google. These variables include genre, date released, director, runtime, cast, language, country, year, MPAA rating, and IMDb rating. The site is a data platform that enlists data scientists and machine-learning engineers to compile useful and novel datasets for public use. The production budget and domestic gross revenue variables are taken from www.the-numbers.com, which is a film industry database that reports box-office numbers regularly using

algorithms. The website is geared toward industry professionals, however, is made freely accessible. The Academy Award variables are drawn from www.filmsite.org, which is a film review and award site, curated by film critics and historians. The awards collected are best actor, best actress, best supporting actor, best supporting actress, best director, and the nominees for each award. The Golden Globes award history is compiled from a combination of another Kaggle dataset as well as the Internet Movie Database (IMDb), www.imdb.com. The Golden Globe Awards include best director, best actor, best actress, best supporting actor, best supporting actress, and the nominees. In addition, IMDb is utilized for the individual and independent film ratings that each site provides for all films. The director-specific variables were gathered by hand, utilizing a combination of IMDb the for year of the first film, www.google.com for birth year, country of birth, and gender, and www.wikipedia.org for film school.

3.2 Description of Variables

The dependent variables in this study are both measuring the level of success garnered by the film. The first way to measure this is with the collected statistics on box-office revenues. The box-office dependent variable will be a financial outcome measured in United States Dollars (USD). The production budget will also be factored in to create a measure of net earnings as opposed to gross earnings. These are both collected from www.the-numbers.com. The second method is by employing the IMDb film rating scores, collected from www.imdb.com. These scores are given on a scale of 1-10 and are a measure of critical acclaim.

The independent variable of interest is the quality level of the film director. This variable will first be constructed based on the sum of generated revenue from all films directed in the previous fifteen years divided by the number of films. This revenue is collected from www.the-numbers.com. The second independent variable to measure quality will be the number of critic

awards (Academy Awards and Golden Globes) wins and nominations collected by the director in the 15 years prior to the film. Other variables will include the genre of the film, the release year, a measure of the star-power in the cast (award-winning cast members), the length of the film, the MPAA rating, a dummy for whether the director is a first-time director, and a dummy for whether the director and star have previously collaborated, a dummy for whether the director has acted previously, the age of the director, the gender of the director, a dummy for whether the director is domestic born, a dummy for whether they attended film school, and the number of years they have worked in the directing industry.

3.3 Summary Statistics

The data spans fifteen years of film beginning in the calendar year 2002 and ending with the inclusion of films in 2016. This year range allows for homogeneity in the film industry as there are no perceived large changes in the industry at this time and it avoids the production issues related to 2020. In total, there are 1605 individual films with about 900 independent directors. The majority of directors in this time release only one film, however, close to fifty percent fall into the category of being a repeat director. On average, 122 films are recorded for each of the years, with the largest number of included films being 127 in 2015 (see Table 1).

Table 1:

Films per each observation year.

(1) Year	(2) Films
2002	102
2003	85
2004	89
2005	94
2006	120
2007	94
2008	117
2009	117
2010	125
2011	126
2012	111
2013	106
2014	117
2015	127
2016	75

The directors are credited with anywhere between one and ten total films. It is interesting to note for all of these summary statistics, the number of films a director and actor can actually work on in a 15-year period. As seen in Table 2 the maximum number of projects worked on is 18 for actors and 10 for directors, however, the average is only 2 or 3 films, respectively.

Table 2:

Number of films actors and directors worked on.

	(1) Minimum	(2) Maximum	(5) Average
1. Actors	1	18	3.8263
2. Directors	1	10	2.2186

The films span 22 different genres, with over 80% being cross-listed in multiple genre categories. The genres with the most references are action, adventure, and comedy, while

Western is the least referenced (see Table 3). In addition, the films originally ranged across 10 distinct Motion Picture Association Ratings (MPAA), which measures the level of offense and inappropriate content included in the film. These are combined into five categories in later analysis. The majority, 43% of the films, are rated R meaning restricted for those under 17 years of age. PG-13 (parental guidance for children under 13) is close behind with 38% of the films and PG (parental guidance suggested for young children) follows with 15%. The least represented rating was NC-17 (no child under 17 admitted in theaters) with only one film falling into this category (see Table 4).

Table 3:

Films per each genre. Column one shows the frequency, column 2 shows the percentage.

Main Genre	(1) Frequency	(2) Percentage
1. Action	292	7.83
3. Adventure	256	6.86
4. Animation	110	2.95
5. Biography	74	1.98
6. Comedy	691	18.5
7. Crime	222	5.95
8. Documentary	54	1.45
9. Drama	762	20.42
10. Family	107	2.87
11. Fantasy	97	2.60
12. History	34	0.91
13. Horror	146	3.91
14. Music	64	1.72
15. Musical	17	0.46
16. Mystery	106	2.84
18. Romance	259	6.94
19. Sci-Fi	108	2.89
20. Sport	60	1.61
21. Thriller	260	6.97
22. Western	12	0.32
Total	3.731	100

The numbers take in to account each genre listed for the film (i.e. an Action-Adventure is counted in both action and adventure)

Table 4:

Films per each rating category. Column one shows the frequency, column 2 shows the percentage.

MPAA Rating	(1) Frequency	(2) Percentage
1. G	31	2.15
4. PG	221	15.29
3. PG-13	551	38.13
4. R	615	42.56
5. UNRATED	27	1.87
Total	1,445	100

The original dataset does not have a full set of observations for the rating of the film, hence the decreased sample size.

The variables of the production budget, domestic gross, and worldwide gross give a picture of the size and success of the films we are examining. Looking at Table 5, we see a large range in terms of how much net gross the films earn both domestically and worldwide, indicating film failure as well as blockbuster-level success. In addition, there are small, medium, and large-budget films represented in the data as well as films with poor and exceptional critical acclaim.

Table 5:

Summary Statistics (Box-Office Numbers)

	(1) Minimum	(2) Maximum	(3) Mean	(4) Std Deviation
1. Production Budget	7,000	365,000,000	38,300,000	46,200,000
2. Domestic Gross	3,080	623,000,000	52,400,000	73,900,000
3. Worldwide Gross	3,264	1,520,000,000	112,000,000	186,000,000
4. IMDb Rating	1.5	9.1	6.26	1.069
5. Runtime	40	219	103.81	16.55
Sample Size	1,605	1,605	1,605	1,605

Figures in rows 1-3 are measured in USD, row 5 is measured in minutes.

The awards are also quite wide-ranging with the dataset including both actors and directors who have never been nominated for an Academy Award or a Golden Globe as well as those who have been nominated and won multiple times throughout their careers. The winningest director in the dataset is Steven Spielberg with a total of 30 career wins and nominations, whilst the winningest actors are Jack Nicholson and Meryl Streep who have the most total Oscar and Golden Globe wins. The film with the highest quality cast, defined by this body of work as the cast with the most previous award wins and nominations is Phillip Noyce’s “The Giver” (2014) starring Meryl Streep, Jeff Bridges, Brenton Thwaites, and Alexander Skarsgard. Table 6 summarizes the director and cast awards.

Table 6:

Award distributions for Actors and Directors (includes totals for Academy Awards and Golden Globes).

	(1) Minimum	(2) Maximum	(3) Mean	(4) Std Deviation
1. Actor Nominations	0	58	4.883	7.336
2. Actor Wins	0	17	1.085	2.015
3. Director Nominations	0	18	0.335	1.596
4. Director Wins	0	5	0.092	0.549

Tables 7 and 8 present the director-specific characteristics. The individual directors range from age 24 to 88 years of age at the year of directing, with some directors being over 50 year veterans of the industry. Women directors represent only 9.34% of the total directors, somewhat below the industry average of 14.6% as of 2022. (Statista Research Department, 2023). Domestic

directors dominate in this dataset with 78.38% of total directors being from the United States, however, this is somewhat expected because the dataset only includes films released domestically and in English. Most interestingly is that only 327 or 29.09% of directors attended some type of film school, indicating most directors are self-taught or entered the industry through another channel.

Table 7:
Director Characteristic Statistics.

	(1) Minimum	(2) Maximum	(3) Mean	(4) Std Deviation
1. Birth Year	1925	1992	1964.08	10.59
2. Year of First Film	1951	2016	1994.99	10.99
3. Years in Industry	0	59	14.61	10.68
4. Age (at film)	24	88	45.39	10.25

Figures in rows 1-4 represents years.

Table 8:
Director Characteristics Continued. Column one shows the frequency, column 2 shows the percentage.

	(1) Frequency	(2) Percentage
1. Domestic	881	78.38
2. Female	105	9.34
3. First-Time	128	11.39
4. Film School Attendees	327	29.09
Total	1,124	

IV. Methodology

4.1 Base Model

The structure of the analysis relies on a simple Ordinary Least Squares (OLS) Regression to estimate the effect of the director on the success of the film. Each iteration includes different model specifications that extend the following basic model:

$$SUC_{iy} = \alpha + \beta_1 DIR_{iy} + \beta_2 BUD_{iy} + \varepsilon_{iy} \quad (1)$$

The success outcomes, denoted by SUC , are the two variables that measure the level of success garnered by film i in year y . The first outcome measure is the box-office domestic gross of the film i in year y . The natural log of this variable is taken due to the large range of values observed. The second outcome measure also indicates the success of the film, but in terms of critical success. This utilizes the Internet Movie Database (IMDb) scores, which as mentioned previously in the data section, is a metric that scores all released films on a decimal scale of 1 to 10, with 1 being the worst and 10 being a perfect film. The BUD variable represents the control variable for the production budget of the film. This is utilized to interpret the success of the film in terms of revenues by accounting for the value inputted. The variable, DIR , denotes a quality measure of an individual director in year, y . This measure is created by taking all films of the director in question within the last 15 years leading up to the current film i , summing the total generated revenue, and then dividing by the number of films. $lnSUC_{iy} = \frac{1}{15} \sum_{y=-1}^{-15} \sum_{i=1}^{\overline{n}_{iy}} \frac{REV_{iy}}{\overline{n}_{iy}}$, where \overline{n}_{iy} is the number of films directed by director i in year y . The coefficient of interest is β_1 , which will be interpreted as the average effect on the success of a film for every one dollar increase in the quality level of a director, holding production budget equal. Epsilon is defined as the general error term.

4.2 Extensions and Controls

From the basic model, controls are added to increase the explanatory power of the regression, to determine whether the director effect is really the effect of some correlated variable, and to decrease the degree of error.

$$SUC_{iy} = \alpha + \beta_1 DIR_{iy} + \beta_2 BUD_{iy} + \beta_3 \mathbf{FILM}_{iy} + \varepsilon_{iy} \quad (3)$$

Equation 3 builds from equation 1 utilizing the same variables, however, with the inclusion of the **FILM** variable. This is a vector variable that represents different aspects of the films. These variables include the MPAA rating of the film, which is a categorical variable that measures the level of offensive content in a film, a categorical variable for the main genre, a numeric variable that categorizes the season of the year in which the film is released where 1 indicates fall and 4 represents summer (excluding summer in the analysis), a numeric variable for the runtime of the film, and a variable that measures the level of quality of the cast of the film. The categories for the rating variable are G, NC-17, PG, PG-13, R, TV-14, TV-G, TV-PG, and Unrated. The categories for the genre variable are action, biography, comedy, crime, drama, family, fantasy, mystery, romance, sci-fi, thriller, western, music, sport, horror, history, war, animation, musical, short, documentary, and news. The cast variable, denoted as *CAST*, is created using the award dataset, which allows for the creation of a numerical variable indicating how many awards and nominations the actors and actresses in the specific film have previously won.

In equation 3, the basic model is again extended to investigate other areas of interest that may be creating error in the β_1 coefficient.

$$SUC_{iy} = \alpha + \beta_1 DIR_{iy} + \beta_2 BUD_{iy} + \beta_3 \mathbf{FILM}_{iy} + \beta_4 \mathbf{CASTDIR}_{iy} + \beta_5 \mathbf{PRE}_{iy} + \beta_6 \mathbf{FIRST}_{iy} + \varepsilon_{iy} \quad (4)$$

The first additional variable is the dummy *CASTDIR*. This variable will investigate whether specific actors working continuously with specific directors is skewing the captured effect on the success of the film, with a 1 indicating a previous relationship between the director and any of the listed cast members within the preceding 15 years. The second additional variable is *FIRST*, which is a dummy variable indicating whether this is the first film the director has made. The third additional variable is *PRE*, which is a dummy variable that measures whether a director has previously participated in a film as an actor, with a 1 if the director made the switch from acting and a 0 if no previous acting experience. This analysis is borrowed from Muehlheusser et al. who investigated the effect of a manager who was previously a player on the success of a professional soccer team (Muehlheusser et al., 2018). This coefficient will measure the difference in the success level of a film with a director and cast that have previous working experience and one without, on average, holding all else equal. This will account for the potential bias in the β_1 from directors and cast members with a higher level of quality based on their combined work experience.

The hypothesis for equations (1), (3), and (4) are all that a high-quality director explains the positive success level of a film, regardless of the included control variables and robustness checks. To validate the magnitudes of these hypothetical effects, the analysis must find a specific level of statistical significance. Therefore, the hypothesis can be summed up as:

$$H_0: \beta_1 = 0$$

$$H_a: \beta_1 > 0$$

4.3 Robustness Checks

The main robustness check will be to employ a different measure of director success as an independent variable. The alternative measure will be to create a numeric variable that

indicates the number of critic awards (i.e. academy awards) wins and nominations accumulated by the director in the previous 15 years leading up to the current film i in year y . Equations (2), (3), and (4) will again be analyzed with this replacement variable to verify the significance of the results and further confirm the hypothesis.¹

The second robustness check will further analyze the characteristics of each specific director to mitigate the heterogeneity present. These director-specific variables include the age of the director at the time of the release of the film, the gender of the director, whether the director is domestic-born or foreign, whether they attended film school or majored in film, and the years they have worked in the directing industry at the time of the release of the film.

V. Results

5.1 Overview

This section presents the results from the regression tables and the perceived effect on box office success. For each of the dependent variables, the results are discussed separately and presented in the tables directly below. The controls are discussed as well as the robustness check of utilizing a different independent variable for director quality. In addition, the director-specific variables are discussed in further detail as well as the secondary testing run to check that they are significantly different from zero. The interpretation of the results are further discussed in the following two sections.

¹ A secondary robustness check was meant to be employed as described here: The secondary robustness check will be to estimate the explanatory power of the different directors specifically. Mirroring Muehlheusser et al. 2018, equation (4) is estimated excluding all variables related to directors. In the first iteration the dependent variable will remain monetary success of the film and the independent variable will be the full set of film level variables described above. Then, the regression will be estimated again with director fixed effects. The explanatory power (R-squared value) of the two models will be compared, to determine the extent to which the director fixed effect are increasing the explanatory power of the model. I will repeat this analysis using the critical success of the movie as the dependent variable. However, the large number of individual directors within this dataset made this analysis not viable.

5.2 Effect on Domestic Gross

Beginning with the directorial effect on monetary success, we refer to Table 9 below, which shows the coefficient of interest, $\ln\text{TotalGrossPre}$, the constructed measure of director quality, across three regressions with an increasing number of controls. The base model, including only the Production Budget, shows that for every 1% increase in the perceived quality of the director, there is a 0.0593 percent increase, on average, in the domestic gross of the film. This effect is statistically significant at the 1% significance level. In column 2 of table 5, film characteristic controls are included, and the coefficient remains statistically significant at the 1% level, however, the effect decreases to a 0.0365 percentage increase in domestic gross. In the third column, director-specific controls are added including whether the director has directed previously, whether the director has worked with any member of the main cast before, and whether the director has any previous acting experience. The coefficient again decreases but remains statistically significant, indicating a 0.0289 percentage increase, on average, at the 1% significance level. Looking specifically at the director variables, the first_time_dir variable indicates that being a first-time director decreases domestic gross by 37.49 percent, on average, significant at the 5% level. The castdir variable indicates that the director and a cast member having a previous working relationship increases domestic gross by 36.48 percent, on average, which is statistically significant at the 10% significance level. The preact variable indicates that a director having acting experience decreases domestic gross by 37.06 percent, on average, which is statistically significant at the 10% significance level. We can reject the null hypothesis that these three coefficient variables are jointly equal to zero at the 5% significance level based on an F-value of 3.64 and a p-value of 0.0124.

As discussed above, a secondary measure of director quality is employed as the main independent variable to test the robustness of this relationship and assess whether the observed effects persist. These results are seen in columns 4-6 of table 5. Running the base model with this new independent variable, we again observe a statistically significant effect on domestic gross. For every one-unit increase in the total number of director's previous awards nominations and wins (a proxy for quality), there is a 6.26% percent increase in the domestic gross of the film. When film characteristic controls are included in column 5, the coefficient decreases, becomes negative, and becomes statistically insignificant. In column 6, the director-specific variables are included, and the coefficient remains negative and insignificant. The `first_time_dir` variable indicates that being a first-time director decreases domestic gross by 46.53%, on average, which is statistically significant at the 1% significance level. The `castdir` variable indicates that the director and cast working together in a previous movie increases domestic gross by 57.15%, on average, which is statistically significant at the 5% level. The `preact` variable shows that being an actor prior to directing decreases domestic gross by 34.75%, on average, which is statistically significant at the 10% level. In this case, we can reject the null hypothesis at the 1% significance level that these coefficients are all jointly equal to zero based on an F-value of 6.20 and a p-value of 0.004.

Table 9 Directorial Effect on Film Domestic Gross.

VARIABLES	(1) lnDomesticGross	(2) lnDomesticGross	(3) lnDomesticGross	(4) lnDomesticGross	(5) lnDomesticGross	(6) lnDomesticGross
ProductionBudget	2.59e-08*** (1.18e-09)	2.16e-08*** (1.70e-09)	2.10e-08*** (1.69e-09)	2.80e-08*** (1.20e-09)	2.29e-08*** (1.73e-09)	2.18e-08*** (1.71e-09)
lnTotalGrossPre	0.0593*** (0.00715)	0.0365*** (0.00758)	0.0289*** (0.00791)			
tot_awards_dir				0.0607*** (0.0129)	-0.00103 (0.0228)	0.000459 (0.0246)
Film Controls	No	Yes	Yes	No	Yes	Yes
first_time_dir			-0.470** (0.219)			-0.626*** (0.212)
castdir			0.311* (0.176)			0.452** (0.176)
preact			-0.463* (0.251)			-0.427* (0.257)
Constant	14.74*** (0.114)	11.81*** (0.455)	11.97*** (0.464)	15.24*** (0.0817)	11.79*** (0.461)	12.00*** (0.467)
Observations	1,605	1,484	1,484	1,605	1,484	1,484
R-squared	0.323	0.416	0.421	0.303	0.407	0.417

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.3 Effect on IMDb rating

Table 10 presents results with the secondary dependent variable, IMDb rating, which is utilized as a proxy for critical acclaim across the same six regressions and controls. The base model shows that for every 1% increase in the quality of a director, there is a 0.0000171 unit increase in the IMDb rating of the film, however, this effect is statistically insignificant. In column 2 of table 10, when the film-specific controls are included, the coefficient indicates that a 1% increase in the quality creates a 0.0000403 unit decrease in the rating of the film, however, this is not statistically significant. Finally, when the director-specific variables are added, a 1% increase in quality generates a 0.0000395 unit increase in the IMDb rating, which is again statistically insignificant. The first-time director variable shows a 0.0286 unit increase in the rating of the film; however, this is insignificant at every level. The cast director relationship variable also indicates a statistically insignificant 0.0526 unit increase in the ratings. Finally, the previous acting experience variable generates a 0.1053 unit decrease in the domestic gross but is also insignificant. With this regression, we cannot reject the null hypothesis that the coefficients

for these three director variables are all equal to zero based on an F-value of 0.50 and a p-value of 0.6802.

The results of the secondary director quality variable effect on IMDb ratings are shown in columns 4-6 of Table 10. When we employ this new quality variable, the base model indicates that for every one-unit increase in the number of director award wins and nominations, there is a 0.0684 unit increase in the rating of the film, on average, statistically significant at the 1% level. In column 5 when the film characteristic controls are included, the coefficient indicates that for every one-unit increase in the quality of the director, there is a 0.0155 unit increase in the rating of the film, however, this is statistically insignificant. In column 6, when the director variables are included, the coefficient indicates that for every one-unit increase in quality, there is a 0.0183 unit increase in the IMDb rating of the film, on average, statistically significant at the 10% level. When we look at the effects of the specific characteristics of the director, we see insignificant effects across the board. The effect of being a first-time director is again positive and a 0.0544 unit increase, the effect of the cast and director having a previous working relationship is positive, with a 0.0301 unit increase, and similar to the previous estimation, and the director previously being an actor has a negative 0.135 unit effect on ratings of the film. In this case, we cannot reject the null hypothesis that the coefficients of these three variables are all equal to zero with an F-value of 0.68 and a p-value of 0.5655.

Table 10 Directorial Effect on IMDb rating.

VARIABLES	(1) imdbRating	(2) imdbRating	(3) imdbRating	(4) imdbRating	(5) imdbRating	(6) imdbRating
ProductionBudget	2.08e-09*** (6.38e-10)	-3.75e-10 (8.08e-10)	-4.52e-10 (8.08e-10)	1.33e-09** (5.93e-10)	-5.72e-10 (8.00e-10)	-6.18e-10 (8.02e-10)
lnTotalGrossPre	0.00171 (0.00437)	-0.00403 (0.00381)	-0.00395 (0.00404)			
tot_awards_dir				0.0684*** (0.00859)	0.0155 (0.0105)	0.0183* (0.0106)
Film Controls	No	Yes	Yes	No	Yes	Yes
first_time_dir			0.0286 (0.0876)			0.0544 (0.0844)
castdir			0.0526 (0.0876)			0.0301 (0.0856)
preact			-0.103 (0.0968)			-0.125 (0.0976)
Constant	6.161*** (0.0554)	4.026*** (0.222)	4.018*** (0.225)	6.114*** (0.0386)	4.050*** (0.222)	4.036*** (0.225)
Observations	1,475	1,468	1,468	1,475	1,468	1,468
R-squared	0.008	0.333	0.333	0.036	0.333	0.334

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.4 Director-Specific Control Results

5.4.1 Domestic Gross

Table 11 shows the results of both independent variables on the dependent variable, Domestic Gross, however, in this robustness check four new director variables are added, to determine which characteristics of a director are impacting the results. The first two columns show the results of columns 2 and 3 in Table 9 to use for reference. The third column then includes the additional variables. Here the coefficient indicates that for every 1% increase in the quality of the director, there is a 0.0307% increase in the domestic gross, which is statistically significant at the 1% level. The first-time director variable indicates a statistically significant 44.57% decrease in the domestic gross of the film. The director and cast having a previous relationship increases the domestic gross by 32.71% but is not significant. The director previously being an actor decreases the domestic gross by 45.77% and is significant at the 5% level. The director being from the United States decreases domestic gross by 20.55%, which is

statistically significant at the 5% level. The director being female decreases the domestic gross by 43.05%, which is statistically significant. The director attending a film school decreases domestic gross by 6.28%, however, this effect is not statistically significant. A one-unit increase in the years in industry decreases domestic gross by 1.49%, which is statistically significant at the 5% level. Finally, a year increase in the age of the director decreases domestic gross by 0.03%, however, this is statistically insignificant. We can reject the null hypothesis that the coefficients of these eight director variables are jointly equal to zero based on an F-value of 3.27 and p-value of 0.0011.

The results of the secondary director quality variable effect on domestic gross are shown in columns 4-6 of Table 11, however, column 6 is where the new director variables are included. The coefficient on `tot_awards_dir` indicates that for every one-unit increase in awards and nominations for the director, there is a 2.02% increase in the domestic gross of the film, however, this effect is not statistically significant. When we look at the director-specific variables, only four produce a statistically significant effect: `first_time_dir`, `castdir`, `preact`, and `dir_female`. Being a first-time director decreases domestic gross by 50.14%, on average, significant at the 1% level. The cast and director having a previous working relationship increases domestic gross by 52.81%, which is significant at the 5% level. The director previously having acted decreases the domestic gross by 46.04%, significant at the 5% level. Finally, the director being female decreases the domestic gross by 43.39%, on average, significant at the 5% level. The four other coefficients are statistically insignificant, however, the director being from the United States, the director attending film school, and the number of years in the industry all produce a negative effect consistent with the previous regression results in column 3. However, the director age variable changes from a negative to a positive relationship, but neither is significant. With this

regression, we can reject the null hypothesis that the director coefficients are all equal to zero based on an F-value of 3.24 and a p-value of 0.0012.

Table 11 Directorial Effect on Domestic Gross with Director Controls.

VARIABLES	(1) lnDomesticGross	(2) lnDomesticGross	(3) lnDomesticGross	(4) lnDomesticGross	(5) lnDomesticGross	(6) lnDomesticGross
ProductionBudget	2.16e-08*** (1.70e-09)	2.10e-08*** (1.69e-09)	1.87e-08*** (1.67e-09)	2.29e-08*** (1.73e-09)	2.18e-08*** (1.71e-09)	1.94e-08*** (1.68e-09)
lnTotalGrossPre	0.0365*** (0.00758)	0.0289*** (0.00791)	0.0307*** (0.00861)			
tot_awards_dir				-0.00103 (0.0228)	0.000459 (0.0246)	0.0200 (0.0266)
Film Controls	Yes	Yes	Yes	Yes	Yes	Yes
first_time_dir1		-0.470** (0.219)	-0.590** (0.265)		-0.626*** (0.212)	-0.696*** (0.265)
castdir		0.311* (0.176)	0.283 (0.177)		0.452** (0.176)	0.424** (0.178)
preact		-0.463* (0.251)	-0.612** (0.258)		-0.427* (0.257)	-0.617** (0.263)
dir_domestic			-0.230* (0.127)			-0.180 (0.125)
dir_female			-0.563** (0.265)			-0.569** (0.265)
filmschool			-0.0643 (0.105)			-0.0639 (0.106)
years_in_industry			-0.0150* (0.00839)			-0.0106 (0.00867)
dir_age			-0.000280 (0.00819)			0.000932 (0.00821)
Constant	11.81*** (0.455)	11.97*** (0.464)	12.63*** (0.550)	11.79*** (0.461)	12.00*** (0.467)	12.65*** (0.553)
Observations	1,484	1,484	1,349	1,484	1,484	1,349
R-squared	0.416	0.421	0.428	0.407	0.417	0.423

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

5.4.2 IMDb Rating

Table 12 shows the results of both independent variables on the dependent variable, IMDb rating, including the four new director variables. Columns 1-2 repeat the previous analysis and column 3 adds the new variables. The coefficient indicates that a 1% increase in the total gross previously earned by the director decreases the rating of the film by 0.0000516, on average, not statistically significant at any level. Moving to the director-specific variables, being a first-time director increases the IMDb rating by 0.250 units, significant at the 1% level. The cast-director relationship, the previous acting experience, the director being American-born, and the director being female all produce insignificant results with a 0.00789 unit increase, a 0.0738

unit decrease, a 0.0579 unit increase, and a 0.0824 unit decrease, respectively. The director attending film school increases the rating by 0.116, on average, significant at the 5% level. A one-year increase in the time spent in industry increases the rating by 0.0103, significant at the 1% level. A one-year increase in the age of the director creates a 0.0151 unit decrease in the rating, significant at the 1% level. We can reject the null hypothesis that these eight coefficients are jointly equal to zero based on an F-value of 3.91 and a p-value of 0.0001.

The results of the secondary measure of director quality effect on IMDb rating are shown in columns 4-6 of Table 12, however, column 6 is where the new director variables are included. A one-unit increase in the number of awards and nominations won by a director increases the IMDb rating of a film by 0.0270 points, on average, significant at the 5% level. Again, being a first-time director increases the IMDb rating by 0.247 units, significant at the 5% level. The cast-director relationship, the acting experience, the director being American-born, and the director being female variables are all statistically insignificant, with a 0.0209 unit decrease, a 0.0991 unit decrease, a 0.0419 unit increase, and a 0.0788 unit decrease, respectively. Interesting to note is that the sign of the cast-director relationship changes between this regression and the regression in column 3. Attending film school generates a 0.113 unit increase on the IMDb rating, significant at the 5% level. A one-year increase in the time spent in industry increases the rating by 0.00735 points, significant at the 10% level. Finally, a one-year increase in the age of the director decreases the rating score by 0.0153 units, significant at the 1% level. We can reject the null hypothesis that these eight director-specific variables are equal to zero with an F-value of 4.46 and a p-value of 0.0000.

Table 12 Directorial Effect on IMDb Rating with Director Controls.

VARIABLES	(1) imdbRating	(2) imdbRating	(3) imdbRating	(4) imdbRating	(5) imdbRating	(6) imdbRating
ProductionBudget	-3.75e-10 (8.08e-10)	-4.52e-10 (8.08e-10)	-4.38e-10 (7.21e-10)	-5.72e-10 (8.00e-10)	-6.18e-10 (8.02e-10)	-5.84e-10 (7.23e-10)
lnTotalGrossPre	-0.00403 (0.00381)	-0.00395 (0.00404)	-0.00516 (0.00445)			
tot_awards_dir				0.0155 (0.0105)	0.0183* (0.0106)	0.0270** (0.0123)
Film Controls	Yes	Yes	Yes	Yes	Yes	Yes
first_time_dir1		0.0286 (0.0876)	0.250*** (0.0966)		0.0544 (0.0844)	0.247** (0.0967)
castdir		0.0526 (0.0876)	0.00789 (0.0863)		0.0301 (0.0856)	-0.0209 (0.0844)
preact		-0.103 (0.0968)	-0.0738 (0.0958)		-0.125 (0.0976)	-0.0991 (0.0966)
dir_domestic			0.0579 (0.0563)			0.0419 (0.0555)
dir_female			-0.0824 (0.0904)			-0.0788 (0.0903)
filmschool			0.116** (0.0513)			0.113** (0.0514)
years_in_industry			0.0103*** (0.00393)			0.00735* (0.00400)
dir_age			-0.0151*** (0.00389)			-0.0153*** (0.00387)
Constant	4.026*** (0.222)	4.018*** (0.225)	4.608*** (0.260)	4.050*** (0.222)	4.036*** (0.225)	4.658*** (0.262)
Observations	1,468	1,468	1,333	1,468	1,468	1,333
R-squared	0.333	0.333	0.347	0.333	0.334	0.348

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

VI. DISCUSSION

Across the two regression tables, there is evidence that director influence is pertinent to success, however, the cause of the trend differs across the two dependent variables. The first regression table leads us to believe that there is, in fact, a director impact on domestic gross², however, seemingly this effect has only to do with the previously earned revenues and not with the previous critical success metric. This could indicate the effect is more closely related to the specific characteristics and experience level of the director, not just their quality level, however, an argument could be made for these characteristic variables being another indirect way to proxy for quality. When we look at the total awards previously won, the effect is of similar magnitude and direction, however, the effects are insignificant when controls are included, thus the quality

² Albeit on a small scale 0.0365%

of the director has no effect on the domestic gross. An alternative explanation is that the number of prior awards is a poor indicator of the quality level of a director. In both cases of the independent variable, however, the same trends persist and, with significance in almost every case, for the three director-specific controls. Again, this backs up the claim that the director's working experience and time in the industry is a better indicator of monetary success. Specifically, having a previous working relationship with the actors creates a positive impact, while being a first-time director and prior actor has a negative impact. When we delve further into the characteristics of the director by including additional descriptive variables, the only consistent trends are being a first-time director, acting previously, and being a female causing a negative effect on domestic gross.

In terms of critical acclaim, directors have an almost opposite effect on ratings. Specifically, it seems that the previous monetary box-office success of the director has no impact on ratings based on the coefficient of previous total gross being insignificant across all regressions and robustness checks., however, previous award recognition impacts critical acclaim positively. The coefficients on the director-specific controls are, initially, consistent with those in the domestic gross regression with no level of significance. However, when we include the additional director metrics, we see significant positive effects from being a first-time director, attending film school, and the number of years working in the directing industry. Additionally, the age of the director indicates a consistent and significant negative effect on IMDb ratings.

VII. CONCLUSION

This analysis set out to answer the simple questions: Do directors truly add value to the production of a film? Can they impact the monetary and critical success outcomes? The results of this analysis indicate that there is a perceived effect of directors, but it may rely less on the

quality indicators of the director and more on the specific characteristics of the director's working history. In fact, working with a cast member for a second time increases the domestic gross of the film by an average of between 44.57% and 50.14%. Being a first-time director decreases the domestic gross by between 45.77% and 46.04%, on average. Being a female director decreases the box-office success by between 43.05% and 43.49%, on average.

However, the IMDb rating is most reliant on the previous critical acclaim of the director and independent of the previous box-office success. Again, the director-specific controls seem to have an important effect, but this effect is based on a different set of characteristics as compared to the domestic gross. Here, we see that being a first-time director increases the rating by between 0.247 and 0.250 points. Attending film school increases the rating by between 0.113 and 0.116 points and additional years in the industry also increase ratings by between 0.00735 and 0.0103 points. Additionally, the age of the director decreases the IMDb rating by between 0.0151 and 0.0153 points. It is important to recall here that although these numbers are small in magnitude, the IMDb rating is measured on a decimal point score with a maximum score of 10. Further, given that the standard deviation of IMDb ratings is around 0.225, these changes are impactful relatively.

These two findings together, lead less to a conclusion on directorial value-added and more to a comment on the film and entertainment industry as a whole. There seems to be a divide in what stirs critics versus audiences. Critics³ are seldom moved by the director's name slapped onto a film, instead focusing on characteristics that seem to be a reflection of the experience and education level of the director. However, audiences are easily, but not necessarily cheaply, bought by the name and esteem of the director. Audiences do maintain some biases, specifically

³ The critics employed by the Internet movie database (IMDb)

interesting is that against female directors and directors new to the industry. This could reflect the marketing tools utilized in the modern age of cinema and the effect on the broader community of movie-goers. There is something to be said about the value of name and branding for a director, especially in the age of social media. However, is this not what would be expected out of the film community: that the less experienced and knowledgeable are easy pickings for marketing, while those who have dedicated their careers and lifework to films would be less susceptible to persuasion based solely on surface appeal?

VIII. APPENDIX

Table A1 Directorial Effect on IMDb rating with full variables.

VARIABLES	(1) lnDomesticGross	(2) lnDomesticGross
lnTotalGrossPre	0.0289*** (0.00791)	
ProductionBudget	2.10e-08*** (1.69e-09)	2.18e-08*** (1.71e-09)
G	1.403*** (0.265)	1.454*** (0.268)
PG	1.096*** (0.174)	1.136*** (0.175)
PG13	0.807*** (0.118)	0.819*** (0.118)
UNRATED	-1.037* (0.629)	-1.070* (0.627)
adventure	-0.153 (0.149)	-0.142 (0.150)
biography	0.720*** (0.207)	0.735*** (0.207)
comedy	0.431*** (0.149)	0.462*** (0.149)
crime	0.308* (0.159)	0.339** (0.161)
animation	0.303 (0.193)	0.241 (0.192)
documentary	-0.553 (0.398)	-0.580 (0.403)
drama	-0.576*** (0.134)	-0.606*** (0.135)
family	0.222 (0.193)	0.207 (0.193)
fantasy	-0.177 (0.244)	-0.187 (0.244)
history	0.00951 (0.307)	-0.0105 (0.309)
horror	0.685*** (0.256)	0.681*** (0.256)
music	0.627*** (0.222)	0.634*** (0.224)
musical	-1.037* (0.591)	-1.060* (0.586)
mystery	0.318 (0.203)	0.339* (0.203)
romance	0.310** (0.150)	0.320** (0.150)
thriller	0.414** (0.175)	0.428** (0.177)
scifi	-0.306 (0.216)	-0.304 (0.215)
sport	0.327 (0.227)	0.348 (0.225)
western	-0.382 (0.602)	-0.388 (0.619)
fall	0.101 (0.139)	0.106 (0.139)
winter	0.299** (0.145)	0.330** (0.145)
spring	-0.135 (0.135)	-0.139 (0.136)
runtime	0.0247*** (0.00414)	0.0269*** (0.00411)
tot_awards_dir		0.000459 (0.0246)
Constant	11.97*** (0.464)	12.00*** (0.467)
Observations	1,484	1,484
R-squared	0.421	0.417

Robust standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Table A2 Directorial Effect on IMDb rating with full variables.

VARIABLES	(1) imdbRating	(2) imdbRating
lnTotalGrossPre	-0.00395 (0.00404)	
ProductionBudget	-4.52e-10 (8.08e-10)	-6.18e-10 (8.02e-10)
G	-0.664** (0.305)	-0.671** (0.308)
PG	-0.458*** (0.102)	-0.461*** (0.102)
PG13	-0.372*** (0.0583)	-0.376*** (0.0581)
UNRATED	-0.396 (0.242)	-0.391 (0.241)
adventure	0.138 (0.0947)	0.138 (0.0945)
biography	0.357*** (0.0828)	0.341*** (0.0835)
comedy	-0.135** (0.0627)	-0.138** (0.0623)
crime	0.135* (0.0708)	0.133* (0.0708)
animation	1.261*** (0.140)	1.273*** (0.140)
documentary	1.283*** (0.189)	1.283*** (0.190)
drama	0.479*** (0.0630)	0.482*** (0.0626)
family	0.101 (0.118)	0.0993 (0.118)
fantasy	-0.0370 (0.108)	-0.0331 (0.108)
history	-0.141 (0.126)	-0.147 (0.123)
horror	-0.390*** (0.104)	-0.388*** (0.104)
music	-0.0699 (0.145)	-0.0751 (0.146)
musical	-0.888*** (0.342)	-0.884** (0.344)
mystery	0.00457 (0.0842)	-0.00439 (0.0836)
romance	0.131* (0.0704)	0.131* (0.0704)
thriller	-0.0649 (0.0731)	-0.0704 (0.0732)
scifi	0.383*** (0.106)	0.387*** (0.106)
sport	0.261** (0.132)	0.267** (0.131)
western	0.290 (0.216)	0.291 (0.217)
fall	0.114* (0.0646)	0.116* (0.0646)
winter	-0.0662 (0.0738)	-0.0706 (0.0737)
spring	0.0530 (0.0660)	0.0566 (0.0660)
runtime	0.0200*** (0.00195)	0.0195*** (0.00191)
tot_awards_dir		0.0183* (0.0106)
Constant	4.018*** (0.225)	4.036*** (0.225)
Observations	1,468	1,468
R-squared	0.333	0.334

Robust standard errors in parentheses

*** p<0.01 ** p<0.05 * p<0.1

IV. REFERENCES

- All Palme d'Or winners from 1939 to 2017 (Cannes Film Festival)*. (n.d.). IMDb. Retrieved November 16, 2023, from <http://www.imdb.com/list/ls061376308/>
- Bandiera, O., Prat, A., Hansen, S., & Sadun, R. (2020). CEO Behavior and Firm Performance. *Journal of Political Economy*, 128(4), 1325–1369.
- Bertrand, M., & Schoar, A. (2003). Managing with Style: The Effect of Managers on Firm Policies*. *The Quarterly Journal of Economics*, 118(4), 1169–1208.
<https://doi.org/10.1162/003355303322552775>
- Carter, S. P., Dudley, W., Lyle, D. S., & Smith, J. Z. (2019). Who's the Boss? The effect of strong leadership on employee turnover. *Journal of Economic Behavior & Organization*, 159, 323–343. <https://doi.org/10.1016/j.jebo.2018.12.028>
- Chisholm, D. C. (2005). Review of Hollywood Economics: How Extreme Uncertainty Shapes the Film Industry [Review of *Review of Hollywood Economics: How Extreme Uncertainty Shapes the Film Industry*, by A. De Vany]. *Journal of Cultural Economics*, 29(3), 233–237.
- Dessein, W., Lo, D. (Ho-F.), & Minami, C. (2022). Coordination and Organization Design: Theory and Micro-Evidence. *American Economic Journal: Microeconomics*, 14(4), 804–843. <https://doi.org/10.1257/mic.20200307>
- Dirks. (n.d.-a). *Academy Awards Best Actress and Supporting Actress—Winners*. Retrieved November 16, 2023, from <https://www.filmsite.org/bestactress2.html>
- Dirks, T. (n.d.-b). *Academy Awards Best Actor and Best Supporting Actor—Winners*. Retrieved November 16, 2023, from <https://www.filmsite.org/bestactor2.html>
- Dirks, T. (n.d.-c). *Academy Awards Best Director—Winners*. Retrieved November 16, 2023, from <https://www.filmsite.org/bestdirs2.html>
- Elberse, A. (2007). The Power of Stars: Do Star Actors Drive the Success of Movies? *Journal of Marketing*, 71(4), 102–120.
- Fontes, R. (2019). *Golden Globe Awards, 1944—2020* [dataset].
<https://www.kaggle.com/datasets/unanimad/golden-globe-awards>

- Frick, B., & Simmons, R. (2008). The impact of managerial quality on organizational performance: Evidence from German soccer—Frick—2008—Managerial and Decision Economics—Wiley Online Library. *Managerial and Decision Economics*, 29, 593–600. <https://doi.org/10.1002/mde.1431>
- Garcia-del-Barrio, P., & Zarco, H. (2016). Do movie contents influence box-office revenues? *Applied Economics*, 49(17), 1679–1688. <https://doi.org/10.080/00036846.2016.1223828>
- Goodall, A., Kahn, L., & Oswald, A. (2011). Why do leaders matter? A study of expert knowledge in a superstar setting. *Journal of Economic Behavior & Organization*, 77, 265–284. <https://doi.org/10.1016/j.jebo.2010.11.001>
- Kang, L., Peng, F., & Anwar, S. (2022). All that glitters is not gold: Do movie quality and contents influence box-office revenues in China? *Journal of Policy Modeling*, 44(2), 492–510. <https://doi.org/10.1016/j.jpolmod.2021.09.009>
- Lazear, E. P., Shaw, K. L., & Stanton, C. T. (2014). The value of bosses. *IDEAS Working Paper Series from RePEc*. <https://www.proquest.com/econlit/docview/1698398133/1211F1AF2E6440AAPQ/3>
- Leone, S. (2020). *Rotten Tomatoes movies and critic reviews dataset* [dataset]. <https://www.kaggle.com/datasets/stefanoleone992/rotten-tomatoes-movies-and-critic-reviews-dataset>
- Lim, C. (2021). *IMDb Movies dataset from 2000—2020* [dataset]. <https://www.kaggle.com/datasets/chenyanglim/imdb-v2>
- Liu, Y. (2006). Word of Mouth for Movies: Its Dynamics and Impact on Box Office Revenue. *Journal of Marketing*, 70(3), 74–89. <https://doi.org/10.1509/jmkg.70.3.074>
- Mhatre, S. (2020). *IMDB Movies Analysis (Version 1)* [dataset]. <https://www.kaggle.com/datasets/samruddhim/imdb-movies-analysis>
- Muehlheusser, G., Schneemann, S., Sliwka, D., & Wallmeier, N. (2018). The Contribution of Managers to Organizational Success: Evidence from German Soccer. *Journal of Sports Economics*, 19(6), 786–819. <https://doi.org/10.1177/1527002516674760>
- Roberts, J., & Shaw, K. L. (2022). Managers and the Management of Organizations. *National Bureau of Economic Research, Working Papre*. <https://www.proquest.com/econlit/docview/2765313322/61B90E67385D4748PQ/2?accountid=11321>

Statista Research Department. (2023). *Distribution of movie directors in the United States from 2011 to 2022, by gender*. <https://www.statista.com/statistics/696871/movie-director-gender/>

The Numbers—Movie Budgets. (n.d.). The Numbers. Retrieved November 16, 2023, from <https://www.the-numbers.com/movie/budgets/all>

Vogel, S. (2022). Shared leadership in higher education: An exploration of the composition of school leadership teams and school performance. *Journal of Higher Education Policy and Management*, 44(5), 486–497. <https://doi.org/10.1080/1360080X.2022.2109560>

World Bank. (1960, January 1). *Inflation, consumer prices for the United States*. FRED, Federal Reserve Bank of St. Louis; FRED, Federal Reserve Bank of St. Louis. <https://fred.stlouisfed.org/series/FPCPITOTLZGUSA>