



How is gender of top billing actor affecting cinematic success of a film?

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Background

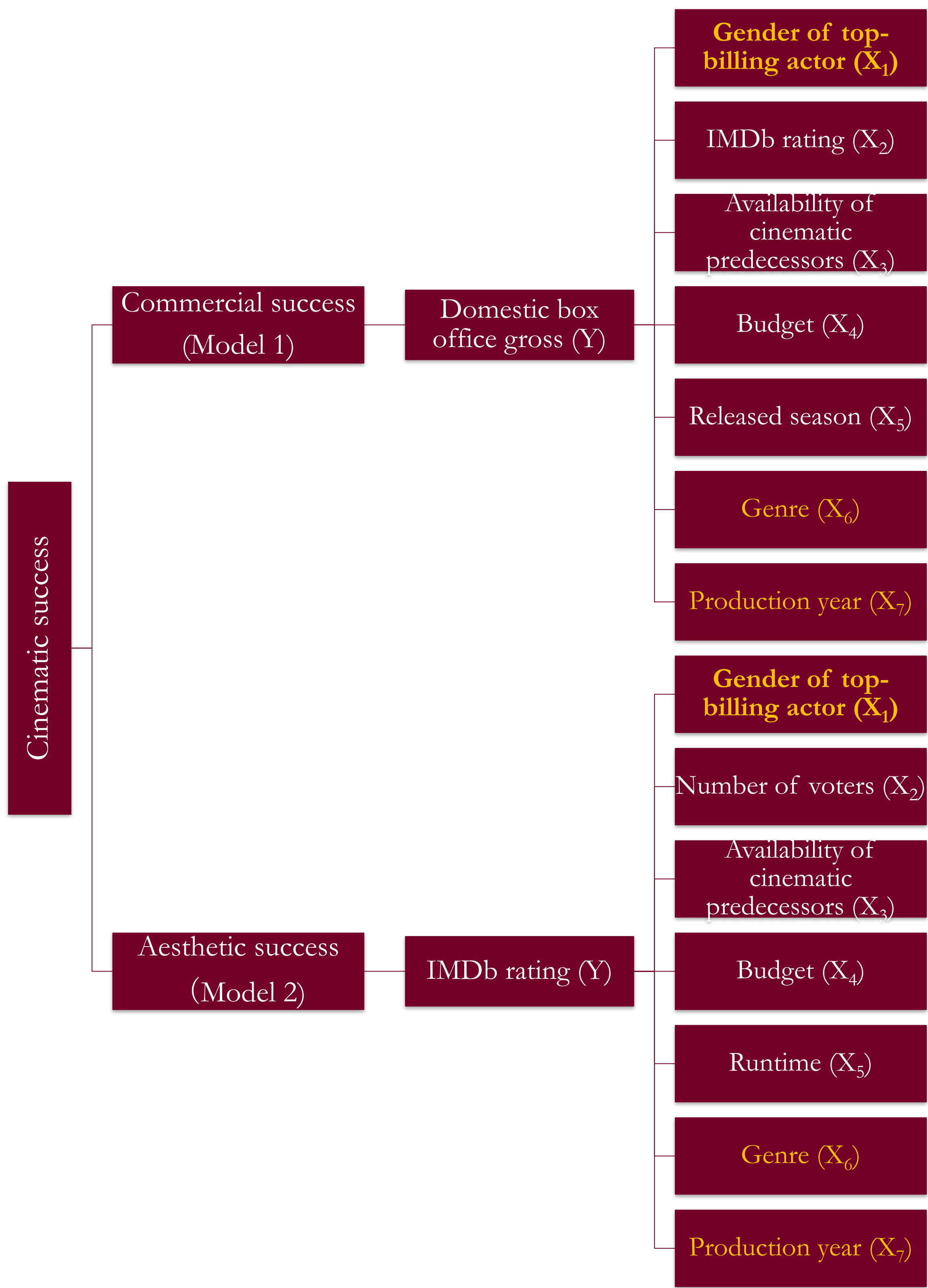
- Films have been frequently scrutinized to discern how different genders are perceived and evaluated.
- The worldwide dominance of Hollywood “blockbusters” has enlarged and extended the gender biases and misconceptions.
- Relevant former researches mainly focus on the portrayal of different genders in the motion picture industry.

Objective

Search for an empirical answer to the gender imbalance in the motion picture industry:

Explore if gender acts as an impact factor of cinematic success in aspect of art and business, and if this impact varies among genres and changes over time.

Methods



Model (1*)

$$Y_i^3 = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2}^2 + \beta_3 X_{i3} + \beta_4 X_{i4} + \beta_5 \log(X_{i4}) + \beta_6 X_{i5} + \beta_7 X_{i6} + \beta_8 X_{i7} + \varepsilon_i$$

Model (2*)

$$Y_i^2 = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 \log(X_{i2}) + \beta_4 X_{i3} + \beta_5 X_{i4} + \beta_6 X_{i5} + \beta_7 X_{i5}^2 + \beta_8 X_{i6} + \beta_9 X_{i7} + \varepsilon_i$$

Data

- The world’s most popular and authoritative source for movie, TV and celebrity content: Internet Movie Database (IMDb)
- Filtered 6,095 U.S. films produced before 2017 from 4,282,600 media products available on IMDb
- 17,676 observations are included in the dataset

Results

(Year 1913 – 2016)					
Genre	# Obs	# Female-leading	# Male-leading	Commercial Success Model	Aesthetic Success Model
				Male-leading Effect (Std. Error)	Male-leading Effect (Std. Error)
Total	6095	1497 (24.56%)	4598 (75.44%)	-2.911** (1.093)	0.757*** (0.1594)
Action	1303	140 (10.74%)	1163 (89.26%)	0.9102 (5.066)	1.157 (0.7390)
Adult	1	0 (0.00%)	1 (100.00%)		
Adventure	1082	167 (15.43%)	915 (84.87%)	-3.051 (5.276)	0.8440 (0.7803)
Animation	265	55 (20.75%)	210 (79.25%)	5.927 (9.742)	-1.720 (1.267)
Biography	333	86 (25.83%)	247 (74.17%)	4.164 (8.028)	0.08797 (0.856)
Comedy	2405	626 (26.03%)	1779 (73.97%)	-8.092 (2.788)	0.3656 (0.4389)
Crime	1154	163 (14.12%)	991 (85.88%)	-3.617 (4.635)	1.223 . (0.6334)
Documentary	75	14 (18.67%)	61 (81.33%)	-3.295 (16.16)	3.859 (4.857)
Drama	3189	875 (27.44%)	2314 (72.56%)	-8.043** (2.468)	0.9742** (0.3231)
Family	662	152 (22.96%)	510 (77.03%)	6.994 (5.735)	-2.445** (0.9294)
Fantasy	667	150 (22.49%)	517 (77.51%)	11.09 . (5.658)	-1.313 (0.9212)
Film-Noir	44	8 (18.19%)	36 (81.82%)	-47.20 . (25.09)	0.5494 (1.690)
History	228	44 (19.30%)	187 (80.70%)	8.966 (11.22)	-0.3445 (1.365)
Horror	670	237 (35.37%)	433 (64.63%)	-9.598 (4.671)	0.9611 (0.6253)
Music	245	83 (33.88%)	162 (66.12%)	2.211 (9.146)	1.630 (1.506)
Musical	217	76 (35.02%)	141 (64.98%)	2.176 (11.02)	0.8861 (1.420)
Mystery	600	166 (27.67%)	434 (72.33%)	-13.34* (5.334)	2.087** (0.7111)
News	1	0 (0.00%)	1 (100.00%)		
Romance	1469	554 (37.71%)	915 (62.29%)	-3.646 (3.359)	1.368** (0.4662)
Sci-Fi	675	113 (16.74%)	562 (83.26%)	-0.7287 (5.678)	0.1671 (0.9628)
Short	2	0 (0.00%)	2 (100.00%)		
Sport	217	22 (10.14%)	195 (89.86%)	1.512 (13.90)	3.486 (2.175)
Thriller	1728	343 (19.85%)	1385 (80.15%)	-10.52 (3.382)	1.891*** (0.4589)
War	270	41 (15.19%)	229 (84.81%)	20.35 (1.234)	0.2365 (1.405)
Western	174	14 (8.05%)	160 (91.95%)	42.57* (17.16)	-1.054 (1.957)

. p<0.1; * p<0.05; ** p<0.01, *** p<0.001

(All genres)					
Year ⁰	# Obs	# Female-leading	# Male-leading	Commercial Success Model	Aesthetic Success Model
				Male-leading Effect (Std. Error)	Male-leading Effect (Std. Error)
Total ⁰	6095	1497 (24.56%)	4598 (75.44%)	-2.911** (1.093)	0.757*** (0.1594)
1913 – 1919	7	4 (57.14%)	3 (42.86%)		
1920 – 1929	32	14 (43.75%)	18 (56.25%)	36.09** (13.17)	-2.815 (2.075)
1930 – 1939	57	35 (61.40%)	22 (38.60%)	-2.894 (10.42)	0.1127 (1.292)
1940 – 1949	95	35 (36.84%)	60 (63.16%)	-7.899 (8.321)	1.232* (0.5732)
1950 – 1959	207	45 (21.74%)	162 (78.26%)	-11.97 . (6.176)	0.2155 (0.7308)
1960 – 1969	153	35 (22.88%)	118 (77.12%)	18.51 . (10.08)	-0.7234 (0.7667)
1970 – 1979	249	48 (19.28%)	201 (80.72%)	2.588 (8.696)	1.541 . (0.855)
1980 – 1989	731	133 (18.19%)	598 (81.81%)	4.934 (3.832)	0.9477 . (0.5122)
1990 – 1999	1330	293 (22.03%)	1037 (77.97%)	-1.913 (2.305)	0.5267 (0.356)
2000 – 2009	1968	514 (26.12%)	1454 (73.88%)	-6.200*** (1.698)	1.209*** (0.2765)
2010 – 2016	1266	341 (26.94%)	925 (73.06%)	-7.989*** (2.136)	0.2432 (0.3267)

. p<0.1; * p<0.05; ** p<0.01, *** p<0.001

Commercial success model

Total	1920 – 1929	1930 – 1939	1940 – 1949	1950 – 1959	1960 – 1969	1970 – 1979	1980 – 1989	1990 – 1999	2000 – 2009	2010 – 2016
Action										
Adventure										
Comedy										
Crime										
Drama										
Family										
Mystery										
Romance										
Thriller										

Aesthetic success model

Total	1920 – 1929	1930 – 1939	1940 – 1949	1950 – 1959	1960 – 1969	1970 – 1979	1980 – 1989	1990 – 1999	2000 – 2009	2010 – 2016
Action										
Adventure										
Comedy										
Crime										
Drama										
Family										
Mystery										
Romance										
Thriller										

Negative Coefficient	p > 0.1	. p < 0.1	*p < 0.05	**p < 0.01	***p < 0.001
Positive Coefficient	p > 0.1	. p < 0.1	*p < 0.05	**p < 0.01	***p < 0.001

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Conclusion

- The male-leading films overwhelmingly outnumber female-leading ones, and the percentage of female-leading films is not increasing overtime.
 - This is surprising, given that females comprise over half of United States population.
- The gender of top-billing cast is statistically significant for both commercial success and aesthetic success of a film.
- The gender effect for commercial success is significant for Drama, Mystery, and Western films and is increasing.
- The gender effect for aesthetic success is significant for Drama, Family, Mystery, Romance, and Thriller films, and is decreasing.
 - Coincide with four dimensions of the traditional female role (Fiebert, 1990)
- It is easier for female-leading films to achieve commercial success.
 - This may result from the imbalanced number of male-leading and female-leading films.
 - Discrete observations
 - Rarity means attracting
- It is easier for male-leading films to achieve aesthetic success.
 - This may result from the difference of career development of actors and actresses.
 - Male actors tend to have longer careers as stars (Lehman, 1941).
 - 78% of movie stars were identified as male (Wallace, Seigerman & Holbrook, 1993).
 - Male roles are more strongly associated with great stories than are female roles (Simonton, 2004).
- Some disagreements with the overall trend when examining each genre carefully are that the percentage of female-leading films of Action, Comedy, Drama, Family, Mystery, Thriller genre is steadily increasing, and among Adventure and Family films, it is easier for female-leading films to achieve aesthetic success, while among Comedy films, it is easier for male-leading films to achieve commercial success.