



Understanding the dynamics between the United States and Australian film markets: testing the ‘10% rule’

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ABSTRACT

Australia has historically been an important market for American media exports. As far as film trade relations between the two countries go, there is an anecdotal perception that distributors follow a ‘10% rule’ to predict the popularity of Hollywood titles in Australia, expecting American films to earn around one-tenth of their domestic box office receipts when screened downunder. Nonetheless, as prevalent as this ‘rule’ has been in the industry, it has not been seriously tested. This article addresses the gap in both scholarship and business practices and uses the ‘10% rule’ as a starting point to discuss various facets of the relationship between the two markets. We measure the popularity of American films among Australian audiences as well as contrast the differences that emerge in terms of distribution and exhibition in these markets. The article compares box office revenues, screening counts, life length in theatres and release delay in both markets. In addition, we examine how Australian exhibitors and audiences differ from the US in terms of preference towards genre, distribution company and production origin. The discussion is informed by a large dataset of global film screenings from the Kinomatics Project in conjunction with box office data compiled by Rentrak. We find no support for the ‘10% rule’ but strong evidence that audience tastes as well as distribution and exhibition practices differ across regions.

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Introduction

The commercial relationship in the movie business between Australia and the US has been described by different industry players in the form of a ‘10% rule.’ The rationale underlying this ‘rule’ stems from the idea that historically Australia was seen as roughly one-tenth of the US across various measures such as population and GDP. The industry came to use the ‘law-of-ten’ to predict the box office earnings of American productions downunder thus guiding the decisions of distributors and exhibitors on reel logistics, marketing and advertising spending as well as screen allocation. However, according to Australian Government Department of Foreign Affairs and Trade (2017a, 2017b) in 2016

Australia's population was 24.6 million which is around 7.6% of American population, while Australia's GDP stood at around 1259.2 US\$b or 6.8% of the American GDP in 2016. As in recent times both relative measures have deviated from 10%, we could expect that the 'cinema rule' used for box office predictions might also be redundant. As this 'rule' has not been seriously tested to date we propose to use it to begin a discussion about the current cinema trade relationship between Australia and the US.

Even though the '10% rule' has not been a focus of attention in academia, it is a concept that has received attention in industry circles and in the popular domain. In a newspaper article arguing that Australia was becoming less dependent on American television and cinema productions, it was asserted that '[o]ver recent decades movie distributors have relied on the formula that a big US movie will make in Australian dollars roughly one 10th of what it makes in US dollars' (Dale 2008, para. 3). The article presented evidence showing that only around half of the 23 highest grossing films from 2007 to 2008 were actually earning around the expected 10%. Film critic Don Perlmut (2009, 2013, 2014) has also repeatedly applied the '10% rule' to compare the Australian and American earnings of certain films in his blog, concluding that *Harry Potter and the Half-Blood Prince* (2009), *The Great Gatsby* (2013) and *Noah* (2014) performed above expectations in Australia due to various cultural reasons. Similarly, film industry commentator Miguel Gonzalez (2010a), writing about the unexpected Australian box-office success of the American romantic comedy *Valentine's Day* (2010) noted: 'Following the "10% rule," it was even more successful here than in the US, where it made U\$56.4m' (para. 3). This use of a 10% measure to evaluate the relative popularity of individual US productions in the Australian film industry is also referred to as a 'rule of thumb' (see Bodey 2010; Gonzalez 2010b; Russell 2015). And yet there is an absence of detailed statistical studies that assess the validity of this method for calculating the performance of box office returns on Hollywood titles.

This article tests whether the '10% rule' holds in current market conditions as well as compares and contrasts the US and Australia as markets for American films by examining screening data on 2013 American feature releases in both countries. The remainder of the article is structured as follows: The second section provides a brief summary of key literature that informs this study focusing on theories about the media exchange between the US and Australia and draws on relevant examples of empirical analyses. In the third section the Kinomatics showtime dataset is described along with the criteria applied to derive the sample used in this study. The next section briefly explains the method used to test the '10% rule.' In the fifth section the results in terms of film earnings, screenings, life length and delay are presented. From this analysis we are able to suggest more accurate ratios for box office and screenings as well as explore how Australian and American markets differ in terms of four market measures across various genres, distributor sizes and production origins. In the final section conclusions are drawn and suggestions for further research are provided.

Literature review

Various aspects of the movie trade between Australia and the US have attracted the attention of cinema history and cultural economics scholars. Early accounts described the relationship as cultural imperialism or cultural hegemony (see Bowles et al. 2007 for a

discussion of this). However, more recently cinema historians have been moving towards an alternative theorization of this relationship by encouraging detailed studies of international distribution and local exhibition (Bowles et al. 2007; Verhoeven 2010). Examples of investigations along those lines are also found in the field of cultural economics (McKenzie 2009; Walls and McKenzie 2012).

While Hollywood content and the ‘Americanization’ of popular culture including films have historically been considered a threat to Australian culture, imported cinema had in fact played an integral role in forming Australian cinema culture (Bowles et al. 2007). Distributors have historically ‘understood the Australian audience as a reproduction in microcosm of the American audience, and constructed its distribution strategies accordingly’ (Bowles et al. 2007, 97) with the US operating as a testing market to establish a picture’s future export value. Following this assumption they would determine a film’s marketing and advertising spending, release scheduling and number of prints abroad based on its home performance. The ‘10% rule’ was derived on this basis. However, Australian film exhibitors had a different view from distributors and would accommodate American movies to suit local tastes. Thus, the exhibition sector could be seen as contributing to Hollywood’s failure to construct identical audiences and cultural experiences across markets (Bowles et al. 2007). Our findings on differences in taste between the two countries presented later in this article support this view. We demonstrate that Australian audiences favour different genres and films distributed by different companies when compared to Americans. Verhoeven (2010) studied the relationship between the US and Australia in a more recent context by investigating the amount of delay with which 570 movies from various countries of origin arrived in Australia over a period of twenty years from 1989 to 2009. She found that while day-and-date releases became more prevalent in the world market throughout the period, Australia still rarely got to premiere American films.

Cultural economists also contributed to the detailed understanding of international distribution and Australian exhibition of American films. McKenzie (2009) studied what factors impact the life of Hollywood movies on Australian screens by looking at 360 features released over five years from 2000 to 2005. Using duration in theatres as an alternative to box office earnings to measure movie’s success he found that preview screenings, advertising/publicity expenditure, box office in the US, weekly screen average, favourable critical reviews, ratings PG or G as well as genre fantasy positively influence film’s survival probability, while the number of opening week screens, release delay and seven other genres (action, animated, comedy, romantic comedy, science fiction, suspense and thriller) all have a negative impact. We also investigate the life of Hollywood features concluding that Australian and American exhibitors favour different genres and distribution companies in terms of duration in theatres. Walls and McKenzie (2012) studied the relationship between national and international box office performance of 1910 American movies that were released in the American–Canadian market and six other countries – Australia, France, Germany, Mexico, Spain and United Kingdom – over ten years from 1997 to 2007. They found no evidence that box office success in the US creates a contagion of demand in export markets, although they demonstrated that home market success reduced foreign financial uncertainty. We too compare the earnings of American productions in Australia to those in the US concluding that Australian and American audiences favour different genres and distribution companies when allocating their spending.

Using ‘big data’ to draw international comparisons

This study is made possible by the availability of new, globally scaled, digital sources of information about the cinema. International comparisons of film performance of this scale have not been previously possible because datasets possessing the requisite levels of accessibility, interoperability and reusability simply did not exist. Key to the design of this study was the collection, curation and combination of heterogeneous information describing various ways of estimating film success.

To understand the dynamics between the United States and Australia as markets for American movies we study four performance measures in both countries. These include: box office returns, volume of screenings, film life on screen and release delay. We use country-to-country ratios for the first three measures instead of total values as a tool to draw inter-market comparisons. This allows us to investigate general differences between the US and Australia as well as variations in their preferences across genres, distribution companies and the country of origin of different titles. Our primary data source is the Kinomatics database¹ in conjunction with box office information from Rentrak (<http://rentrak.com/>) and the Internet Movie Database (IMDb – <http://www.imdb.com/>).

The Kinomatics database is a ‘big data’ collection of global movie showtime information. It contains show records for all screenings of all films for all cinema venues in 48 countries around the world spanning 2.5 years. Various details about movies, cinemas and screenings are all part of this collection. The database registers information on formal theatrical distribution and does not track other types of viewing such as DVD, streaming, illegal downloading, etc. The Kinomatics database tracks all films screened in cinemas across the countries covered, thus including both past and new releases. Using this type of detailed screening data is unique in cinema studies at this point in time and to our knowledge film research at this level of granularity has only been produced in other applications of the Kinomatics database (see Arrowsmith et al. 2014; Coate et al. 2016, 2017; Coate, Verhoeven, and Davidson 2017; Coate and Verhoeven 2015; Verhoeven, Davidson, and Coate 2015). The time frame for this study reflects the start and end points of the Kinomatics database, from 1 December 2012 to 1 June 2015. During this 30-month period, we collected information on over 338 million screenings for over 96,000 movies in over 33,000 venues in 48 countries.

To compare the US and Australia as markets for American productions based on the proposed measures we construct a relevant film sample from the Kinomatics database by imposing a set of restrictions. Firstly, a movie’s main theatrical release has to begin within the first 13 months of the data collection (from 1 December 2012 to 1 January 2013). Even though data across 30 months were available in the Kinomatics database, we decided to only include films released in the first part of the period so that we could track each feature for at least 17 months and ensure that a film’s entire life (or at least majority of life) was able to be tracked for analytical purposes. Those movies that started either before or after the 13-month period were excluded from our sample. We begin our time frame in December rather than January because typically a year’s final week is one of the heaviest box office periods and thus working with calendar year data could bias the results for films released during the holidays since their main life lies in the following year (Verhoeven, Davidson, and Coate 2015). We also limit our study to films that received a conventional theatrical release thus excluding movies which had fewer than

20 screenings or stayed in theatres for shorter than 7 days as that suggests a festival run or showings for promotional purposes only.

In addition, we select feature movies thus excluding shorts. We use the Academy of Motion Pictures, Arts and Sciences definition of ‘feature film’, i.e. any film that runs for 40 min or longer. Further, we focus our view to only include American productions. We rely on IMDb to identify which movies from the Kinomatics dataset are sole produced or co-produced with the US. As IMDb does not follow strict guidelines when recording origin information and in some instances lists more collaborating countries than official co-production agreements specify, this data needs to be interpreted with some caution and understanding of this limitation. We also restrict our sample to films that screen in both the US and Australia.

The application of these selection criteria resulted in a sample of 368 titles from the Kinomatics database, for which we further obtained total box office earnings in Australia and the US from Rentrak. Complete or partial box office data were missing for 139 of those movies, which had to be further excluded. However, only seven of these productions screened more than 50 times in either of the countries, so the impact of these deletions on the overall analysis is quite low. Moreover, box office information for four of these titles was later obtained from an alternative source Box Office Mojo (<http://www.boxofficemojo.com/>). As a result our final sample included 231 movies with no missing values.

For each of these films we documented box office earnings as an expression of a film’s commercial success, screening volume and screen life as a measure of availability to be readily accessed by audiences and delay as the speed of media dissemination. Having defined the four market measures we then calculated the country-to-country ratios for the first three. As delay or ‘stagger’ is a directional dependent variable it is not expressed

Table 1. Four market measures and movie characteristics used to compare Australia to the US.

Variable	Description	Data source
Box office ratio	A movie’s total box office revenue in Australia, US\$, as a proportion of its total box office revenue in the US, US\$, percentage: $\text{Box Office Ratio} = \frac{\text{Box Office in Australia}}{\text{Box Office in the USA}} \times 100\%$	Rentrak; Box Office Mojo
Screenings ratio	A movie’s total number of screenings in Australia as a proportion of its total number of screenings in the US, percentage: $\text{Screenings Ratio} = \frac{\text{Screenings in Australia}}{\text{Screenings in the USA}} \times 100\%$	Kinomatics
Life ratio	Days between a movie’s first and last screenings in Australia as a proportion of its days between first and last screenings in the US, percentage: $\text{Life Ratio} = \frac{\text{Life in Australia}}{\text{Life in the USA}} \times 100\%$	Kinomatics
Delay	Days between a movie’s first screening in the US and its first screening in Australia, absolute	Kinomatics
Genre	One of eight genres: action/adventure, animation, comedy, documentary, drama, horror, music/event ⁴ or suspense/thriller	Kinomatics
Distributor	One of three distributors: major (one of six companies: Walt Disney Pictures, Warner Bros. Pictures 20th Century Fox, Universal Pictures, Columbia Pictures, Paramount Pictures or their subsidiaries), mini-major (one of eight companies: Lionsgate Films, STXfilms, Open Road Films, A24, The Weinstein Company, Amblin Partners, CBS Films, Metro-Goldwyn-Mayer Pictures or their subsidiaries ⁵) or independent (any other company)	Kinomatics
Origin	One of two origins: American or co-production	IMDb

as a ratio. Finally, we categorized each film by genre, distributor and production origin. These variables, calculations and data sources are outlined in Table 1.

After we selected our sample and compiled data from several sources, we also had to convert all box office earnings into one currency before we could begin the analysis. Rentrak measures box office returns in the currency of each country where movies have screened. To express earnings in equivalent terms Australian box office receipts are converted into US dollars using relevant monthly exchange rates from the period as reported by Reserve Bank of Australia (2016). We convert Australian box office in US equivalent prices accounting for changes in the exchange rate over time as well as the monthly screening volume. This extra step is to account for proportional screening volumes which ensures that the earnings of Australian films are not underestimated due to the weakening of Australian dollar throughout the period.² As all sample movies are released within the first half of the data collection period, they receive the majority of their screenings in 2013 and the beginning of 2014. However, the life of films ‘with legs’ might extend over multiple years, as for example was the case with *The Hobbit: An Unexpected Journey* (2012) which screened for 790 days in Australia. Equation 1 represents the formula used to perform the box office conversion as described, where $S_{12/2012}$ is the number of screenings in Australia in a given month, S_{Total} is the total number of Australian screenings and $E_{12/2012}$ is the exchange rate from \$A to \$US in a given month. From this calculation the exchange rate that we use in all calculations amounts to 1 \$A = 0.95 \$US.

$$1 \text{ USD} = (S_{12/2012} \div S_{Total} \times E_{12/2012}) + \dots + (S_{05/2015} \div S_{Total} \times E_{05/2015}) \quad (1)$$

Typical values expressed in medians and standard deviations of the four market measures for all films as well as across genres, distributors and origins are displayed in Table 2. It also lists the sizes of all attribute categories. When interpreting medians in this table it is important to remember that for the most part we are using ratios and not absolute values for country-to-country comparisons (except from delay). A high ratio value can be driven by a higher value in Australia or a lower value in the US. In addition, because our ratio variables incorporate information

Table 2. Typical values and variation of four market measures across genres, distributors and origins.

Variable	N	%N	Box office ratio		Screenings ratio		Life ratio		Delay	
			Median	Std. Dev.	Median	Std. Dev.	Median	Std. Dev.	Median	Std. Dev.
All films	231	100%	11.49	1,475.21	6.06	164.17	50.62	51.44	38.0	107.40
<i>Genre</i>										
Action/adventure	49	21%	9.40	6.05	5.95	3.88	50.62	51.75	16.0	45.37
Animation	13	6%	11.23	4.59	4.81	1.84	72.74	28.57	19.0	49.47
Comedy	41	18%	11.97	3122.44	6.53	212.51	51.48	53.00	17.0	92.50
Documentary	20	9%	23.36	512.41	5.79	40.57	26.88	22.80	158.5	169.48
Drama	77	33%	12.15	88.74	7.66	62.55	49.56	36.99	58.0	120.44
Horror	9	4%	6.71	570.44	5.58	9.82	32.79	37.45	38.0	41.28
Music/event	13	6%	12.69	22.67	4.53	2.66	16.22	126.80	35.0	34.98
Suspense/thriller	9	4%	15.52	3210.68	7.79	667.84	69.29	45.79	69.0	56.97
<i>Distributor</i>										
Major	119	52%	11.13	125.52	6.37	79.40	53.37	45.26	23.0	71.12
Mini-major	44	19%	9.93	391.99	5.96	159.23	49.09	31.67	45.5	106.15
Independent	68	29%	13.51	2674.22	5.43	252.59	38.98	68.95	65.0	144.09
<i>Origin</i>										
USA	154	67%	11.10	238.78	5.79	47.52	49.47	53.99	41.0	115.64
Co-production	77	33%	13.83	2519.52	8.35	274.06	51.85	46.06	29.0	87.71

from both regions, any group differences should be interpreted as differences between Australia and the US for those groups. For example, judging from differences in box office ratio, documentaries typically earn around 12% more than action/adventure movies in Australia when compared to the States. This should not be interpreted as meaning that a documentary will earn more than an action film in Australia, rather what it does show is that Australians favour documentaries over action/adventure movies more than Americans do. Or to put it another way, audience cultural tastes differ between the countries when it comes to genre.

Screenings and life ratios across different groups should be interpreted in the same manner. However, variations in these ratios across genre, distributor and origin groups reveal different preferences of exhibitors and sometimes distributors in the two countries since screenings and life length are controlled by those parties. Delay is presented in absolute value terms, where higher medians in a certain category mean that those films typically release later in Australia compared to movies from another category. Differences in typical delay across groups reflect associated international distribution strategies. Table 2 also reports standard deviations that express variation in values within categories. Out of four market measures the box office ratio was the least consistent from film to film, while life ratio was the most predictable.

Non-parametric testing for real-world data

Once all data were collected and prepared for testing, we were able to test whether the medians of box office and screenings ratios differed from 10%, as suggested by the ‘industry’s rule,’ and also whether the four market measures varied per genre, distributor and origin categories. We found all four cinema market measures to be non-normally distributed with high skewness and kurtosis as well as many extreme outliers.³ This was further confirmed by statistically significant results from Shapiro–Wilk normality test ($p < .001$) (Thode 2002). We perform all statistical analyses using non-parametric tests suited for this type of data and use medians to report typical values as these are less affected by outliers compared to averages derived on a mean basis. Firstly, we check whether the typical box office and screenings ratios in our data are equal to 10% using one-sample sign test (Kraska-Miller 2013). Then we investigate whether there are statistically significant differences in box office, screenings and life ratios as well as delay across genre, distributor and origin categories. For this we rely on Mann–Whitney U test, Kruskal–Wallis test and Mood’s median test (Hollander, Wolfe, and Chicken 2013). We require multiple tests for this purpose due to the nature of our data as Mann–Whitney U test is designed for variables with two categories, Kruskal–Wallis test compares more than two groups and Mood’s median test suits both. Finally, we identify which specific category pairs such as two specific genres are statistically significantly different from each other using the same tests.

Non-parametric tests have lower power, which means that they are less likely to show statistically significant results than parametric tests suited for normally distributed data. Because of this we use two suitable tests to investigate each relationship. For simplicity we report results as statistically significant in tables and text only once when at least one of the tests yields them. We set significance level to 0.05 for all statistical testing.

Results

Our analysis of results is divided between aggregate level results as well as a consideration of the specific differences between Australia and the US in box office, screenings, life and delay across genres, distributors and origins. The evidence we find suggests that the typical box office and screenings ratios in our sample are significantly different from the ‘industry’s rule.’ In addition, we demonstrate that box office and life significantly differ between Australia and the US across genres and distributors, while number of screenings significantly vary between the countries across production origins; and that delay significantly varies across genres and distributors.

None of the four market measures typical to our data are equal to the 10% proposed by the industry, although some come close to this benchmark. Even though the box office and screenings ratios are both numerically close to ‘industry’s rule’ as outlined in Table 2, non-parametric testing yielded that all four market measures were statistically significantly different from 10%. Our data suggest that American films typically earn more than expected, around 11%, while screening considerably less, around 6%, in Australia when compared to the States. In addition, American movies typically live here around half the time they stay on screens in the US and usually arrive in Australia with around a 38 day delay.

The typical values of all four market measures are numerically different across genre, distributor and origin categories as illustrated in Table 2. Further non-parametric testing detected statistically significant differences across genres and distributors for box office ratio, life ratio and delay as well as between origins for screenings ratio. Table 3 summarizes those results and lists their significance. As production origin only had two categories, the initial testing immediately revealed that co-productions typically screen statistically significantly more than American movies in Australia relative to the US (Figure 1). This means that Australian exhibitors favour co-productions in terms of allocating screenings more than American exhibitors do when compared to sole American films.

Further non-parametric testing was required to detect which specific genres (out of 28 possible pairs) demonstrated significant differences in three market measures. The results indicated statistically significant variations among five genre pairs for box office ratio, fourteen pairs for life ratio and eleven pairs for delay. Table 4 summarizes those test results identifying which variable had statistically significant differences per each genre pair and at what significance level, while Figure 2 illustrates them. Only the main findings are described below. See Table 2 for typical values per genre. First, action/adventure movies earn statistically significantly less than comedies, documentaries, dramas and music/event films when Australians are compared to Americans. This means that Australian audiences favour action/adventure movies significantly less than American audiences

Table 3. Summary results for differences among genre, distributor and origin categories for the four market measures.

Attribute	Box office ratio	Screenings ratio	Life ratio	Delay
Genre	*	–	**	**
Distributor	*	–	*	**
Origin	–	**	–	–

*/** denotes the highest significance at 5/1%.

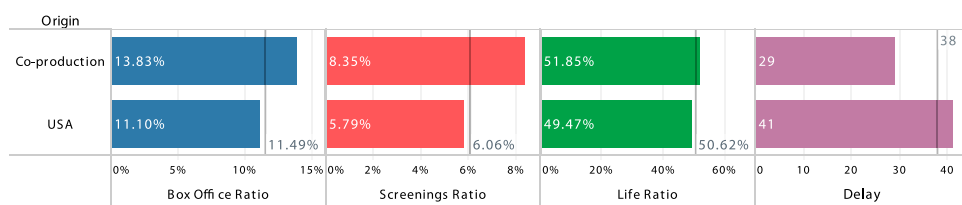


Figure 1. Median box office ratio, screenings ratio, life ratio and delay per origin.

Table 4. Summary results for differences in box office ratio, life ratio and delay among 28 genre pairs.

Genre	Action/ adventure	Animation	Comedy	Documentary	Drama	Horror	Music/ event	Suspense/ thriller
Action/ adventure	X							
Animation	– > Life*	X						
Comedy	> Box office* – < Life*	–	X					
Documentary	> Box office* < Life** > Delay**	– < Life** > Delay**	– < Life*	X				
Drama	> Box office** – > Delay**	– < Life* > Delay**	– < Life*	– > Life*	X			
Horror	– – –	– – –	– – –	– – < Delay**	– – < Delay*	X		
Music/ event	> Box office** < Life*	– < Life*	– < Life*	– < Delay** < Delay*	– < Life*	> Box office*	X	
Suspense/ thriller	– – > Delay*	– – –	– – –	– > Life** –	– > Life*	– – –	– > Life*	X

*/** denotes the highest significance at 5/1%. >/< denotes which genre typically had higher/lower values for that measure, reading from the left.

do when compared to other genres. Second, animations have statistically significantly longer lives than most of the genres (except from horror and suspense/thriller films), while documentaries and music/event movies have statistically significantly shorter lives than most of the genres (except from horror films) in Australia relative to the States. Accordingly, Australian exhibitors favour animations over other genres significantly more, while documentaries and music/event films significantly less in terms of duration on screen than American exhibitors do. Finally, documentaries and dramas reach Australia statistically significantly later than most of the genres (except suspense/thriller films). Consequently, distributors position dramas and documentaries in terms of release timing differently from other genres.

Further non-parametric testing was also required to detect which specific distributors (out of three possible pairs) demonstrated significant differences in three market measures. The results indicated statistically significant variations in single pairs for box office ratio, life ratio and delay. Table 5 summarizes those test results identifying which market variable had statistically significant differences per each distributor pair

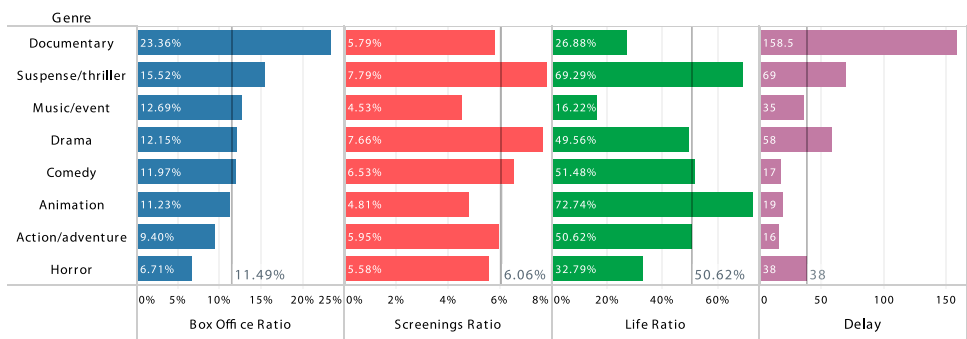


Figure 2. Median box office ratio, screenings ratio, life ratio and delay per genre.

Table 5. Summary results for differences in box office ratio, life ratio and delay among three distributor pairs.

Distributor	Major	Mini-Major	Independent
Major	X		
Mni-Major	-	X	
Independent	-	> Box office* < Life** > Delay**	X

*/** denotes the highest significance at 5/1%. >/< denotes which distributor typically had higher/lower values for that measure, reading from the left.

and at what significance level, while Figure 3 illustrates them. Again, see Table 2 for the typical values per distributor. First, independently distributed films earn statistically significantly more than those distributed by mini-majors in Australia relative to the US. Accordingly, Australian audiences favour independently distributed movies significantly more than American audiences do when compared to those distributed by mini-majors. Second, independently distributed pictures live statistically significantly shorter than those distributed by majors in Australia relative to the States. This means that Australian exhibitors favour movies distributed by majors

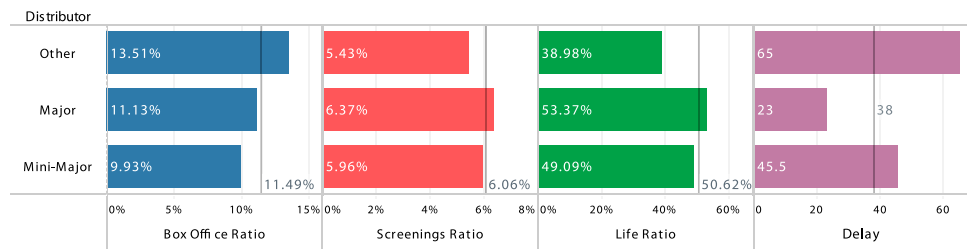


Figure 3. Median box office ratio, screenings ratio, life ratio and delay per distributor.

significantly more than independently distributed productions in terms of allocating duration on screen than American exhibitors do. Finally, independently distributed films reach Australia statistically significantly later than those distributed by majors. Consequently, independent distributors position their movies differently than major distributors do in terms of release timing.

Discussion and conclusion

In this article we aimed to compare and contrast Australia and the US as markets for American movies. We took the '10% rule' as a starting point to draw inter-country comparisons. Constructing our sample from the Kinomatics database and expanding it with information from Rentrak and IMDb, we used four market measures to evaluate the performance of 231 American releases from 2013 in both regions: box office, screenings, life and delay. We also investigated differences between Australia and the US in preference towards genre, distribution company and production origin. Non-parametric testing revealed that both earnings and screenings of American films in Australia do not follow the '10% rule.' This goes in line with the findings of Walls and McKenzie (2012) that box office success in the US does not necessarily lead to high earnings abroad, especially when viewed in light of our observation that box office ratio had by far the most variation in values. Further analysis showed that Australian and American audiences differ as Australians favour action-adventure movies less than other genres and films distributed by mini-majors less than independently distributed pictures. This goes in line with the arguments of Bowles et al. (2007) that the cultural tastes and experiences of Australian audiences differ from those of Americans. In addition, Australian and American exhibitors also differ in terms of allocating screenings and duration on screen as Australians favour co-productions more than American films in terms of screenings while allocating longer runs for animations and shorter runs for documentaries and music/event films when compared to other genres. Moreover, Australia gave longer runs to movies distributed by majors when compared to independently distributed films. This would seem to support the observation that Australian exhibitors have historically worked to accommodate American movies to suit local preferences (Bowles et al. 2007). Finally, all Australian distributors release dramas and documentaries later than other genres while independent distributors also delay the release of all their productions more than majors do. This finding expands on earlier, 'small data' studies about release lags presented by Verhoeven (2010).

This study makes an evidence-based contribution to wider debates about the impact of 'Americanisation' on Australian culture, especially as it is experienced through popular cultural forms such as the cinema. The belief that Australia is a proportional, perfectly formed microcosm of American cultural preferences is shown in our analysis to be largely unsubstantiated. Further research however would help us understand if this is exceptional or not. It would be interesting for example, to investigate the performance of American films in other foreign markets as well as study the relative performance of films from other places of origin (such as the UK) in Australia. A longer time span as well as new explanatory variables such as budget, advertising spending, and so on are also expected to yield new insights into the uptake of international culture by Australian audiences.

Notes

1. For further information on the Kinomatics Global Showtime Dataset see: <http://kinomatics.com/about/data-and-technology/>
2. The exchange rate between Australia and the US has fallen by 27 cents throughout the period from 1 \$A = 1.04 \$US in December, 2012 to 1 \$A = 0.77 \$US in May, 2015 (Reserve Bank of Australia 2016).
3. We cross-checked the values of all extreme outliers with other sources such as Box Office Mojo and The Numbers (<http://www.the-numbers.com/>) and concluded that our information was correct. As they were not measurement errors, we could not justify excluding the outliers from the data. In addition, the removal would have greatly reduced the sample size.
4. A less conventional genre category 'music/event' was established for live concerts, performances and operas. *The Metropolitan Opera* performances that make up 69% of this category belong to a slightly different event cinema market with singular live HD transmissions at a certain time and higher priced admission.
5. No sample films were distributed by STXfilms or A24.

Disclosure statement

No potential conflict of interest was reported by the authors.

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