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## An empirical study of trade effect on culture

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#### ABSTRACT

Given the global dominance of American movies, they play a significant role in presenting U.S. ideology and culture to the world, thus raising concern of undermining domestic culture. This paper investigates whether trade shapes culture by studying the impact of imported American movies on Chinese cultural values measured by Hofstede Index. The results show that demand for American movies has a positive and statistically significant effect on individualism, power distance, long-term orientation and indulgence. While many studies show evidence that cultural similarity stimulates trade, there is almost no empirical evidence on how international trade affects culture. This study contributes to the literatures related to the relationship between culture and trade by filling this void. The findings of this study also have strong policy implications by bringing empirical evidence to the debate on free trade of cultural products.

#### **ARTICLE HISTORY**

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**KEYWORDS** International trade; culture; movie industry

## 1. Introduction

Movies reflect the values of the cultures that produce them. Sometimes movies' influence is trivial, as in the case of changing fashion trends. Nevertheless, sometimes the impact of movie can be profound by shaping beliefs and ideologies. In spite of rising costs of production and foreign protectionism, the U.S. movie industry has been winning the global dominance due to American movie stars, economies of scale and popularity of English speech (Giannetti & Eyman, 2010; Marvasti & Canterbery, 2005). According to Theatrical and Home Entertainment Market Environment (THEME) report 2021 published by the Movie Association of America (MPAA), the share of U.S. movies in global box office in 2021 was 79%, much higher than the U.S. share of world GDP published by the World Bank (approximately 23.93%). The U.S. movies are regarded as a powerful tool to advertise American values (Bennett, 2012) and an essential element of the U.S. soft power (Nye, 2004). Movie producer Walter Wanger referred to Hollywood movies as "120,000 American ambassadors" (Moody, 2017; Swann,

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1991). Although movie directors and screenwriters may not intentionally incorporate the U.S. values in a movie plot, yet the U.S. government (e.g., Pentagon and the CIA) is actively trying to involve in the production of movies by offering free expensive equipment like tanks, battleships, and fighter planes (Jenkins, 2016; Robb, 2011). This suggests a significant role of Hollywood in presenting U.S. ideology and culture to the world. Movies are the most pervasive American cultural form which might undermine domestic culture, and thus are considered as a symbol of American cultural hegemony.

Nevertheless, the view that foreign cultural goods like movies can change cultural values seems to be based on casual observation. In this paper, we aim to investigate whether trade shapes culture by empirically testing the impact of imported American movies on Chinese cultural values. We work with a dataset on the Chinese movie market that records box office and demand at the movie-city-month level. As we do not have a direct measurement of culture values at the city level, we measure culture values indirectly using the intensity of internet search for the key words of a certain cultural dimension.

We explore the variation in viewership of the U.S. movies across cities over time to identify the effect on cultural values. The omitted variable bias and reverse causality pose threats to identification. The positive association between the U.S. movies and changes in culture values may be caused by some unobserved factors like preference for exoticism. It is possible that people in some regions are more susceptible to foreign cultures and prefer to watch more U.S. movies. There is also reverse causal relationship between demand for the U.S. movies and changes in culture values. It is likely that changes in culture values lead to more viewership of the U.S. movies. To resolve the endogeneity problem, we apply the instrumental variable (IV) approach using the quality of air as an instrumental variable. We argue that this is valid instrumental variable because the air condition affects the people's decision of going to movie theaters (He et al., 2022) and does not affect national cultural values directly.

Our main finding is that the U.S. movies have a positive and statistically significant effect on the Chinese cultural values. We perform several checks on the robustness of our results by using alternative measurements of cultural values and demand for U.S. movies. All the results remain qualitatively unchanged compared with the base-line regression results. Furthermore, we perform three placebo tests. We find no significant effects of the U.S. movies on the cultural dimensions with smaller differences between China and the U.S. We also show that neither domestic movies nor imported movies from countries with similar cultures to that of China affect the Chinese cultural values.

In addition, we find heterogenous effects of the U.S. movies across movie types and genres. Specifically, the Sino-U.S. coproduction movies, which do not carry as strong American values as the typical U.S. movies, have a smaller impact on the Chinese cultural values. Action movies, which embed more American elements than comedy movies, have a stronger effect on the Chinese cultural values than comedies. Besides, we find evidence that deterioration of Sino-U.S. relations affects the cultural penetration of the U.S. movies.

The rest of the paper is organized as follows. The next section conducts the literature reviews. Section 3 describes the industry background and the data used in this paper. The following section introduces the empirical model and presents the empirical results. The last section concludes.

## 2. The literature review

There are quite a few studies building theoretical models on the relationships between globalization and cultural diversity (Bala & Van Long, 2005; Belloc & Bowles, 2009, 2013; Francois & Van Ypersele, 2002; Gabszewicz et al., 2011; Janeba, 2007; Kónya, 2006; Olivier et al., 2008; Ramezzana, 2003; Rauch & Trindade, 2009; Suranovic & Winthrop, 2005). For instance, Bala and Van Long (2005) show that a large country's preferences can change the preferences of its smaller trading partners. Olivier et al. (2008) find that trade in cultural goods can lead each country to move towards different monocultures.

While many empirical studies show that cultural similarity stimulates trade (e.g., Balogh & Jámbor, 2018; DiRienzo & Das, 2020; Guiso et al., 2009; Kristjánsdóttir et al., 2017; Takara, 2018), there are very limited empirical evidences on how international trade affects culture. Using a long panel of French birth registries, Disdier et al. (2010) find foreign media have a positive but limited influence on naming patterns in France. Their simulation of name choice shows that, absent foreign media, fewer than 5% of French babies would have been named differently. Using a unique data on global popular music, Ferreira and Waldfogel (2013) find a substantial bias towards domestic music. Our research fills the gap in the literature on the international trade and culture by examining whether imported American movies change Chinese cultural values.

Our research also enriches the literature on movie and trade. As movie is a typical cultural product, a large number of studies examine how cultural discount affects demand for imported movies and the corresponding adjustments in the production and distribution strategies of the movie studios (Akdeniz & Talay, 2013; Alaveras et al., 2018; Broekhuizen et al., 2011; Budeva, 2010; Feng & Ravi, 2016; Fu & Sim, 2010; Hellmanzik & Schmitz, 2015; Kim & Jensen, 2014; Mayer et al., 2009; Moon & Song, 2015; Moon et al., 2016; Özmen, 2018; Shin & McKenzie, 2019; S. L. Wang et al., 2020). But there is almost no research on how movie imports affect cultural values, which is what we explore in this study. A closely related issue to this paper is trade policies in the movie industry and our research contributes to the discussion of trade liberalization in cultural goods (Marvasti, 1994, 2000; Meloni et al., 2015; Parc & Messerlin, 2018). Perceptions of American dominance in movie trade motivate active protectionism against movie, a typical cultural product. In practice, a lot of countries have used various policy tools in the movie industry, whose impacts on trade of movies have been explored by many studies. Marvasti (1994) examines the impact of quota, government subsidies and intellectual property protection on movie exports and find that trade barriers limit imports and lead to higher net exports. Marvasti (2000) also confirms that tariffs are effective trade barriers. By conducting counterfactual experiments on the trade liberalization effect, Tang et al. (2018) obtains the similar results. Tang et al. (2021) investigates the welfare effect of import quota in the Chinese movie industry. They show that removal of import quota has a large negative effect on the domestic movie producer. There are also studies that obtain the opposite conclusions on the effects of the trade protection policies. Meloni et al. (2015) examine the impact of public subsidies in the Italian movie industry and find that an overall negative influence on movie box office and movie quality except for some genres (dramas and thrillers). Parc and Messerlin (2018) explore the effectiveness of several trade-related policies to promote the movie industry. They conclude that regulatory barriers like import or screen quotas and tax relief schemes

should be avoided. If we can find evidence of significant influence of trade on culture, then our research results lend support to the use of trade policy in this area.

Figure 1 shows the annual cumulative distribution of publications on cultural trade (including trade in movies) from 1983 to 2023. Overall, the number of publications related to cultural trade has been increasing, which reflects the consistent research interest in this field.

As shown in Table 1, most of researches in the field of cultural trade are conducted in the United States, which is reflected by its large number of publications, high H-index (H-index = 10) and high average citation count (AC/P = 8.09). Besides, researchers from China and England have also contributed a lot to this field, especially in China, which may be due to China's fast growth in the movie industry

Finally, we complement the literature on a general relationship between ideology and economy. The earliest work on this relationship is Marx (1859), proposing that the "base"



**Figure 1.** The number of publications on cultural trade and movie trade. The figure is obtained via CiteSpace based on the Web of Science Core Collection, which is the core part of the Web of Science (WoS) database including a large number of high-quality academic journals, conference paper and other literature sources. It is one of the most commonly used databases for academic research and literature analysis.

Rank	Countries/Regions	Counts	H-index	AC/P	Begin Year
1	USA	56	10	8.09	1996
2	CHINA	40	4	1.33	2010
3	ENGLAND	22	4	4.14	2003
4	CANADA	16	4	14.81	1999
5	AUSTRALIA	13	5	3.98	1998

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<sup>1</sup>The H-index is widely used to evaluate the quality and quantity of research in a country, of a journal or of an institution. The average citation per publication (AC/P) partially explains the quality of the literature..

(economy) determines "superstructure" (ideologies). There is limited research along this line. DiTella et al. (2007) investigate how land ownership determines market beliefs. By exploiting a natural experiment inducing a property rights (squatter settlement) allocation exogenous to the characteristics of the squatters in the outskirts of Buenos Aires, DiTella et al. (2007) find squatters who end up with legal titles are more in favor a free market. Alesina et al. (2013) examine how traditional agricultural practices affect gender norms and conclude that the descendants of societies that traditionally practiced plough agriculture today have less equal gender norms. Lan and Li (2015) build an economic framework for studying how economic openness affects nationalism. By taking advantage of a regional variation in nationalism within a country, they show that all else being equal, increasing a region's foreign trade reduces its economic interests in its domestic market and thus weakens its nationalism.

## 3. Data

In this section, we describe data used in this study. There are four datasets as follows.

First, we obtain movie data from multiple sources. Data on movie box office are from EntGroup, a leading Chinese consultancy in the media and entertainment industry.<sup>2</sup> For each movie, we have monthly movie admission and box offices. Data on movie characteristics are obtained from the Chinese website *Douban Movie* (https://movie.douban.com), which provides detailed information on all the Chinese and foreign movies released in mainland China, including genre, director, actors, language, release date and country of origin.

We measure culture values based on Hofstede's Cultural Dimensions theory developed by Geert Hofstede in 1980. Hofstede's model is one of the most widely used frameworks to measure and compare different national cultures and to assess the impact of culture differences on business operations (Broekhuizen et al., 2011; Budeva, 2010; Feng & Ravi, 2016; Fu & Sim, 2010; X. Wang et al., 2021).<sup>3</sup> Specifically, this theory identifies six indicators defining a culture: power distance, uncertainty avoidance, individualism, masculinity, long-term orientation, and indulgence. We compare the cultural values of China and the U.S. from these six dimensions. As show in Table 2, the Chinese and U.S. cultures differ significantly in individualism, power distance, long-term orientation and indulgence. Therefore, we quantify the changes of Chinese cultural values based on these four cultural dimensions.

Cultural Dimension	China	U.S.
Individualism	20	91
Power Distance	80	40
Indulgence	24	68
Long-term Orientation	87	26
Uncertainty Avoidance	30	46
Masculinity	66	62

 Table 2. The comparison of cultural values of

 China and the U.S.

<sup>2</sup>EntGroup collects box office data from the National Movie Ticketing Integrated Information Management System (NFTIIMS), a digital data collection system implemented by the State Administration of Radio, Movie and Television (SARFT). <sup>3</sup>https://www.hofstede-insights.com/ We do not have a direct measurement of culture values at the city level due to lack of data. Instead, we take an indirect approach by drawing on the intensity of internet search for the key words of a certain cultural dimension. Specifically, we use the Baidu index, which showcases the popularity of keywords and what is trending on Baidu, the largest Chinese-language search engine in China (https://index.baidu.com/). As the Chinese counterpart of Google in the United States, Baidu's market share is estimated to be about 65% in China as of January 2023 (as shown in Figure 2). By studying the keyword search trends on the Baidu index, researchers can gain insight into the interests and attitudes of internet users. There is a growing number of studies that use the Baidu index for a variety of research purposes (Fan et al., 2022; Kearney & Levine, 2015; Madestam et al., 2013; Qin & Zhu, 2018; Stephens-Davidowitz, 2014). For example, Qin and Zhu (2018) use the Baidu index for "emigration" to measure people' intention to emigrate.

The Baidu index allows us to retrieve information at a weekly frequency on the volume of search queries for a certain keyword in a particular location. The specific formula Baidu adopts to transform search volume into an index is not available. The only official explanation is that the Baidu index provides a weighted sum of the search volume on a key word in a given period. However, some studies (Qin & Zhu, 2018) have verified that the search index is very likely to be linearly correlated with the underlying search volume of a key word. For instance, the value of the Baidu index is positively correlated with people's search volume on the key word "equality" in a city in a given period of time, and therefore, it captures the contemporaneous aggregate interests on equality, implying a change in their attitudes toward power distance in a city during that given period of time.

Most American movies emphasize individual achievements, and characters in American movies are often independent and confident. Correspondingly, the keywords we use for individualism include "independence" and "self-orientation". Another popular theme in American movies is fighting for equality, rejecting authority or defending



**Figure 2.** The market share of search engines in China in 2023. Source: https://www.statista.com/statistics/253340/market-share-of-search-engines-in-chinap ageviews/

individual rights. Therefore, the keywords we use for power distance are "equal treatment" and "equality". American movies also reflect the fact that Americans focus more on the present than the future. The corresponding keywords used for long term orientation are "life is short" and "living for the moment". Finally, many American movies promote ideas like enjoying life, seeking work and life balance, pursuing for happiness and pleasure. In contrast, the traditional Chinese culture regards bearing hardships and standing hard work as a virtue. Therefore, we use "hedonism" and "enjoying life" as keywords for indulgence. Specifically, the key words for each cultural dimension are reported in Table 3.

We scrape the Baidu index for these keywords by both time and city. Different values of the Baidu index across cities over time reflect changes in search intensities in these places at different times. In the baseline regression, we take the average of Baidu indexes of all the keywords for a cultural dimension to measure that cultural dimension. Figure 3 plots the Baidu index of the six cultural dimensions from 2011 to 2021. Overall, the Baidu indexes of all the cultural value dimensions have been increasing overtime, suggesting changes in these cultural values during this time period.

The quality of air is measured by the PM2.5 indicator. We collect a comprehensive dataset of PM2.5 from the National Real-Time Urban Air Quality Release Platform managed by the Chinese Ministry of Environmental Protection. This online platform publishes real-time air pollutant concentrations



Table 3. The key words for cultural dimension.

**Figure 3.** The baidu indexes for the six cultural values dimensions (2011–2021). Source: https://index.baidu.com

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for all national controlled monitoring sites. A new air quality monitoring system was established in 2013, which is able to collect real time data without human intervention. This new system has significantly improved the reliability of data on air quality (Greenstone et al., 2022). We collected the data on PM2.5 from 1,497 separate air monitoring stations, covering 275 prefecture-level cities in most of China's geographical areas. We aggregate the hourly data for each monitoring station to get the monthly data on air pollution.

Finally, there are multiple sources for the prefecture-level city data. The city level socioeconomic variables (GDP and urbanization rates) are from the China Urban Statistics Yearbooks (2012 to 2018), provincial statistic yearbooks and regional economic yearbooks. The data on the number of movie theaters in each city are from the annual report of China Movie Distribution and Exhibition Association.

Covid-19 that broke out in 2019 has done a great damage to the movie industry, which has been in doldrums since then. Therefore, we focus on the pre-Covid era and our sample in this study is from 2012 to 2018. After combining all the datasets, our final sample for the IV regression has 7400 observations, containing 290 cities and 4090 movies. Each unit of observation is at the month-city level.

Table 4 reports the summary statistics for the major variables. As shown in the table, the average Baidu indexes for individualism, power distance, long-term orientation and indulgence are 132.55, 74.38, 162.26 and 56.04, respectively. The mean of the logarithm of per capita U.S. movie admission is 5.11. On average, the PM2.5 concentrations during the sample period is  $53.57 \mu g/m3$ . Figure 4 shows that the box offices of both Chinese movies and imported movies have maintained a steady growth until 2019 when COVID-19 broke out. The share of imported movies remains above 35% before 2020 on average. Figure 5 shows the box offices of the U.S. movies in the Chinese market. Even though the box offices of the U.S. movies have declined significantly, their share in the total Chinese box offices and in the imported movies' box offices are still very high.

## 4. The empirical strategy and the empirical results

#### 4.1. The empirical strategy

In this section, we specify the econometric model and our empirical strategy to test the following hypotheses:

Variable	Ν	Mean	Standard deviation	Max	Min
PM2.5	7400	53.57	29.99	250.31	5.92
Individualism	7400	132.55	151.98	797.00	0.00
Power Distance	7400	74.38	102.49	726.00	0.00
Long-term Orientation	7400	162.26	161.89	882.00	0.00
Indulgence	7400	56.04	102.66	765.00	0.00
Uncertainty Avoidance	7400	261.96	209.09	1503.00	0.00
Masculinity	7400	238.94	204.43	1150.00	0.00
Box Office per capita (U.S.)	7400	8.59	1.45	12.77	1.64
Admission per capita (U.S.)	7400	5.11	1.37	9.04	0.12
Box Office (U.S.)	7400	14.61	1.64	19.33	7.53
Admission (U.S.)	7400	11.12	1.59	15.53	4.04
GDP per capita	7400	11.05	0.50	13.06	9.38
Urbanization	7400	0.43	0.26	1.00	0.00
Theater	7400	29.31	32.23	281.00	1.00
ineater	/400	29.31	32.23	281.00	1.00

Table 4. Summary statistics.



Figure 4. Box offices of domestic and imported movies the Chinese market (2012 to 2020). Source: EntGroup



Figure 5. Box offices of U.S. Movies in the Chinese Market (2012–2022). Source: EntGroup

Imported cultural products or services like movies may change the domestic H1: cultural values.

Products made by international coproductions have a smaller effect on the domes-H2: tic cultural values than the imported products.

Imported cultural products or services with more salient foreign cultural features H3: have a larger effect on the domestic cultural values.

H4: The political relationship between the importing country and the exporting country may impede the transmission of cultural values of the imported products or services.

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The regression model is specified as below.

$$y_{it} = \beta_0 + \beta_1 Movie_{it} + \beta_2 Control_{it} + time_t + city_i + \varepsilon_{it}$$
(1)

In Equation (1),  $y_{it}$  is approximation of culture value in city *i* and month *t* as explained in Section 3. The key variable of interest *Movie<sub>it</sub>* is per capita demand for movie in city *i* and month *t*. *Control<sub>it</sub>* are control variables that affect the cultural values, including real GDP per capita, which captures the household income effect, the number of movie theaters, which controls the supply factors and urbanization rate, which affects the acceptance of foreign culture.<sup>4</sup> *City<sub>i</sub>* is the city fixed effect, controlling for all timeinvariant city specific factors and *time<sub>t</sub>* is the monthly fixed effect, controlling for the monthly shocks (e.g., monthly seasonality) common to all cities. And  $\varepsilon_{it}$  is the error term. To account for possible serial correlation within a city, we cluster the standard errors at the city level.

Using the terms from Lundberg et al. (2021), we define the estimand as follows. The unit-specific quantity is the search intensity for keywords reflecting changes of a certain cultural dimension in city i at time t if movie demand for American movies in city i at time t took a particular value. The target population is all the cities in China. There are unobserved heterogeneities that affect both national cultural values and demand for movie. For instance, people in some region may be more susceptible to foreign cultures and like watching more U.S. movies. Reverse causality also exists. It is possible that higher demand for the U.S. movies is a result of change in culture values. Therefore, the ordinary least square (OLS) estimation would result in biased estimates. To resolve this endogeneity problem, we use the quality of air as an instrumental variable for movie demand. Some movie studies have used this instrumental variable as well (Gilchrist & Sands, 2016; Moretti, 2011; Xi et al., 2023). We argue that this is a valid instrumental variable for it meets the following two requirements. In general, poor air condition reduces the likelihood of people going to movie theaters (He et al., 2022). The higher the environmental pollution index, the more likely people are to stay at home, thereby reducing the number of viewers of American movies at theaters. Therefore, this instrumental variable is correlated with movie demand. Meanwhile, air pollution is exogenous as it does not affect directly the national cultural values. We can interpret the coefficient of the IV estimator as the change in cultural values due to changes in the number of American movie viewers caused by the environmental pollution.

We further verify our identification strategy by performing some statistical tests. As shown in the first column of Table 5, The first-stage results of the instrumental variable regression indicate a significantly negative correlation between demand for the U.S. movies and the instrumental variable. In addition, the F-statistic of for the first-stage regression (258.598) is much larger than 10, confirming that it is unlikely to be a weak instrumental variable (Baum et al., 2007; Staiger & Stock, 1997).

<sup>&</sup>lt;sup>4</sup>People in the urbanized regions might have more tolerant attitudes toward foreign cultures due to greater exposures to the outside world.

#### 4.2. The estimation results

The IV estimation results are presented in Table 5. Demand for movie is measured by the logarithm of U.S. movie admission per capita. The dependent variables of Column 2-5 of Table 5 correspond to individualism, power distance, long-term orientation and indulgence, respectively. As we can see, consistent with expectation, the coefficients of U.S. movie demand are positive and statistically significant across all these four columns. Specifically, the U.S. movies have the greatest impact on power distance, followed by long-term orientation, and the least impact on individualism. For example, an increase in per capita demand by one standard deviation in the sample would be associated with an increase in increase in search index for individualism by 11.459 percent according to Column 2. Except for a difference in the size of the trade effect, this finding is basically consistent with the Disdier et al. (2010), which shows a positive influence of foreign media on the naming patterns in France. Our results are somewhat different to that of Ferreira and Waldfogel (2013), which do not find cultural domination by large economies, particularly the US, in music industries of small economies. However, as Ferreira and Waldfogel (2013) point out, their conclusion should not be extrapolated for other cultural goods, such as movies, given the much higher fixed production costs and the unique distribution channels of movies.

For comparison purpose, we also run report the OLS regression. The results are reported in Table A1. The results remain qualitatively similar while the magnitudes of coefficients in the IV regression are generally larger than those in the OLS regression. This suggests the importance of correcting the endogeneity problem.

We now test Hypothesis 2. In the context of the Chinese movie market, we compare the effects of coproduced movies and imported movies on the Chinese cultural values. To avoid competing for the limited number of movie quotas and other regulatory restrictions on foreign movies, increasingly more American movie producers choose to

	First stage			IV	
	Admission per capita ( U.S.)	Individualism	Power Distance	Long-term Orientation	Indulgence
IV	-0.006*** (0.000)				
Admission per capita (U.S.)		12.712*** (3.430)	50.790*** (6.099)	35.213*** (5.111)	16.150*** (4.556)
GDP per capita	0.209*** (0.063)	-23.343*** (6.788)	-16.091*** (6.117)	-24.518*** (7.069)	-6.232 (9.560)
Urbanization	-0.100 (0.202)	-22.744 (28.365)	45.027* (26.839)	-18.273 (26.918)	-9.595 (45.321)
Theater	-0.004*** (0.001)	0.687*** (0.108)	1.464*** (0.154)	0.853*** (0.116)	0.431* (0.249)
CONSTANT	5.729*** (0.795)	718.922*** (92.110)	16.743 (95.687)	618.149*** (100.542)	437.597*** (140.160)
City FE	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes
Observations	7400	7400	7400	7400	7400
R-squared	0.281	0.914	0.729	0.882	0.738
F statistics	258.598				

#### Table 5. The baseline IV results.

cooperate with the Chinese counterparts.<sup>5</sup> China Movie Coproduction Corporation (CFCC), which administers activities related to Sino-foreign movie coproduction, requires that the total cast of coproduction movies must include no less than one-third Chinese actors.<sup>6</sup> In addition, the Sino-U.S. coproduction movies usually contain some Chinese elements.<sup>7</sup> As a result, these movies do not carry as strong American values as the typical U.S. movies, and correspondently we expect that the Sino-US coproduction movies have a smaller impact on cultural values. We run two regressions using separate samples of coproduction movies and non-coproduction movies. The results, shown in Table 6, are in line with expectations. Compared with those of coproduction movies, the coefficients of non-coproduction movies are larger for all the four cultural dimensions, suggesting a greater impact on cultural values.

To test Hypothesis 3, we compare the impacts of action movies and comedy movies on the Chinese cultural values. Compared with comedies, there are more elements of individualism, heroism and masculinity in action movies, which further enhances the "Americanness" in these movies. Overall, it is easier for the Chinese audience to associate with the United States. In addition, due to the universality of action, American action movies are usually more popular in China than comedies.<sup>8</sup> Therefore, we expect that action movies have a stronger impact on national cultural values than comedies. We run regressions for action movies and comedies separately, the results of which are shown in Table 7. As we can see, for the four cultural dimensions, the coefficients of action movie are positive and significant at the level of 1%. In contrast, across all the columns, comedies have significantly negative coefficients.

Finally, to test Hypothesis 4, we compare the effects of the US movies on cultural values during the pre-China-U.S. trade war period and the post China-U.S. trade war period. The Sino-U.S. relationship has deteriorated since August, 2017, when the Trump administration started the trade war with China. The Chinese people regard the greatly increased U.S. tariffs on imports from China as a bullying tactic to protect U.S. interests, leading to rising anti-Americanism in China. Fan et al. (2022) find empirical evidence of trade-war-induced aversion towards the U.S. movies. Does deterioration of Sino-U.S. relations affect the cultural penetration of the U.S. movies? We investigate this issue by dividing the sample into two parts: the one before the Sino-U.S. trade friction and the one after. We run the regressions for the two subsamples separately. The results presented in Table 8 show that before the U.S.-China trade friction, the U.S. movies have stronger effects on all the four cultural dimensions, confirming that the China-U.S. trade friction impedes the transmission of the U.S. culture in China.

### 4.3. Robustness checks and placebo tests

We conduct several robustness checks. First, we measure cultural values in a different way by using the Baidu index for individual keyword rather than the average value. As shown in Table A2, the U.S. movies still have positive and significant effects in all the

<sup>&</sup>lt;sup>5</sup>Successful examples of coproduction movies include *Transformers: Age of Extinction* (\$1.1 billion box office), *Crouching Tiger, Hidden Dragon* (\$USD 128 million box office) and *Hero* (\$USD 53.71 million box office).

<sup>&</sup>lt;sup>6</sup>Specifically, the responsibilities of CFCC include assessment of coproduction applications, review of coproduction movies, assistance in negotiations of Sino-foreign movie coproduction agreements, and provision of any other relevant services.

<sup>&</sup>lt;sup>7</sup>Examples include The Great Wall, Godzilla (2014) and Transformers 4 (2014).

<sup>&</sup>lt;sup>8</sup>For instance, Lee (2006) shows empirical evidence that U.S. comedies are less popular in Hong Kong.

ence	Jon-co-production	22.269***	(6.410)	-7.291	(9.583)	-8.584	(45.394)	0.459*	(0.249)	400.633***	(142.045)	Yes	Yes	7400	0.714	182.911	y, July and August).
Indulg	Co-production N	10.109***	(3.086)	-3.677	(6.779)	-4.297	(46.152)	0.365	(0.256)	518.327***	(139.210)	Yes	Yes	7400	0.728	144.314	ıs (e.g., 2012 Februar
Orientation	Non-co-production	48.553***	(7.041)	-26.828***	(7.215)	-16.067	(27.747)	0.915***	(0.122)	537.554***	(106.174)	Yes	Yes	7400	0.850	182.911	fects for specific montl
Long-term	Co-production	22.040***	(3.773)	-18.948***	(7.043)	-6.720	(26.825)	0.709***	(0.104)	794.168***	(91.157)	Yes	Yes	7400	0.839	144.314	FE refers to fixed ef
r Distance	Non-co-production	70.032***	(9.327)	-19.422***	(6.816)	48.209*	(29.074)	1.552***	(0.167)	-99.505	(114.200)	Yes	Yes	7400	0.558	182.911	< 0.05, * <i>p</i> < 0.1. Month
Power	Co-production	31.790***	(3.393)	-8.056	(5.268)	61.690**	(26.302)	1.255***	(0.133)	270.625***	(72.776)	Yes	Yes	7400	0.543	144.314	*** <i>p</i> < 0.01, ** <i>p</i> <
idualism	Non-co-production	17.527***	(4.720)	-24.177***	(6.779)	-21.947	(28.530)	0.709***	(0.110)	689.828***	(94.459)	Yes	Yes	7400	0.909	182.911	shown in parentheses.
Indiv	Co-production	7.956***	(2.337)	-21.332***	(6.888)	-18.573	(28.310)	0.635***	(0.103)	782.462***	(88.102)	Yes	Yes	7400	0.905	144.314	rd errors by city are
		Admission per capita		GDP per capita		Urbanization		Theater		CONSTANT		City FE	Month FE	Observations	R-squared	F statistics	Robust clustered Standa

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I able 7. Action movies v	s. comeay movin	-C.2.						
	Individu	ualism	Power I	Distance	Long-term (	Orientation	Indul	ence
	Action	Comedy	Action	Comedy	Action	Comedy	Action	Comedy
Admission per capita	19.820***	-20.238***	79.194***	-80.863***	54.906***	-56.063***	25.182***	-25.713***
	(6.346)	(6.019)	(14.263)	(13.876)	(6.801)	(10.464)	(8.717)	(8.855)
GDP per capita	$-20.261^{***}$	-29.269***	-3.775	-39.770***	$-15.980^{*}$	-40.936***	-2.316	-13.762
	(7.456)	(6.782)	(2.790)	(12.590)	(8.771)	(8.908)	(9.871)	(10.478)
Urbanization	-15.664	-28.502	73.315***	22.017	1.339	-34.226	-0.600	-16.912
	(28.280)	(30.612)	(25.451)	(53.789)	(27.932)	(37.887)	(45.055)	(48.761)
Theater	0.532***	0.953***	0.845***	2.528***	0.424***	1.591***	0.234	0.770***
	(0.105)	(0.155)	(0.172)	(0.333)	(0.121)	(0.252)	(0.268)	(0.272)
CONSTANT	766.114***	856.272***	205.305*	565.538***	748.881***	998.632***	497.556***	612.104***
	(96.395)	(83.034)	(110.385)	(150.742)	(111.791)	(111.235)	(137.224)	(148.381)
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7400	7400	7400	7400	7400	7400	7400	7400
R-squared	0.883	0.899	-0.668	0.123	0.639	0.765	0.592	0.663
F statistics	46.544	44.426	46.544	44.426	46.544	44.426	46.544	44.426
Robust clustered Standard err	ors by city are show	vn in parentheses. ***	<sup>+</sup> <i>p</i> < 0.01, ** <i>p</i> < 0.0	15, * <i>p</i> < 0.1. Month FI	E refers to fixed effect	s for specific months	(e.g., 2012 February,	July and August).

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After Trade         Before Trade         After Trade         Before Trade         After Trade         Before Trade         After Trade         Before Trade         Friction         Friction		Individ	dualism	Power I	Distance	Long-term	Orientation	Indul	gence
Admission per capita ( U.S.)         14.310****         17.154***         7.256**         65.199***         38.514***         40.317***         -11.982***         2748           Admission per capita ( U.S.)         (3.519)         (4.344)         (3.184)         (8.293)         (4.399)         (6.685)         (3.123)         (5.43)           GDP per capita         -3.818         -28.120***         -7.614         -20.514***         2.772         -31.268***         3.895         -13.8           GDP per capita         (5.109)         (7.643)         (5.499)         (7.603)         (6.944)         (7.837)         (4069)         (11.00           Urbanization         11.114         -22.173         21.320         53.481         33.506         (3.768)         (5.476)         (16.024)         (3.556)         (3.138)         (5.913)         (6.913)         (4.1069)         (11.10)           Urbanization         11.114         -22.173         21.320         53.481         53.565         (3.138)         (5.913)         (5.913)         (5.9169)         (11.00           Urbanization         (18.120)         (16.024)         (3.3596)         (3.764)         (3.5682)         (3.138)         (5.915)           Theater         0.4366         (0.120)		After Trade Friction	Before Trade Friction						
GDP per capita $(3.519)$ $(4.344)$ $(3.184)$ $(3.518)$ $(3.124)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.436)$ $(3.134)$ $(3.512)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.123)$ $(3.132)$ $(3.356)$ $(3.110)$ $(3.5,79)$ $(3.110)$ Urbanization         11.1120 $(3.5,79)$ $(16.024)$ $(3.3.596)$ $(3.3.68)$ $(3.114)$ $9.118$ $-37.1$ Theater $4.346^{***}$ $0.579^{***}$ $4.514^{***}$ $1.480^{***}$ $(3.76)$ $(3.3.596)$ $(37.69)$ $(3.10)$ $(3.220)$ $(69.31)$ $(0.30)$ Theater $4.346^{***}$ $0.579^{***}$ $4.514^{***}$ $1.480^{****}$ $4.336^{****}$ $2.3207$ $(69.31)$ $(0.30)$ Theater $(0.3.36)$ $(0.120)$ $(0.120)$	Admission per capita (U.S.)	14.310***	17.154***	7.256**	65.199***	38.514***	40.317***	-11.982***	27.486***
Urbanization         (5.109)         (7.643)         (5.499)         (7.603)         (6.944)         (7.837)         (4.069)         (11.03)           Urbanization         11.114 $-22.173$ 21.320         53.481         53.608 $-18.141$ 9.118 $-37.7$ Urbanization         11.114 $-22.173$ 21.320         53.481         53.608 $-18.141$ 9.118 $-37.7$ Urbanization         (18.120)         (36.776)         (16.024)         (33.596)         (37.684)         (35.852)         (23.207)         (69.13)           Theater $4.346^{***}$ $0.579^{***}$ $4.514^{***}$ $1.480^{***}$ $6.477^{***}$ $0.788^{***}$ $0.01$ Theater $(0.436)$ $(0.120)$ $(0.705)$ $(0.133)$ $(0.526)$ $(0.138)$ $(0.520)$ $(0.138)$ $(0.687)$ $(0.139)$ CONSTANT $-227.281^{***}$ $755.401^{***}$ $1.46032$ $(14.474)$ $(135.390)$ $(114.903)$ $(195.5$ City Fe         Yes         Yes         Yes         Yes         Yes         Yes         Yes           Month FE	GDP per capita	(3.519) 3.818	(4.344) —28.120***	(3.184) -7.614	(8.293) —20.514***	(4.399) 2.772	(6.685) —31.268***	(3.123) 3.895	(1.44.1) —13.836
Urbanization         11.114 $-22.173$ $21.320$ $53.481$ $53.608$ $-18.141$ $9.118$ $-37.7$ Inbarization         (18.120)         (36.776)         (16.024)         (33.596)         (37.684)         (35.852)         (23.207)         (69.13)           Theater         (18.120)         (36.776)         (16.024)         (33.596)         (37.684)         (35.852)         (23.207)         (69.13)           Theater         (18.120)         (36.776)         (16.024)         (33.596)         (37.684)         (35.852)         (23.207)         (69.13)           CNSTANT $-227.281^{***}$ 0.559^{***} $-350.656$ (0.138)         (0.526)         (0.138)         (0.587)         (0.139)         (0.139)           CONSTANT $-227.281^{***}$ 755.401^{****} $-350.656^{***}$ $-350.656^{***}$ $220.50$ (135.390)         (114.403)         (159.5         (159.54)         (159.5           City F         Yes		(5.109)	(7.643)	(5.499)	(2.603)	(6.944)	(7.837)	(4.069)	(11.084)
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Urbanization	11.114	-22.173	21.320	53.481	53.608	-18.141	9.118	-37.773
Theater         4.346***         0.579***         4.514***         1.480***         6.477***         0.748***         4.836***         0.01           CNNSTANT         (0.436)         (0.120)         (0.705)         (0.183)         (0.526)         (0.138)         (0.687)         (0.305)           CONSTANT         -227.281**         755.401***         -320.805**         -46.032         -859.110***         6.72.386***         -350.065**         520.50.           CONSTANT         -227.281**         755.401***         -320.805***         -46.032         -859.110***         6.72.386****         -350.065***         520.50.           CONSTANT         -227.281**         755.401***         0.1200         (0.1200)         (0.1200)         (0.756)         (0.138)         (0.687)         (0.305)           CONSTANT         -227.281**         755.401***         -320.805***         -320.805         *46.032         -859.110***         6.72.386****         -350.064)         (159.55)           City FE         Yes         Yes         Yes         Yes         Yes         Yes         Yes         Yes           Month FE         Yes         Yes         Yes         Yes         Yes         Yes         Yes         Yes         Yes		(18.120)	(36.776)	(16.024)	(33.596)	(37.684)	(35.852)	(23.207)	(69.137)
(0.436)         (0.120)         (0.705)         (0.183)         (0.526)         (0.138)         (0.687)         (0.30           CONSTANT         -227.281**         755.401***         -320.805***         -46.032         -859.110***         672.386****         -350.065***         520.50           CONSTANT         -227.281**         755.401***         -320.805***         -46.032         -859.110***         672.386****         -350.065***         520.50           CONSTANT         (104.699)         (101.948)         (141.205)         (124.474)         (135.390)         (114.403)         (139.004)         (159.5           City FE         Yes         Yes<	Theater	4.346***	0.579***	4.514***	1.480***	6.477***	0.748***	4.836***	0.011
CONSTANT       -227.281**       755.401***       -320.805**       -46.032       -859.110***       672.386***       -350.065**       520.50         CONSTANT       (104.699)       (101.948)       (141.205)       (124.474)       (135.390)       (114.403)       (139.004)       (159.5         City FE       Yes       Yes       Yes       Yes       Yes       Yes       Yes       Yes         Month FE       Yes       Y		(0.436)	(0.120)	(0.705)	(0.183)	(0.526)	(0.138)	(0.687)	(0.303)
(104.69)         (101.948)         (141.205)         (124.474)         (135.390)         (114.403)         (139.004)         (159.5           City FE         Yes	CONSTANT	-227.281**	755.401***	-320.805**	-46.032	-859.110***	672.386***	-350.065**	520.504***
City FE         Yes		(104.699)	(101.948)	(141.205)	(124.474)	(135.390)	(114.403)	(139.004)	(159.584)
Month FE         Yes         Ye	City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations         1401         5999         1401         5999         1401         599         1401         599         1401         599         1401         599         1401         599         1401         599         780          780	Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared 0.971 0.905 0.956 0.639 0.958 0.967 0.953 0.70 F statistics 299.735 163.774 299.735 163.774 299.735 163.7 Empirical p-value 0.000*** 0.000*** 0.001***	Observations	1401	5999	1401	5999	1401	5999	1401	5999
F statistics 299.735 163.774 299.735 163.774 299.735 163.77 299.735 163.7 163.7 Empirical p-value 0.000*** 0.000*** 0.001***	R-squared	0.971	0.905	0.956	0.639	0.958	0.867	0.953	0.707
Empirical p-value 0.000*** 0.001*** 0.000*** 0.000***	F statistics	299.735	163.774	299.735	163.774	299.735	163.774	299.735	163.774
	Empirical p-value	0.0(		0.00	)2***	0.00	***0	0.00	1***

We test for the significance of the pre/post trade friction difference using the Fisher Permutation test (bootstrapped by 1000 times).

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columns. Secondly, instead of admission per capita, we use alternative measurements of demand for U.S. movies, including the U.S. movie box office per capita, share of U.S. movie in admission and box office. The results are shown in Table A3. It is clear that the results remain almost identical to the baseline regression results.

More recently, some studies modify the Hofstede model of national cultures. For instance, Minkov (2018) and Minkov and Kaasa (2022) propose a reconceptualization of the Hofstede model by reducing the six dimensions to just two: individualism-collectivism (IDV-COLL) and long-term orientation, renamed "flexibility-monumentalism" (FLX-MON). Accordingly, we regroup the keywords based on the Minkov's model and run the regression. The results presented in Table A4 show that the coefficients of these two cultural dimensions are also positive and significant.

Finally, we consider the possibility of temporal effects. Given the inertia of culture, it may take some time for the cultural effects of movies to take place. That is, the effects of movies on cultural values could manifest over time. We test this temporal effect by using box office lagged by 12 months. These results are reported in Table A5. As is shown, the coefficients are still positive and significant.

We also perform three placebo tests. In the analysis above, we test the impact of the U.S. movies on the four cultural dimensions that China and the U.S. differ in greatly. There are smaller differences of the two other cultural dimensions, that is, uncertainty avoidance and masculinity. Therefore, the first placebo test is to examine whether U.S. movies affect these two cultural dimensions as well. The results are shown in Table A6. The coefficients of demand for U.S. movies are statistically indifferent from zero in both columns, suggesting no impact on these two cultural dimensions and providing support for our previous results.

On top of the political and economic power of the U.S, another reason for the strong influence of U.S. movies on the Chinese cultural values is the large cultural differences between China and the U.S. The imported movies from other countries whose cultures are similar to that of China are expected to have a milder or no effect on the Chinese cultural values. The second placebo test is to see whether this hypothesis is true. We select the countries with the smallest cultural distances to China. We construct the cultural distance for each cultural dimension following Kogut and Singh (1988):  $Culdist_{kj} = \frac{(z_{kj}-z_{kch})^2}{var(z_k)}$ , where  $Z_{kj}$  is a cultural dimension k (such as power distance) of country j,  $Z_{kch}$  is the same cultural dimension k of China, and  $var(Z_k)$  is the variance of cultural dimension k. As reported in Table A7, the empirical results show that movies from countries with similar cultural values to China have either no significant effect (induividualism, power distance and long-term orientation) or negative effect (induigence) on cultural values, reinforcing our baseline results.

We perform a similar placebo test by checking the impact of domestic movies on cultural values. The empirical results in Table A8 show that the coefficients of domestic movies on all cultural dimensions are negative and significant at the 1% level. These results suggest that, in contrast to the U.S. movies, domestic movies reinforce the traditional Chinese cultural values. These results are in line with the reality. For instance, most domestic movies are reflective of collectivism and solidarity rather than individualism and heroism.

## 5. Conclusion

Movies play a significant role in presenting social and cultural values. The global dominance of American movies has maintained despite extensive protectionist efforts by other countries. The U.S. movies contribute to increased appreciation of the American values and life styles worldwide. The view of American movies influencing and shaping cultural values has motivated restrictions on trade of movies by many countries. Nevertheless, there are limited empirical evidence on how trade affects cultural diversity. This paper uses a dataset on the Chinese movie market to conduct an empirical investigation on whether imported American movies change Chinese cultural values. We use the quality of air as an instrument variable to resolve the endogeneity problem caused by the omitted variable bias and reverse causality. Our study offers evidence on the changing effect of U.S. movies on Chinese cultural values. The results are confirmed by several robustness checks and placebo tests. We also find heterogenous effects of the U.S. movies is impeded by deterioration of Sino-U.S. relations.

Our research fills the gap of the literatures on relationships between trade and culture by providing the first systematic evidence on how trade affects culture. Our study also contributes to the literature on a general relationship between ideology and economy. In addition, we add a fresh new angle- how movie imports affect cultural values- to the literature on movie and trade, which is abundant in studies on how cultural differences affect demand for imported movies. Our research results have strong policy implications for trade liberalization in cultural goods. As mentioned earlier, there are heated discussions of liberalization of trade in cultural goods and services due to their distinguishing attributes. In fact, liberalization of trade in cultural goods and services is one of the most contentious issues in WTO multilateral negotiations. Many countries such as France and Canada insist that free trade should not apply for cultural goods given some distinguishing attributes of cultural goods, as point outed by Mas-Colell (1999). The idea of "cultural exception" is endorsed by Article 8 of the United Nations Universal Declaration on Cultural Diversity: "cultural goods and services which, as vectors of identity, values and meaning, must not be treated as mere commodities or consumer goods."9 There are mixed findings in the literatures on the effect of trade policies. Evidence of significant influence of trade on domestic culture calls for caution in fully opening the domestic market of cultural products/services. Nevertheless, to what extent should the governments should use trade policies in trade of cultural goods to protect the local culture in the context of globalization is another research question which deserves further exploration.

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<sup>&</sup>lt;sup>9</sup>http://unesdoc.unesco.org/images/0012/001271/127160m.pdf, p. 12.

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## **Appendix**

## Table A1. The OLS results.

	(1)	(2)	(3)	(4)
	Individualism	Power Distance	Long-term Orientation	Indulgence
Admission per capita ( U.S.)	2.606***	2.968***	2.664***	5.273***
	(0.407)	(0.399)	(0.457)	(0.466)
GDP per capita	-2.191	-5.929**	3.919	4.895*
	(3.183)	(2.317)	(3.526)	(2.514)
Urbanization	6.215	27.184***	12.804	-4.548
	(7.939)	(9.175)	(10.190)	(11.098)
Theater	1.743***	1.948***	1.972***	0.915***
	(0.142)	(0.133)	(0.156)	(0.145)
CONSTANT	312.968***	150.575***	251.850***	181.834***
	(38.098)	(32.875)	(44.933)	(43.193)
City FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Observations	22145	22145	22145	22145
R-squared	0.238	0.316	0.321	0.204

Robust clustered standard errors by city are shown in parentheses. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Month FE refers to fixed effects for specific months (e.g., 2012 February, July and August).

## Table A2. The IV results for the individual keyword of cultural dimensions.

			Power			
	Indiv	idualism	Distance	Long-term C	rientation	Indulgence
	self-			live for the	life is too	
	orientation	independence	equality	moment	short	hedonism
Admission per capita (U.S.)	9.903***	15.520***	50.790***	21.919***	48.508***	16.150***
	(3.698)	(3.986)	(6.099)	(5.450)	(5.525)	(4.556)
GDP per capita	-26.779***	-19.907***	-16.091***	-15.467**	-33.570***	-6.232
	(6.876)	(7.083)	(6.117)	(7.185)	(7.854)	(9.560)
Urbanization	-17.236	-28.251	45.027*	-20.887	-15.659	-9.595
	(30.862)	(30.310)	(26.839)	(30.364)	(26.064)	(45.321)
Theater	0.721***	0.653***	1.464***	0.681***	1.026***	0.431*
	(0.118)	(0.104)	(0.154)	(0.117)	(0.175)	(0.249)
CONSTANT	781.694***	656.149***	16.743	716.078***	520.221***	437.597***
	(95.648)	(97.704)	(95.687)	(104.067)	(109.793)	(140.160)
City FE	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7400	7400	7400	7400	7400	7400
R-squared	0.908	0.898	0.729	0.895	0.828	0.738
F statistics	258.598	258.598	258.598	258.598	258.598	258.598

	ורז מזוווא מוררו	ומרוגר דורמ										
		Box Office	per capita			Admissio	n share			Box Offic	e share	
	Individualism	Power Distance	Long-term Orientation	Indulgence	Individualism	Power Distance	Long-term Orientation	Indulgence	Individualism	Power Distance	Long-term Orientation	Indulgence
Box Office per capita	11.776*** (3.186)	47.052*** (5.611)	32.621*** (4.739)	14.962*** (4.226)								
Admission share					27.659***	110.516***	76.621***	35.142***				
Box Office share					(7.432)	(12.249)	(10.6/3)	(9.934)	25.426***	101.591***	70.434***	32.304***
									(6.845)	(11.225)	(9.810)	(9.163)
GDP per capita	-23.144***	$-15.296^{**}$	-23.968***	-5.979	-21.256***	-7.752	-18.737**	-3.580	-21.164***	-7.385	-18.483**	-3.464
	(6.772)	(6.270)	(7.176)	(9.571)	(7.015)	(4.795)	(7.356)	(0:830)	(7.019)	(4.784)	(7.362)	(9.841)
Urbanization	-23.453	42.193	-20.238	-10.497	-22.638	45.448*	-17.981	-9.461	-22.617	45.532*	-17.923	-9.435
	(28.383)	(27.498)	(27.256)	(45.493)	(28.137)	(24.240)	(25.770)	(45.289)	(28.138)	(24.253)	(25.850)	(45.300)
Theater	0.695***	1.498***	0.877***	0.442*	0.644***	1.294***	0.735***	0.377	0.644***	1.293***	0.735***	0.377
	(0.109)	(0.155)	(0.120)	(0.249)	(0.104)	(0.137)	(0.106)	(0.255)	(0.104)	(0.135)	(0.106)	(0.255)
CONSTANT	677.450***	-148.963	503.265***	384.906***	776.814***	248.058***	778.521***	511.151***	775.994***	244.782***	776.250***	510.109***
	(96.482)	(108.805)	(110.346)	(145.259)	(90.036)	(70.250)	(94.953)	(139.517)	(90.124)	(70.106)	(95.115)	(139.699)
City FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7400	7400	7400	7400	7400	7400	7400	7400	7400	7400	7400	7400
R-squared	0.913	0.733	0.882	0.738	0.912	0.774	0.888	0.741	0.913	0.781	0.890	0.742
F statistics	257.405	257.405	257.405	257.405	518.587	518.587	518.587	518.587	515.863	515.863	515.863	515.863
Robust clustered Standard	l errors by city are	e shown in pa	arentheses. **	** <i>p</i> < 0.01, **	* <i>p</i> < 0.05, * <i>p</i> <	0.1. Month F	E refers to fix	ed effects for	specific months	(e.g., 2012 F	ebruary, July	and August).

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	Individualism-collectivism	Flexibility-monumentalism
Admission per capita (U.S.)	12.613***	19.868***
	(3.533)	(4.096)
GDP per capita	-13.176***	-16.677***
	(4.762)	(6.334)
Urbanization	2.957	-21.442
	(27.883)	(29.854)
Theater	0.840***	0.818***
	(0.102)	(0.111)
CONSTANT	678.839***	627.576***
	(70.283)	(91.706)
City FE	YES	YES
Month FE	YES	YES
Observations	7400	7400
R-squared	0.913	0.896

Robust clustered Standard errors by city are shown in parentheses. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Month FE refers to fixed effects for specific months (e.g., 2012 February, July and August).

	Individualism	Power Distance	Long-term Orientation	Indulgence
Admission per capita (lagged by 12 months)	7.568***	35.739***	13.110***	5.561*
	(2.332)	(5.247)	(2.976)	(3.254)
GDP per capita	-2.617	1.110	6.865	1.456
	(7.182)	(5.755)	(7.003)	(8.219)
Urbanization	13.067	21.061	-28.460	48.841*
	(24.282)	(25.363)	(33.061)	(27.875)
Theater	0.322***	1.107***	0.409***	0.994***
	(0.084)	(0.121)	(0.129)	(0.168)
CONSTANT	536.464***	14.901	469.940***	345.175***
	(93.594)	(94.525)	(92.688)	(116.985)
City FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Observations	5719	5719	5719	5719
R-squared	0.929	0.800	0.917	0.806
E statistics				

Table A5. The IV results for the temporal effects.

Robust clustered Standard errors by city are shown in parentheses. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Month FE refers to fixed effects for specific months (e.g., 2012 February, July and August).

Table Ao. The IV results of uncertainty avoidance and masculin
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	Uncertainty Avoidance	Masculinity
Admission per capita (U.S.)	4.839	-9.802
	(6.909)	(6.263)
GDP per capita	-7.341	-6.642
	(7.938)	(7.604)
Urbanization	-34.470	-3.368
	(42.381)	(42.631)
Theater	0.408*	0.402**
	(0.211)	(0.162)
CONSTANT	977.094***	950.790***
	(119.341)	(108.924)
City FE	Yes	Yes
Month FE	Yes	Yes
Observations	7400	7400
R-squared	0.870	0.893
F statistics	258.598	258.598

	Individualism	Power Distance	Long-term Orientation	Indulgence
Admission per capita (U.S.)	3.017	-12.092	-80.362	46.301
	(4.971)	(11.298)	(63.242)	(104.617)
GDP per capita	-28.400	-180.358***	-30.640*	-4.661
	(40.986)	(5.326)	(16.216)	(41.469)
Urbanization	86.386	450.827***	-9.916	98.545
	(54.086)	(4.217)	(33.292)	(111.029)
Theater	0.868***	2.423***	1.450**	1.305***
	(0.198)	(0.068)	(0.564)	(0.277)
CONSTANT	784.533	1669.679***	1018.200***	257.959
	(486.532)	(78.328)	(233.997)	(171.099)
City FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Observations	654	330	6554	1951
R-squared	0.960	0.986	0.644	0.687

Table A7. The IV results for countries with similar cultural values.

Robust clustered Standard errors by city are shown in parentheses. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1. Month FE refers to fixed effects for specific months (e.g., 2012 February, July and August).

	Individualism	Power Distance	Long-term Orientation	Indulgence
Admission per capita	-6.930***	-27.691***	-19.199***	-8.805***
	(1.866)	(3.087)	(2.668)	(2.514)
GDP per capita	-19.371***	-0.219	-13.514*	-1.185
	(7.286)	(4.838)	(7.871)	(10.145)
Urbanization	-22.553	45.787*	-17.746	-9.354
	(28.014)	(23.663)	(25.630)	(45.202)
Theater	0.607***	1.144***	0.632***	0.329
	(0.102)	(0.128)	(0.104)	(0.260)
CONSTANT	822.058***	428.834***	903.854***	568.634***
	(91.390)	(67.017)	(99.196)	(140.934)
City FE	Yes	Yes	Yes	Yes
Month FE	Yes	Yes	Yes	Yes
Observations	7400	7400	7400	7400
R-squared	0.910	0.766	0.886	0.738
F statistics	530.740	530.740	530.740	530.740

Table A8. The IV results for domestic movies.