

**Theatrical Feature Film Trade in the United States, Europe, and Japan since the
1950s: An Empirical Study of the Home Market Effect**

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Abstract

Theatrical Feature Film Trade in the United States, Europe, and Japan since the 1950s: An Empirical Study of the Home Market Effect

We test a home market model of international trade in media products using a movie industry database covering six major countries (the United States, Japan, Germany, Italy, France, and the U.K) over the 1950-2003 period. In support of the model, we find a consistently positive relationship between domestic theater box-office market shares and various measures of domestic movie spending or domestic movie attendance, and negative relationships between domestic movie spending and the market shares of imported American film products. Based on these results, we attribute declining domestic film production industries in Europe and Japan after about the 1970s, along with growing dominance of the world film market by the United States, to a relatively rapid growth of domestic consumer spending on movies in the U.S.

The apparent tendency for relatively large and wealthy countries, notably the United States, to dominate world trade in electronic media products has been widely attributed to a home market effect. That is, countries having relatively high domestic consumer spending on a given media product should tend to have relatively high exports of that product to other nations. In this paper, we test the home market theory in an attempt to explain long term shifts in the balance of theatrical feature film trade among the United States, Japan, and four European countries from 1950 to 2003. As we detail below, the early part of this period, generally from the 1950s to the 1970s, was one of relative prosperity and high theater box office market shares for domestic European and other film production industries outside the United States. The tables then turned; while film production in the United States steadily expanded until at least the early 1990s, indigenous production industries in Europe, Japan, and other countries declined, many of them becoming heavily dependent on state subsidy. In Western European countries, for example, domestically produced films as a whole were reported to earn 60% of the box office in 1968, but only 27% in 2003; the market share of American produced films in these countries rose over this same period from 35% to 72% (European Union, 1994; European Audiovisual Observatory, 2004). We seek to understand these broad trends over time using the home market model.

We begin with an exposition of the home market theory, along with a brief review of previous work. We then discuss the construction of our database and set out basic descriptive relationships that emerge from it. Specification of our empirical models and results follow. We conclude with a summary and discussion.

Theory and Previous Research

A long tradition of research from a variety of social scientific or cultural perspectives has attempted to explain the historical tendency for the United States to dominate international exchange of media products, especially theatrical feature films. These explanations include “cultural imperialism” (Schiller, 1969; 1992), aggressive behavior by the Motion Picture Association of America (MPAA) and the United States government to promote American movie company interests (Guback, 1969; Jarvie, 1992; Segrave, 1997; Thompson, 1985), the influence of American advertising and general fascination with America and American products (Pells, 1997; Tracey, 1985; Tunstall, 1977), prevalence of the English language (Wildman & Siwek, 1988; Straubharr, 1991; Collins, 1994), and inadequate or misdirected protectionist or

subsidization policies in other countries (Dale, 1997; Ilott, 1996; Finney, 1996).¹

The “home market” model is a more direct economic explanation for U.S. dominance that involves the general tendency for countries having relatively large and wealthy domestic markets (of which the U.S. is obviously the most prominent representative) to dominate world exchange of media products. The basic outlines of the home market theory also have a long tradition in communications scholarship (eg, Pool, 1977). More systematic economic models based on the home market effect were advanced by Hoskins & Mirus (1988); Waterman (1988); and Wildman & Siwek (1987, 1988).

The economic logic of these media-specific explanations for large country dominance is imbedded in more general theories published in the international trade literature. A prevalence of home market effects—that is, a tendency for countries with relatively high home demand to account for larger proportions of exports--was first noted by Linder (1961), and then given a rigorous theoretical basis in the form of “new economic geography” models. Krugman (1980) and Helpman and Krugman (1985) showed that imperfect competition in differentiated product industries that exhibit economies of scale would lead to a home market effect if transport costs are significant. That is, such firms will tend to locate in relatively large markets in order to minimize transport costs while also best realizing scale economies. More recent authors have extended these models to show circumstances under which country-to-country demand differences or different assumptions about costs and competition can lead to similar results (Feenstra, Markusen & Rose, 2001; Head, Mayer & Reis, 2002; Davis & Weinstein, 2003). Weder (1996) offers a taxonomy of demand conditions, including variations in income, tastes, and climate, that can also generate home market effects. Empirical studies have generally supported home market models, although sometimes with mixed results (Hanson & Xiang, 2004; Lundback & Torstensson, 1998; Davis & Weinstein, 1999, 2003; Weder, 2003; Head & Reis, 2001).

The media-specific home market explanations for trade dominance by the U.S. or other large countries offered by Wildman and Siwek (1988) and others provide the theoretical basis for our empirical analysis to follow. As these authors argue, relatively large and/or wealthy countries tend naturally to have a large consumer demand base for movies. Some specific assumptions about demand and technology are needed, however, to imply a large country effect in the movie or other media product case; unlike most industrial products, movie trade involves minimal transport costs, implying that movie

¹ For a survey of these explanations with more complete references, see Waterman (2005).

production could potentially take place anywhere without significant export-import cost effects. Unless internal or external economies of scale in movie production are extremely high, that is, the transport cost-based home market advantage alone would not lead the U.S. or other major countries to be dominant producers and exporters of movies.

One media-specific assumption leading to a home market effect is that there is a home bias in consumption, which authors of media-based models have labeled as a “cultural preference” or conversely, a “cultural discount.” As put by Hoskins and Mirus (1988) in reference to television:

A particular programme rooted in one culture, and thus attractive in that environment, will have a diminished appeal elsewhere as viewers find it difficult to identify with the style, values, beliefs, institutions and behavioural patterns of the material in question. Included in the cultural discount are reductions in appreciation due to dubbing or subtitling. As a result of the diminished appeal, fewer viewers will watch a foreign programme than a domestic programme of the same type and quality (p. 500).

Other things equal, that is, we assume that audiences prefer movies that are produced in their native languages or that reflect their own cultural values. The implication of the cultural discount assumption is that producers in high domestic demand countries effectively have larger potential markets. In a two country world, for example, the large country effectively has a full slice of a large market, and a partial slice of a small market, while the small country has a partial slice of a large market and a full slice of a small market. In effect, the cultural discount can be thought of as a natural barrier to trade in media products.

A second assumption leading to a large country effect involves the high setup (ie, production) cost, low marginal distribution cost characteristics of media products, and the endogenous nature of those setup costs. As Shaked and Sutton (1987) and Sutton (1991) have shown in a more general context, industries having relatively large sized markets that are faced with these cost conditions will tend to produce greater variety, but especially, higher quality products due to economies of scale. These conditions suggest that competing producers in counties having relatively large potential markets in terms of consumer movie spending, will produce more expensive, and thus

more attractive (i.e., higher quality²) movies, and also a larger variety of them. It then follows that in a free trade environment, countries with larger domestic markets will tend to dominate trade and have relatively high box-office market shares in both their home and foreign markets.

The cultural discount assumption upon which the media-specific explanation of large country dominance depends seems to have widespread, though anecdotal, empirical support (e.g., Tracey, 1985; Mills, 1985; Wildman, 1995), and can be likened to the “cultural proximity” theory of international television programming trade patterns advanced by Straubhaar (1991). A similar home bias in consumption of other kinds of products has been commonly observed (Wolf, 2000). Notable is a literature attempting to explain a strong home bias in the purchase of securities (French & Poterba, 1991); among explanations offered are familiarity, language and culture (Grinblatt & Keloharju, 2001).

Among empirical tests of media-specific trade models, Marvasti (1994) reported that country size had a significant effect on exports of a broad range of cultural products. In a later empirical study of factors influencing motion picture trade, Marvasti (2000) found support for a factor endowment theory of trade and some evidence of country size effects. Jayakar and Waterman (2000) reported cross-sectional evidence in the movie case that larger size, higher GDP, and higher spending on movies were significantly related to domestic box office share. Oh’s (2001) analysis of 1988 through 1994 box office data from 14 countries found significant relationships between the box office market share of domestic films and gross domestic product (GDP), box office revenue, and some measures of cultural distance from the United States.

Waterman and Jayakar (2000) and Lee (2002) primarily used graphical analysis to relate trends over time in movie box-office market shares to consumer movie spending in Italy and the U.S. and in Japan and the U.S., respectively, producing results that are consistent with the home market interpretation for American dominance. Using a pooled cross-sectional, time series database for 33 countries over the 1991-95 period, Marvasti and Canterbury (2005) find that purchasing power, spatial distance, protectionist policies, and cultural variables (such as language, education, and religion) are significant influences on U.S. motion picture exports. Waterman (2005, Chapter 5) primarily relies on graphical analysis to argue that increasing box-office dominance by U.S.-produced films since the 1970s in Japan, Germany, United Kingdom, France and Italy has been due to a relatively rapid increase in American consumer spending on

2 Quality is defined in entirely economic, not aesthetic terms.

movies, driven in turn by faster diffusion and more intensive use of home video, subscription television and other direct payment movie media by American consumers.

Data and Descriptive Trends

The empirical analysis of this paper covers movie trade among six countries: the United States, Japan, Germany, UK, France and Italy. We use a home market model to explain domestic box office market shares in these six countries over the 1950 to 2003 time period, as a function of trends in domestic consumer movie spending in them.³ We also report statistical tests of the relationship between U.S. market shares and consumer movie spending in the five trading partner countries over this same time period.⁴

Ideally, of course, we would include a larger variety of countries, but long term time series data were generally unavailable except for this country group. In 2003, however, the six subject countries of our study garnered 73% of world box office revenues, with the United States alone accounting for 43% of that total (Screen Digest , 2004, September, pp. 270-271). Thus, the six subject countries accounted for the bulk of the entire world market for movies.

Market Shares

Table 1 reports domestic theatrical box office market shares over time that we were able to assemble for each of the six subject countries from 1950 to 2003. These data originate from quasi-governmental film organizations, the European Audiovisual Observatory, and trade associations.

The data indicate a general prosperity of national (domestically produced) films until about the mid-1970s in the four European countries, but then steadily decline into the 1990s. Japan shows the same general pattern, even though the strength of its domestic production industry began to ebb earlier. Over time, Japan and France have sustained the strongest domestic film industries except for the U.S., even though the market shares of domestic movies have recently fallen to about half or below in all five of these countries. The U.S. data are less complete, but they indicate very high domestic

3 For detailed documentation of the sources and methods by which we assembled the time series data for box office market shares, consumer spending and related data for the six countries included in this study, see Appendix F to Waterman (2005).

4 These U.S. market share results are also reported in Appendix G to Waterman (2005).

market shares since at least the early 1980s, with a slight decline evident in the 1990s.⁵

Data reported for the market shares of U.S. films in the other five countries is less complete but demonstrates the large extent to which the decline in domestic film production has been mirrored by a rise in the shares of U.S. films.⁶ In most cases, the U.S. accounts for the overwhelming proportion of imported films in these countries.

Consumer Spending

For purposes of this paper, we define “primary movie spending” to consist of total consumer spending on the three main media—theaters, pay TV (premium subscription movie channels, plus pay-per-view movie services), plus home video (videocassettes and DVD)—that primarily exhibit theatrical movies with direct payment support. Arguably, we should add in revenues from exhibition of movies on domestic broadcast television and basic cable networks to better represent the flow of production resources into the industry. Before the 1960s, virtually all movie studio revenues from distribution of theatrical features came from theaters, although broadcast television accounted for roughly one-quarter of U.S. studio revenues from domestic release of theatrical features at its peak in the early 1970s (Waterman, 2005, Appendix C). By 2002, broadcast television and basic cable networks together accounted for only about 12% of distributor revenues from domestic sources in the U.S. (Paul Kagan Associates, 2003, Sept. 12, p. 4). Data for foreign markets are less complete, although domestic theatrical film production in at least France, Germany, and Italy had apparently become considerably more dependent on broadcast television by the mid-1990s than in the United States. We could not account for these additional television revenues in our statistical analysis because of insufficient data. In any case, the included direct payment movie media are the most efficient means of financial support for theatrical features. Anecdotal evidence also indicates that a substantial portion of broadcast television support for theatrical features in European countries has been essentially state subsidy, implying that distributors do not employ that support in response to market forces (Dale, 1997; Ilott, 1996).

A related issue is that the various movie exhibition media that have come on line over time are partial substitutes. Distributors release to these various media in a

5 Although systematic earlier data are not available, statistics published in *Variety* and reported by Guback (1969) suggest that the market shares of foreign films in the United States were substantially higher in the 1958-64 period than after 1980. See also Waterman (2005), Appendix F for discussion.

6 The U.S. market share data are available from the authors.

timed sequence that segments demand for them, however, and this strategy presumably maximizes aggregate consumer spending for the movies that appear on these media.

Historical data on primary movie spending as we define it were assembled from a variety of sources and are shown as a fraction of GDP for each of the six countries in Table 2. As these data show, the U.S. generally trailed the other five countries in movie spending in early years, but in about the mid-1970s, the U.S. took a lead that with little exception, it has maintained since. A rough correspondence of these long term trends with the long term shifts in box-office market shares suggests that they may be statistically related, a possibility we test formally below.

Empirical Models

In their two country comparative statistic model, Wildman and Siwek (1988) show that if producers are monopolistically competitive with free entry, and there is free trade, then given symmetric discount factors and zero marginal costs of distribution, and certain assumptions about the functional form of demand, that higher movie spending by consumers in country A implies that producers in A will offer a greater number of movies and make higher production investments in them, than will producers in B. That result further implies that after trade takes place, domestic market shares in country A will be greater than domestic shares in country B. Country A's movies, that is, will be relatively dominant in international trade. Wildman and Siwek further show that the ratio of domestic movie spending in country A to that of country B should be positively correlated to the ratio of total revenues for domestically produced movies--or equivalently, the ratio of domestic market shares--in countries A and B.

The general implication of this model is that movie producers in relatively large and wealthy countries will tend to have large market shares of theater box-office revenues, both in their domestic market and, to a lesser extent, in foreign markets. It follows that if the home market theory is correct, and if its logic can in fact be generalized to a multi-country world, then changes in the market shares of domestic vs. U.S. movies should be positively explained by shifts over time in the relative amounts of home market consumer spending on movies in those countries.

As Frank (1992) shows, the Wildman and Siwek model does not have a general equilibrium solution, and its particular results may not hold for other functional forms of the consumer demand functions. It is also possible to construct examples in which non-symmetric cultural discount factors lead to different results. For example, a relatively small country whose films face low cultural barriers in a larger country, can

have a bigger effective potential market than the large country (and thus higher domestic box-office market shares) if the large country's films face high enough cultural barriers outside its own market. In fact, however, intuition and scraps of evidence suggest the opposite with respect to the U.S.: that American movies tend to face lower cultural barriers than the films of the many smaller countries that they trade with (Hoskins & Mirus, 1988). If so, the forces leading to American dominance would tend to be greater than the model implies. Finally, it is not obvious that Wildman and Siwek's two country results generalize to multiple countries that all trade among each other.

In spite of these shortcomings, the Wildman and Siwek model provides a logically consistent and intuitively plausible analytical framework for empirically testing the presence of a home market effect in theatrical feature film trade.

We specify ten basic statistical models as follows:⁷

$$(1) \text{DOMBOXSHARE}_{i,t} = \alpha_i + \beta(\text{BOXSPENDSHARE}_{i,t-1}) + \varepsilon_{i,t}$$

$$(2) \text{DOMBOXSHARE}_{i,t} = \alpha_i + \beta(\text{TOTALSPENDSHARE}_{i,t-1}) + \varepsilon_{i,t}$$

$$(3) \text{DOMBOXSHARE}_{i,t} = \alpha_i + \beta(\text{BOXADMISSIONSHARE}_{i,t-1}) + \varepsilon_{i,t}$$

$$(4) \text{DOMBOXSHARE}_{i,t} = \alpha_i + \beta(\text{BOXPERGDPSHARE}_{i,t-1}) + \varepsilon_{i,t}$$

$$(5) \text{DOMBOXSHARE}_{i,t} = \alpha_i + \beta(\text{TOTALPERGDPSHARE}_{i,t-1}) + \varepsilon_{i,t}$$

$$(6) \text{USBOXSHARE}_{i,t} = \alpha_i + \beta(\text{BOXSPENDRATIO}_{i,t-1}) + \varepsilon_{i,t}$$

$$(7) \text{USBOXSHARE}_{i,t} = \alpha_i + \beta(\text{TOTALSPENDRATIO}_{i,t-1}) + \varepsilon_{i,t}$$

$$(8) \text{USBOXSHARE}_{i,t} = \alpha_i + \beta(\text{BOXADMISSIONRATIO}_{i,t-1}) + \varepsilon_{i,t}$$

$$(9) \text{USBOXSHARE}_{i,t} = \alpha_i + \beta(\text{BOXPERGDPRATIO}_{i,t-1}) + \varepsilon_{i,t}$$

$$(10) \text{USBOXSHARE}_{i,t} = \alpha_i + \beta(\text{TOTALPERGDPRATIO}_{i,t-1}) + \varepsilon_{i,t}$$

where i indicates countries. Variable definitions are as follows: (All financial variables

⁷ Results for models (6) through (10) reported in this paper (Table 5) are reproduced from Waterman (2005), Appendix G (co-authored with Sang-Woo Lee)

are specified at prevailing exchange rates.)

Table1. Variable Definitions

Variable	Definition
<i>DOMBOXSHARE_i</i>	the box-office market share of country <i>i</i> 's domestically produced movies in country <i>i</i>
<i>BOXSPENDSHARE_i</i>	Country <i>i</i> 's share of aggregate theater box-office spending by the combined group of six countries in the model
<i>TOTALSPENDSHARE_i</i>	Country <i>i</i> 's share of aggregate theater box-office, premium pay TV, pay-per-view, video rentals and video sales spending by the combined group of six countries in the model
<i>BOXADMISSIONSHARE_i</i>	Country <i>i</i> 's share of aggregate theater admissions accounted for by the combined group of six countries in the model
<i>BOXPERGDPSHARE_i</i>	The ratio of country <i>i</i> 's theater box-office spending as a % of GDP to that for the combined group of six countries in the model
<i>TOTALPERGDPSHARE_i</i>	The ratio of country <i>i</i> 's theater box-office, premium pay TV, pay-per-view, video rentals and video sales spending as a % of GDP to that for the combined group of six countries in the model
<i>BOXSPENDRATIO_i</i>	the ratio of the country <i>i</i> 's total theater box-office spending to that of the U. S.
<i>TOTALSPENDRATIO_i</i>	the ratio of country <i>i</i> 's total theater box-office, premium pay TV, pay-per-view, video rentals and video sales spending to that of the U. S.
<i>BOXADMISSIONRATIO_i</i>	the ratio of country <i>i</i> 's total theater box-office admissions to that of the U. S.
<i>BOXPERGDPRATIO_i</i>	the ratio of country <i>i</i> 's total theater box-

	office spending as a % of GDP to that of the U. S.
$TOTALPERGDP\text{RATIO}_i$	the ratio of country i 's total theater box-office, premium pay TV, pay-per-view, video rentals and video sales spending as a % of GDP to that of the U. S.
$USBOXSHARE_i$	the box-office market share of U. S. movies in country i

These ten basic models test the home market theory in two basic ways. The first five models use domestic market box office share as the dependent variable. Model (2) reflects the hypothesis that the market share of domestic movies in country i will increase with its share of aggregate primary consumer movie spending in all six countries combined. This model has the drawback that the actual revenues distributors receive from the three primary media accrue at different points in time, and the fraction of total consumer spending they actually receive may vary from one technology to another. Model (1) avoids this aggregation problem by including only theater spending, under the implicit assumption that theater spending is a constant fraction of all movie spending in the six countries. Model (3) is based only on theater admission counts. That model has the advantage that it avoids cross-country financial comparisons at current exchange rates. Models (4) and (5) respectively specify the total box office spending and total primary movie spending relationship in per-GDP terms. These latter estimation forms do not directly follow from the home market model, in which market shares depend on some measure of total market size. If country-to-country ratios of total GDP remain roughly comparable over time, however, per-GDP measures, while financially based, are correlated with total market size and implicitly avoid the problems of extraneous influences on exchange rates over time. Other things equal, we may also hypothesize that countries having a relatively high ratio of entertainment spending to overall economic activity will have higher domestic resources for movie production.

We thus hypothesize that coefficients of the independent variables in Models (1)- (5) will be positive. Each of these models incorporates the implicit assumption that all five non- i countries can freely trade with county i . Essentially, however, the five other countries are treated statistically as a single entity in these models, and they implicitly ignore the influence of movies produced outside of the six countries in the data set. But as noted above, the overwhelming proportion of all box-office receipts worldwide throughout the period was accounted for by films produced in one of these

six countries.

Models (6) through (10) specify U.S. box office market shares in its five trading countries as the dependent variable, and thus directly test the causes of shifts in the extent of dominance of U.S. movies in those countries. Independent variables in these models are comparable to those of models (1)-(5) except that they are specified in ratio form. We hypothesize that the coefficients for the ratio variables in models (6)-(10) will be negative; relatively higher consumer movie spending in the five non-U.S. countries should decrease U. S. box-office market shares in them. The functional forms of these models have the evident disadvantage that trade between the U.S. and each of these individual countries is assumed to be exclusively bilateral. However, non-domestic, non-U.S. movies have earned by far the lowest market shares in all of these countries throughout the period, and especially in recent years, that trade has become almost negligible. These ratio models also follow directly from Wildman and Siwek's two country theoretical model.

The one year lag in all of the models reflects an expected time delay from observed consumer spending to producer investments. In general, it takes about one year from the beginning of production to a movie's release. The appropriate lag could be longer or shorter.⁸

It would obviously be desirable to include other explanatory variables in these models, such as cultural proximity or language measures, or indicators of trade barriers and other regulations. On one hand, the fixed effects/random effects estimation methods we describe below take account of country-to-country variations, such as different cultural discount factors, to the extent that they can be absorbed into a constant term and that they do not vary over time. We were unable, however, to assemble useful time series data that could realistically account for changes in English language proficiency or for other cultural factors in these six countries over a significant period of time. Potentially important are changes over time in government regulations or trade barriers. It is true that regulation or government influence has substantially restricted the proportion of American programs on publicly and privately operated television systems, especially on free broadcasting, in the five countries trading with the U.S (Noam, 1992; Segrave, 1997). In the much more important theater box-office and video cases, however, government quotas or other restrictions have been largely absent or ineffectual during post-World War II period for the

⁸ In tests of models (1) and (2), one year up to five year lags on the spending variables resulted in positive and significant coefficients in all cases but the effects were slightly larger and more significant for the one year lags.

six countries in our analysis (Guback, 1969; Schiller, 1969, 1992; Segrave, 1997; Thompson, 1985; Noam, 1991). Thus, we can be reasonably confident that that policy factors do not heavily influence our results.

We write the general estimation model as:

$$y_{i,t} = \alpha_i + X_{i,t}\beta + \varepsilon_{i,t}$$

where α_i is a set of dummy variables represents the effects specific to the six different countries, and $\varepsilon_{i,t}$ varies independently across time and across countries.

Because we are using a panel data set, however, we need to determine if OLS, fixed effects, or random effects estimation is most appropriate. The fixed effects model is written as

$$y_{it} = \alpha_i + \beta' X_{it} + \varepsilon_{it},$$

while for the random effects case:

$$y_{it} = \alpha + \beta' X_{it} + u_i + \varepsilon_{it}$$

where u_i is an error term measuring the degree to which the intercept of the i th cross-sectional unit differs from the overall intercept, and ε_{it} is the usual error term. If the country-specific term, α_i , does not vary over i , OLS provides consistent and efficient estimates. However, if countries have the same average impact on market share, subject to an additional error term that differs for each individual country, the random effects model is more appropriate; that is, $\alpha_i = \alpha + u_i$, where the α_i 's represent independent random variables with the same mean (α) and variance (σ_u^2).

Because of the extremes in size and perhaps cultural receptivity represented by the U.S., the domestic market share models are estimated both with and without the U. S. domestic market share observations. Because cultural, political, or other factors may make Japan an unusual case in some sense as well, both the domestic and the U.S. market share models are also estimated both with and without Japanese market share observations included.

Results

Tables 3 and 4 show results for 15 of the market share models we estimated. All the reported results are random effects estimates. First, the confidence levels of the F-

statistics testing the joint significance of the country effects in all models that we estimated were in favor of a country specific effect in the data. The Lagrange multiplier test (Breusch and Pagan, 1980) gives the confidence level at which the hypothesis, $\sigma_u^2 = 0$ may be rejected. Since p -values of the Lagrange Multiplier test for these models are statistically significant, the random-effects model is more appropriate than OLS. Finally, Hausman's test shows that there is no significant correlation between u_i and the independent variables, implying that the random-effects specification is appropriate. We also estimated all models using fixed effects, but since these results were very similar, only the random effects estimations are reported.

All parameter estimates for domestic market share models reported in Table 3 are statistically significant and in the hypothesized directions at either the .01 or .05 significance levels. That is, domestic box-office shares are positively related to domestic movie spending, movie spending per GDP, movie admissions, and other measures, relative to those of trading partner countries. As shown by the latter columns of Table 3, significance of coefficients was generally weaker in models that excluded the U.S. Results for the domestic share models without Japan are not reported; coefficients were all significant and very close to the models with all 6 countries combined.

Parameter estimates in Table 4 for the five U. S. box-office share models were also statistically significant in the expected directions, supporting the hypothesis that market shares of U. S. films in the five countries are negatively related to the ratio of domestic to U. S. spending on movies. All results without Japan were again statistically significant and are not reported. Table 4 thus indicates that U. S. box-office shares in the five U.S. trading partner countries were, as hypothesized, negatively related to primary movie spending in those countries, and positively related to U. S. consumers' spending.

Because we used such a lengthy estimation period, during which the underlying model might have changed, we also estimated some models separately for the first half and the second half of the full time period; further, we estimated these same models using five additional dummy variables, each representing a 10 year time period (13 years in the case of the last dummy). In all of these estimates, the beta coefficients were statistically significant and in the expected direction.

Overall, then, the statistical results of a variety of different specifications indicate consistent support for the existence of home market effects in international trade of theatrical feature films

Discussion and Conclusion

We have explained long term trends in box-office market shares in six major countries based on a home market effect. From the 1950s to about the 1970s, when domestic box office market shares in countries outside the U.S. were relatively high, consumer spending on movies in those countries was also relatively high. Since this period, the situation has roughly reversed; lower domestic market shares in countries outside the U.S. since the 1970s have been accompanied by relatively high levels of U.S. spending on movies. We find a similar pattern in our analysis of US box office market shares. Our analysis thus implies that declining domestic film industries outside the United States since the 1970s, accompanied by a rising dominance of U.S. movies worldwide, may be explained by a relatively slow growth in consumer movie spending in these countries relative to that of the United States. That faster spending growth in the United States has served to increase the economic resources of American movie producers in comparison to their foreign counterparts, plausibly providing the foundation for the Hollywood studios to make a larger number of higher production value films than competing producers could offer.

Consistent with previous empirical studies by Marvasti (1994; 2000) and Oh (2001) and prior contributions of the present authors, we find support for the home market model of media product trade. Although we do not explicitly test for the presence of cultural discounts or attempt to measure them, empirical affirmation of the home market model in general offers implicit support for the theory that cultural discounts do exist.

The models we have presented in this paper have evident shortcomings. First, of course, they are very broad and simplistic specifications. Other factors, as suggested by the wide variety of social scientific and cultural studies of U.S. media dominance that have been published, have undoubtedly influenced long term trends in U.S. box office dominance, and the prosperity of indigenous film production industries more generally. In the context of the home market model itself, a likely contribution to rising American dominance since the 1970s may be changing cultural discount factors; language or cultural barriers to American films have probably declined as English proficiency and exposure to American culture by successive movie going generations in Europe and Japan has increased.

A related issue is our assumption underlying the empirical specification of the domestic market share models: that predictions of the two-country Wildman and Siwek (1988) model generalizes to a multi-country world. If a very large country such as the United States trades media products bilaterally with a large number of small nations that

trade little among themselves, what is the economic effect on trade patterns if domestic movie markets in all those small nations grow simultaneously? The two-country model suggests that domestic production in the small country markets would increase relative to that of the United States, but it is not clear whether a theoretical generalization of the model to multiple countries would confirm that conclusion.

A broader issue raised by this study is that of cause and effect. In reality, the true home market model is surely interactive. That is, for example, the decline in the supply of culturally compatible, high quality domestic films in Europe and Japan in the last 30 years has probably exacerbated the decline in audience demand for movies in those countries. Comparably, the rise of movie spending in the U.S. probably reflects to some degree the increasing availability to Americans of domestically produced, high budget films. To that extent, domestic consumer spending on movies is not entirely exogenous to the home market model. We have not, in fact, explored in this study the fundamentally important issue of what determines the consumer demand for movies from country to country in the first place, and why that demand may change over time. In the case of Italy, for example, Sorlin (1996) identifies several distinct phases of moviegoer demand after World War II, which he basically ascribes to social, cultural, or political change in that country. In an earlier book, Sorlin (1991) addresses similar issues for Europe more generally. An even broader issue involving endogeneity issues is that of the countries themselves. As Alberto and Spolaore (2005) and others have recently argued, the size, wealth and other characteristics of nation states have been endogenously determined, in part to achieve international trade objectives.

In spite of the obvious limitations of this study, we have been able to use an originally developed database to apply the home market model to a substantially longer period of history for a larger number of countries than has been possible in previous economic studies. Hopefully, others can build on our database to include more countries or a richer array of explanatory factors, but our analysis offers the first systematic attempt to explain the marked changes over time in U.S. movie industry dominance and the historically related rise and fall of domestic film production industries outside the U.S.

Whatever the complete explanation for trends in U.S. movie industry trade dominance may be, an important economic reality emerges from this study. Over the long term, theatrical film investments that are reasonably responsive to marketplace forces in any country must have a commercial support base of ticket buyers, pay television subscribers, and video renters and purchasers to return those investments. The home market model implies that a given country's domestic support base is

disproportionately important to maintaining a viable theatrical film industry.

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Table 2. Domestic Market Shares (%) in the Six Subject countries, 1950-2003

Year	U. S.	France	Germany	Italy	UK	Japan
1950	n. a.	45.9	n. a.	23.9	28.9	n. a.
1951	n. a.	47.4	n. a.	27.9	27.0	n. a.
1952	n. a.	49.5	n. a.	33.1	27.7	n. a.
1953	n. a.	48.4	n. a.	34.9	30.6	n. a.
1954	n. a.	48.8	n. a.	36.2	32.8	n. a.
1955	n. a.	48.9	47.3	34.8	29.9	65.8
1956	n. a.	50.3	47.1	34.8	32.6	67.5
1957	n. a.	51.9	47.7	30.0	37.1	69.1
1958	n. a.	49.5	47.7	32.6	39.2	76.1
1959	n. a.	51.5	47.0	35.9	40.9	77.4
1960	n. a.	53.3	41.0	41.2	41.2	78.3
1961	n. a.	52.7	32.6	41.9	45.0	77.2
1962	n. a.	51.4	29.0	47.0	41.2	73.1
1963	n. a.	49.3	30.4	45.9	47.7	68.8
1964	n. a.	50.9	27.0	45.2	47.1	66.3
1965	n. a.	55.0	25.8	47.0	n. a.	66.7
1966	n. a.	53.2	25.9	58.9	n. a.	63.2
1967	n. a.	54.4	24.7	53.2	n. a.	61.3
1968	n. a.	52.5	37.0	54.0	n. a.	64.4
1969	n. a.	48.5	39.3	61.7	42.7	64.1
1970	n. a.	52.6	39.2	60.3	39.8	59.5
1971	n. a.	56.1	36.1	65.1	43.7	51.3
1972	n. a.	55.9	32.7	64.8	41.5	51.9
1973	n. a.	61.8	26.3	62.5	36.9	55.9
1974	n. a.	56.2	26.5	62.0	27.0	51.1
1975	n. a.	52.4	12.9	59.1	29.5	44.4
1976	n. a.	52.5	11.4	60.8	22.5	48.4
1977	n. a.	47.3	11.4	50.8	19.7	50.8
1978	n. a.	46.5	12.8	42.8	26.1	48.6
1979	n. a.	51.1	16.0	36.3	17.2	53.5
1980	n. a.	46.9	9.3	43.5	10.0	55.0
1981	95.0	49.6	18.7	44.1	13.0	54.5
1982	98.0	53.3	11.3	46.1	16.0	51.1

1983	96.1	49.3	14.1	39.5	20.0	52.6
1984	96.8	49.6	16.8	33.0	17.0	48.6
1985	97.7	44.7	22.7	31.8	14.0	51.6
1986	93.6	43.7	22.1	31.6	12.0	49.8
1987	98.3	36.1	17.2	34.1	9.8	48.1
1988	98.8	39.1	23.4	28.5	14.8	49.7
1989	98.0	34.3	16.7	21.7	10.0	46.6
1990	98.6	37.5	9.7	21.0	7.0	41.4
1991	98.4	30.6	13.6	26.8	5.5	41.9
1992	98.7	35.0	9.5	24.4	6.8	45.1
1993	95.8	35.1	7.2	17.3	2.5	35.8
1994	94.8	28.3	10.1	23.7	8.8	40.1
1995	95.9	35.2	6.3	21.1	10.2	37.0
1996	95.7	37.5	15.3	24.9	12.8	36.3
1997	92.4	34.5	16.7	32.9	28.1	41.5
1998	94.6	27.6	8.1	24.7	14.1	30.2
1999	91.7	32.4	14.0	24.1	17.8	32.0
2000	93.3	28.5	12.5	17.5	21.4	31.8
2001	93.1	39.0	16.2	19.4	11.7	39.0
2002	93.9	34.0	11.9	21.9	15.4	27.0
2003	95.1	34.8	17.5	22.0	11.9	33.0

Sources: *EAO yearbook*(various issues); *EAO Focus*(2002, 2003, 2004); Guback(1969); Motion Picture Producers Association of Japan(2005); *Screen Digest* (various issues); Thiermeyer(1994); See also Waterman (2005), Appendix F, for specific details.

Table 3. Primary Movie Spending as a proportion of GDP in the Six Subject Countries, 1950-2002

Year	U. S.	France	Germany	Italy	UK	EURO-4*	Japan	All except U. S. (EURO- 4+Japan)**
1950	0.481	0.257	0.350	n. a.	0.803	n. a.	n. a.	n. a.
1951	0.402	0.271	0.343	0.680	0.742	0.502	n. a.	n. a.
1952	0.379	0.266	0.354	0.726	0.698	0.488	0.523	0.492
1953	0.362	0.274	0.383	0.742	0.646	0.486	0.614	0.501
1954	0.337	0.283	0.414	0.770	0.616	0.489	0.601	0.503
1955	0.298	0.280	0.402	0.778	0.555	0.468	0.654	0.490
1956	0.264	0.260	0.405	0.709	0.506	0.436	0.656	0.463
1957	0.242	0.257	0.398	0.643	0.429	0.400	0.627	0.430
1958	0.222	0.243	0.376	0.588	0.367	0.367	0.627	0.401
1959	0.198	0.223	0.321	0.584	0.285	0.324	0.539	0.355
1960	0.183	0.223	0.252	0.521	0.251	0.286	0.455	0.312
1961	0.173	0.201	0.210	0.488	0.222	0.254	0.378	0.275
1962	0.149	0.192	0.182	0.459	0.202	0.234	0.346	0.253
1963	0.152	0.183	0.156	0.424	0.182	0.215	0.307	0.231
1964	0.143	0.170	0.141	0.415	0.176	0.203	0.257	0.214
1965	0.145	0.163	0.128	0.406	0.174	0.196	0.230	0.202
1966	0.135	0.150	0.117	0.389	0.156	0.181	0.198	0.185
1967	0.133	0.139	0.108	0.351	0.145	0.169	0.175	0.170
1968	0.141	0.128	0.096	0.338	0.134	0.158	0.153	0.156
1969	0.131	0.115	0.090	0.320	0.125	0.146	0.134	0.143
1970	0.137	0.111	0.080	0.271	0.115	0.132	0.112	0.127
1971	0.123	0.106	0.074	0.283	0.106	0.128	0.097	0.119
1972	0.128	0.109	0.070	0.298	0.093	0.126	0.083	0.114
1973	0.110	0.104	0.066	0.275	0.079	0.115	0.082	0.105
1974	0.127	0.104	0.062	0.263	0.083	0.113	0.087	0.105
1975	0.131	0.107	0.061	0.261	0.068	0.110	0.088	0.104
1976	0.115	0.103	0.053	0.215	0.061	0.096	0.088	0.093
1977	0.123	0.096	0.055	0.160	0.059	0.085	0.082	0.084
1978	0.126	0.097	0.058	0.137	0.071	0.084	0.079	0.082
1979	0.127	0.093	0.061	0.117	0.064	0.080	0.071	0.077

1980	0.126	0.108	0.070	0.111	0.091	0.092	0.083	0.089
1981	0.151	0.122	0.077	0.109	0.112	0.103	0.091	0.098
1982	0.190	0.131	0.077	0.108	0.118	0.106	0.101	0.104
1983	0.221	0.130	0.082	0.097	0.138	0.109	0.114	0.111
1984	0.243	0.126	0.081	0.084	0.145	0.107	0.114	0.109
1985	0.261	0.118	0.083	0.082	0.159	0.109	0.118	0.112
1986	0.277	0.155	0.085	0.087	0.17	0.121	0.124	0.122
1987	0.303	0.167	0.091	0.078	0.178	0.125	0.148	0.134
1988	0.324	0.168	0.093	0.070	0.180	0.125	0.157	0.139
1989	0.345	0.201	0.090	0.095	0.224	0.148	0.144	0.146
1990	0.350	0.208	0.097	0.078	0.228	0.147	0.130	0.140
1991	0.355	0.220	0.093	0.082	0.237	0.150	0.129	0.141
1992	0.350	0.244	0.078	0.095	0.263	0.159	0.121	0.143
1993	0.350	0.259	0.088	0.121	0.281	0.177	0.119	0.151
1994	0.352	0.260	0.088	0.110	0.282	0.181	0.122	0.153
1995	0.352	0.263	0.086	0.099	0.296	0.185	0.128	0.176
1996	0.361	0.269	0.088	0.098	0.299	0.190	0.121	0.182
1997	0.354	0.270	0.084	0.105	0.304	0.194	0.141	0.194
1998	0.364	0.282	0.090	0.115	0.321	0.211	0.153	0.212
1999	0.368	0.274	0.086	0.114	0.311	0.231	0.140	0.188
2000	0.366	0.292	0.089	0.126	0.356	0.259	0.143	0.200
2001	0.381	0.303	0.107	0.132	0.426	0.293	0.163	0.231
2002	0.401	0.315	0.126	0.128	0.483	0.254	0.173	0.218

Sources: *EAO yearbook*(various issues); *EAO Focus*(2002, 2003, 2004); International Motion Picture Almanac(2000); Jouhou Media Hakusyo(various issues); Motion Picture Producers Association of Japan(2005); *Screen Digest* (various issues); Thiermeyer(1994); Veronis, Suhler, & Associates(1999); See also Waterman (2005), Appendix F for specific details.

* Euro-4: weighted average of France, Germany, UK, and Italy

** weighted average

Table 4. Random Effects Estimates of Domestic Market Share Models: 1950-2003

Dependent variable: *DOMBOXSHARE*

Models	Six Countries including U. S.					Six Countries except U. S.				
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	25.3402 (2.5742) ^c	24.4019 (2.5144) ^c	10.7882 (1.2154)	26.8154 (2.0013) ^b	32.3334 (2.9374) ^c	22.7201 (3.0187) ^c	23.1778 (2.7876) ^c	15.3555 (1.7255) ^a	18.7923 (1.6184) ^a	24.6094 (2.1626) ^b
BOXSPENDSHARE	1.2364 (9.2483) ^c					1.6308 (9.6701) ^c				
TOTALSPENDSHARE		1.2618 (9.9263) ^c					1.6994 (12.5983) ^c			
BOXADMISSIONSHARE			1.8802 (28.2653) ^c					2.1874 (27.3344) ^c		
BOXPERGDPSHARE				1.1271 (17.7934) ^c					1.1117 (17.5893) ^c	
TOTALPERGDPSHARE					0.7952 (17.2665) ^c					0.7766 (15.1074) ^c
F-test*	63.89 ^c	74.39 ^c	334.02 ^c	74.27 ^c	54.47 ^c	31.74 ^c	43.52 ^c	361.48 ^c	63.12 ^c	42.75 ^c
Adj-R square	0.1861	0.2106	0.5634	0.2159	0.1860	0.1099	0.1479	0.6053	0.2029	0.1418
No. of observations	276	276	259	267	267	250	246	236	245	245

Note 1: : ^a $p < 0.1$; ^b $p < 0.05$; ^c $p < 0.01$

Note 2: * The F-statistics for testing the joint significance of the country effects

Table 5. Random Effects Estimates of U. S. Market Share Models: 1950-2003

Dependent variable: *USBOXSHARE*

Models	Model 6	Model 7	Model 8	Model 9	Model 10
Constant	62.9944 (8.3313) ^c	62.3925 (7.0843) ^c	60.7226 (7.7807) ^c	60.1456 (7.1224) ^c	59.2899 (6.7413) ^c
BOXSPENDRATIO	-0.6191 (-2.8074) ^b				
TOTALSPENDRATIO		-0.6245 (-2.8487) ^c			
BOXADMISSIONRATIO			-0.4195 (-3.1856) ^c		
BOXPERGDPRATIO				-0.0766 (-2.2667) ^b	
TOTALPERGDPRATIO					-0.0698 (-2.1678) ^b
F-test*	4.69 ^c	6.82 ^c	6.50 ^c	3.67 ^c	3.93 ^c
Adj-R square	0.2383	0.3695	0.3940	0.1972	0.2054
No. of observations	191	191	191	190	190

Note 1: ^a $p < 0.1$; ^b $p < 0.05$; ^c $p < 0.01$

Note 2: * The F-statistics for testing the joint significance of the country effects.