# ESSAYS ON INTERNATIONAL MARKET ENTRY STRATEGY

A Dissertation

by

MYUNGGOOK SONG

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2010

Major Subject: Marketing

Essays on International Market Entry Strategy

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# ABSTRACT

Essays on International Market Entry Strategy.

(August 2010)

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Two important issues regarding international market entry strategy remain largely unexplored: international launch time window (the elapsed time between product launch in the home country and launch in the focal country) and country sequence. First, I investigate the factors that drive international launch time window and its impact on the performance of new products in foreign markets. The results show that launch time window is positively associated with word of mouth, but negatively related to prelaunch advertising efforts and foreign demand potential. Second, I examine the determinants of the sequence of countries in which firms introduce new products and its impact on performance in foreign countries. The findings include that a country's order in the international launch sequence of a new product affects the product's performance in that country. Country order is negatively related to country revenues. A country's cultural distance (economic openness) is positively (negatively) associated with its order in the sequence. I also find that there is cross-country spillover effect - lagged revenues from other countries and lagged marketing efforts in the home country are positively related to

a new product's revenues in the focal foreign country. The more culturally sensitive a product, the earlier culturally closer countries are in the launch sequence for that product. Based on the cross-country performance spillover effects, I recommend a launch sequence that can maximize overall performance in foreign markets.

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# CHAPTER I

# INTRODUCTION

With the growing globalization of business, international markets are becoming important and managerial interest in formulating a sound international market entry strategy is gaining prominence. International markets are particularly important for short life cycle products such as movies, books, music, and video games. For these products, in a given country or market, sales typically decline steeply from an early peak, so it is critical to enter and grow in multiple international markets. In fact, a substantial chunk of revenues for these products come from outside the home country of launch. Consider the motion picture industry—the context for my empirical analysis. In 2008, while the total U.S. box office revenues were $9.8 billion, foreign box office receipts reached $18.3 billion (Motion Picture Association of America [MPAA] 2008). In many cases, domestic launch is unprofitable and its loss is offset by international revenues. Elberse and Anand (2007) estimate the average movie loses approximately $17 million from its domestic theatrical release. Not surprisingly, Weinberg (2005) asks whether the North American release of a movie should even be viewed as a "loss leader."

Thus, a sound international market entry strategy is becoming increasingly critical for the success of new products. Two important issues regarding international market entry strategy are largely unexplored: international launch time window (the elapsed time between product launch in the home country and launch in the focal

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This dissertation follows the style of *Journal of Marketing Research*.

country) and country sequence. In the second chapter, I investigate the factors that drive launch time window and its impact on performance of new products in foreign markets. In the third chapter, I examine the determinants of the country sequence in which firms introduce new products and its impact on performance in foreign countries. The fourth chapter provides conclusion, limitations, and extensions of these two studies.

# CHAPTER II

# NEW PRODUCT INTERNATIONAL LAUNCH TIME WINDOW AND PERFORMANCE: A CASE OF THE MOTION PICTURE INDUSTRY

## *Introduction*

An important decision relating to international market entry strategy is the decision on the timing of entry into international markets. Two international entry timing strategies are commonly practiced (Kalish, Mahajan, and Muller 1995). A waterfall or sequential release strategy is one in which the new product enters multiple countries sequentially. A sprinkler or simultaneous strategy, in contrast, involves almost simultaneous entry into multiple countries. In the motion picture industry, movie studios[1] appear to be adopting both simultaneous and sequential release strategies. For example, Sony-Columbia's *Spider-Man 3* was simultaneously released into 71 countries in 2007, making the launch time window— the elapsed time between product launch in the home country and launch in the focal country— for each country almost zero. In contrast, DreamWorks' *Terminal* was released in 55 countries sequentially with the time window between the release dates in the U.S. and in the foreign country ranging between 70 days to 203 days.

To determine the launch time window in a foreign country, firms need a better understanding of the influence of domestic prelaunch advertising and word of mouth on

[1] The major studios both produce and distribute movies, so I use the terms, studios and distributors, interchangeably.

foreign market performance and time window because there are spillover effects of advertising and word of mouth across countries. For short life cycle products such as movies, achieving good opening revenues is critical to its success. For example, Friedman, the former Vice Chairman of Paramount Pictures, says "If the opening grosses are not strong, the picture will not survive for an extended run. If a picture is not performing as expected, it is virtually impossible to rescue it" (Friedman 2004). For this reason, firms spend huge sums of money on prelaunch advertising campaign to inform potential customers of the product's upcoming launch and create opening buzz about the product. According to MPAA (2007), the average marketing cost for movies released by major studios in 2007 reached $35.9 million, out of which, advertising expenditures amounted to $32.2 million. A Hollywood movie spends, on average, about 80% of advertising expenditures before release (Elberse and Anand 2007; Vogel 2007). One of the advantages that firms can expect from large prelaunch domestic advertising campaign is advertising spillover effect across countries. Advertising spillover refers to the broad effect of domestic advertising on sales in foreign markets. Why does domestic advertising affect foreign sales? First, potential customers in foreign countries can be directly exposed to the domestic advertising. For example, in the motion picture industry, foreign audience can easily watch a trailer for a movie through various websites. Second, the local media are more likely to cover those products with heavy prelaunch advertising support in its home country, increasing awareness and attractiveness of the products among potential consumers in foreign markets. Third, local channels/distributors are more likely to promote sales in the target country for those

products which receive a large advertising support in the home country (Tellis, Stremersch, and Yin 2003). Therefore, managers' decision on foreign launch time window will be guided by the strength and the duration of the spillover effect of domestic prelaunch advertising on performance in foreign markets. Specifically, if the prelaunch advertising effect is high, then managers will want to enter foreign markets quickly before the advertising spillover effect wears out.

Furthermore, word of mouth plays a significant role in the time window decision. Word of mouth refers to information transmission among consumers. For example, in the movie industry, consumers who watched a movie in one country often post their reviews on websites in another country even before the movie is released in that country. That is, online word of mouth can travel across countries. What is the effect of word of mouth on international launch time window of new products? First, potential negative word of mouth for a new product may move it toward a simultaneous international launch. With regard to the effect of word of mouth in the domestic context of the motion picture industry, Moul and Shugan (2005) argue that the current strategy of wide release that replaced the limited release in the 1970s is at least, in part, an attempt to limit the adverse effects of negative word of mouth that might be exacerbated by a sequential entry strategy. In the international setting, their argument suggests that firms will follow a simultaneous launch strategy to minimize the effect from negative word of mouth. By launching simultaneously into multiple countries, products can better prepare themselves for the downside that it may not perform well initially in the home country. On the other hand, if firms are relatively confident about the performance of the product and want to

capitalize on the positive word of mouth effect across countries, then it is better to use a sequential release strategy to allow reasonable amount of time for word of mouth to travel across countries. In this case, products can benefit from positive word of mouth effect from one country to another with sequential launch (Elberse and Eliashberg 2003).

Therefore, the international launch time window will be a function of prelaunch advertising and word of mouth. Specifically, the launch time window will be a function of the tradeoff between the two effects. Firms will use a simultaneous release strategy in foreign markets if the product is supported with large prelaunch advertising campaign, but follow a sequential release strategy to maximize the effect of positive word of mouth. Understanding this tradeoff has important implication on resource allocation because firms can benefit from a higher return on advertising investment by effectively utilizing the tradeoff between these two effects.

Despite the importance of international launch time window and the effects of prelaunch advertising and word of mouth on it, important questions relating to these variables remain underexplored. What are the determinants of international launch time window? In particular, what are the relative effects of prelaunch advertising and word of mouth on the launch time window? What are the effects of launch time window on international market performance? I address these important research questions using the motion picture industry as the context. The movie industry provides an ideal setting to explore these issues. As discussed earlier, the industry spends large amounts on prelaunch advertising campaign than any other industries. Furthermore, the effect of word of mouth on demand is considered particularly important in the industry.

## *Related Literature*

Previous research has examined the issue of simultaneous and sequential market entry strategies. For example, Kalish, Mahajan, and Muller (1995) use a competitive game theory framework to examine simultaneous and sequential strategies and show that sequential entry strategy is appropriate if (1) the product has a very long life cycle, (2) the foreign market is small, not innovative, and characterized by a slow growth rate, and (3) competitors in the foreign market are week. However, empirical evidence for the success of each of these strategies is mixed. For example, Van Everdingen, Fok, and Stremersch (2009) and Tellis, Stremersch, and Yin (2003) find that the takeoff of a new product category in one country increases the probability of takeoffs in other countries, suggesting a sequential release strategy is preferable to a simultaneous release strategy. This spillover phenomenon is called cross-country lead-lag or learning effect in the international diffusion of innovation literature. (e.g., Dekimpe, Parker, and Sarvary 2000; Ganesh and Kumar 1996;Kumar and Krishnan 2002; Putsis et al. 1997; Takada and Jain 1991). The lead market refers to the country into which the product is launched first. The lag market is the country into which the product is launched later. Prior research suggests that new product diffusion in the lag market is generally faster than that in the lead market. Thus, firms can take advantage of the lead-lag effect when they use a sequential release strategy. Another study by Fischer, Shankar, and Clement (2005) examines international market entry strategies in terms of market scope and the speed of rollout. They find that late mover brands that sequentially enter many large international

markets can challenge the market pioneer in a country more effectively than other late mover brands, suggesting that a sequential strategy may be more appropriate when there are multiple brands. On the other hand, Elberse and Eliashberg (2003) who analyze 164 movies released from 1999 to 2000 in the U.S. and four European countries find that the longer the time lag between releases, the weaker the relationship between domestic and foreign market performances. This finding suggests an advantage of a simultaneous release strategy. My study differs from these studies. Unlike previous empirical studies which only find support for either a simultaneous or a sequential release strategy, I identify conditions under which a simultaneous or sequential release strategy is beneficial by examining the tradeoff between the effects of prelaunch advertising and word of mouth on international launch time window.

Two additional studies examine the issue of entry timing into international markets. Mitra and Golder (2002) examine the impact of dynamic near-market knowledge (a firm's own operations in similar markets) and other economic and cultural variables on foreign market entry timing. Using a hazard model on 722 foreign market entries of 19 multinational firms, they find significant effects for near-market cultural and economic knowledge. Gielens and Dekimpe (2007) also estimate a hazard model on the top 75 European grocery retailers' decisions to enter the Eastern European market and find that firms take their competitors' prior decisions into account when deciding on their own entry timing. My research also differs from these studies. Their analyses pertain to firm-level entry decision rather than entries of new products or brands into foreign countries. Furthermore, modeling entry timing using dynamic updates is not

appropriate for short life cycle products such as movies. This is because once media plans are scheduled, it is hard to change them for short time periods. Studios typically buy the vast majority of their TV advertising (as much as 90%-95%) in the ‘‘up-front’’ advertising market, at least several months prior to movies’ releases. Based on interviews with studio executives, Elberse and Anand (2007) report that once advertising expenditures are allocated across media outlets, studio executives have limited flexibility in adjusting a movie’s advertising campaign in the weeks leading up to the release even if they receive updated information about the movie’s potential or changes in the competitive environment. My research uses a different modeling approach to address this issue for short life cycle products.

To summarize, although these studies provide valuable insight into the factors that affect entry timing and the performance of new products in foreign markets, they do not try to identify conditions under which a simultaneous or sequential release strategy achieves better performance. Specifically, my research is the first to analyze the effects of prelaunch advertising and word of mouth on international market entry timing of new products across a large number of countries in a comprehensive framework. I extend prior research in important ways. First, I formulate an analytic model of the optimal international entry time window and prelaunch advertising. Second, I empirically test my predictions from the analytic model using a simultaneous system of equations in which launch time window, prelaunch advertising spending, and revenue in each country are the dependent variables.

## *Analytic Model*

In this section, I formulate an analytic model. The purpose of this model is to develop predictions relating to launch time window and prelaunch advertising by deriving the optimal launch time window and the prelaunch advertising spending level. My analytic model captures only the tradeoff between these two variables. In empirical estimation, I augment these predictions with expectations about the effects of additional variables (e.g., cultural distance, seasonality, and star power) that potentially influence the time window decision.

If a product is launched in the home country at time $t = 0$ and is launched in a foreign country at $t = t_F$, that is, if $t_F$ is the international time window, then the domestic ($D_D$) and foreign ($D_F$) demands for the product are given by:

(1) $$D_D(t) = \alpha_D e^{-\beta_D t}$$

(2) $$D_F(t) = \alpha_F e^{-\beta_F (t - t_F)} \ [t \geq t_F]$$

where $\alpha_D$ ($\geq 0$) and $\alpha_F$ ($\geq 0$) represent the opening demand and $\beta_D$ ($\geq 0$) and $\beta_F$ ($\geq 0$) the decay rates of opening demand in the home country and in the foreign market, respectively.

Domestic demand at $t = 0$ is $\alpha_D$ and foreign demand at $t = t_F$ is $\alpha_F$. The parameter, $\alpha$, can be viewed as external influence because the firm's prelaunch effort, such as advertising and promotion is expected to influence the level of opening demand. Similarly, $\beta$ can be viewed as internal influence because the decay rate is likely to depend on customer word of mouth. The exponential decay model is consistent with

prior research (e.g., Krider and Weinberg 1998; Lehmann and Weinberg 2000). The model captures the aspect of demand that peaks at opening and gradually declines, which is typical of short life cycle products.

The opening demands in the home country and in the focal foreign country are given by:

$$\alpha_D = \alpha_1 A \tag{3}$$

$$\alpha_F(t_F) = \underbrace{\alpha_0}_{\text{Demand potential}} + \underbrace{\kappa_w W t_F}_{\text{Word of mouth effect}} + \underbrace{\delta_a A e^{-\beta_a t_F}}_{\text{Prelaunch advertising effect}} \tag{4}$$

where $W$ is word of mouth effect from consumers in the home country, $A$ is prelaunch advertising spending before product launch in the home country, and $\alpha_1$ is the marginal effect of prelaunch advertising ($A$) on domestic demand. The key part of my model is $\alpha_F$. I model foreign opening demand as a function of: (1) the intrinsic foreign demand potential, (2) the word of mouth effect, and (3) the effect of domestic prelaunch advertising. $\kappa_w (\geq 0)$ and $\delta_a (\geq 0)$ are demand responsiveness to word of mouth and to prelaunch advertising, respectively. The effect of prelaunch advertising declines at the rate of $\beta_a$.

The assumption that domestic prelaunch advertising expenditures affect opening demand in the foreign country is based on the idea that firms can utilize advertising spillover effect by launching the product in multiple countries within short period of time as explained before. If firms want to make the most of the spillover effect, then it is better for them to use a simultaneous release strategy because the spillover effect created by prelaunch advertising may quickly wear out. However, as discussed earlier, it is

better to use a sequential release strategy if firms want to rely on the word of mouth effect to allow for word of mouth to build up. My model captures these tradeoffs between sequential and simultaneous release strategies. I do not include prelaunch advertising spending for the foreign release in my model because I focus on domestic advertising spillover effect. Omitting foreign advertising from my model should not affect the results of my analysis as long as prelaunch advertising spending for the domestic release can be thought of reasonable proxy for the firms' effort to create cross-country spillover.

Substituting $\alpha_D$ and $\alpha_F$ into the demand function and subtracting prelaunch advertising cost, I obtain the following profit function.

$$\max_{t_F,\,A} \pi = \underbrace{-A^2}_{\substack{\text{Prerelease}\\ \text{advertising}}} + \underbrace{m_D \int_0^{\infty} \alpha_1 A e^{-\beta_D t} e^{-rt} dt}_{\text{Domestic profit}} + \underbrace{m_F \int_{t_F}^{\infty} [\alpha_0 + \kappa_w W t_F + \delta_a A e^{-\beta_a t_F}] e^{-\beta_F (t-t_F)} e^{-rt} dt}_{\text{International profit}} \tag{5}$$

where $m_D$ and $m_F$ are domestic and foreign margin ratios, respectively. The profit function is the sum of domestic and foreign demand multiplied by the respective margin ratio. The profit function is assumed to be concave in *A*, that is,

$$\frac{\partial \pi}{\partial A} > 0 \ \textit{and} \ \frac{\partial^2 \pi}{\partial A^2} < 0 \tag{6}$$

Revenues are discounted by a continuous discount rate, *r*.

The firm selects the optimal time window ($t_F$) and prelaunch advertising (*A*) to maximize its profit. The first order conditions for time window and prelaunch advertising are given by:

(7) $$\frac{\partial \pi}{\partial t_F} = \frac{m_F e^{-rt_F}(\kappa_w W - A\delta_a \beta_a e^{-\beta_a t_F} - r\alpha_0 - r\kappa_w W t_F - rA\delta_a e^{-\beta_a t_F})}{\beta_F + r}$$

(8) $$\frac{\partial \pi}{\partial A} = \frac{m_D \alpha_1}{\beta_D + r} + \frac{m_F \delta_a e^{-\beta_a t_F} e^{-rt_F}}{\beta_F + r} - 2A$$

There are no closed form solutions for time window and prelaunch advertising from these first order conditions. Using the implicit function theorem, I derive the following comparative statics for launch time window and prelaunch advertising spending. Result 1 through Result 3 are predictions about launch time window.

Result 1. International launch time window is negatively related to the foreign opening demand potential ($\alpha_0$), all else equal.

(9) $$\frac{\partial t_F^*}{\partial \alpha_0} = -\frac{2m_F e^{-rt_F}}{\beta_F + r} \leq 0$$

The result shows that firms will launch a movie faster into countries with greater baseline opening demand potential. By entering earlier into countries with higher revenue potential, firms can recover their costs faster. In addition, achieving higher revenues will help build positive word of mouth and reduce of risk of trial by potential customers in subsequent countries.

Result 2. International launch time window is positively associated with foreign demand responsiveness to word of mouth ($\kappa_w$), all else equal.[2]

(10) $$\frac{\partial t_F^*}{\partial \kappa_w} = -\frac{2m_F W e^{-rt_F}(rt_F - 1)}{\beta_F + r} \geq 0$$

[2] I assume that the optimal launch time window is less than 1/r. This is because $\partial \pi / \partial t_F < 0$ at $t_F = 1/r$, assuming that the profit function is concave in time window.

This result states that firms will release new products slower into international markets if they expect them to generate good word of mouth in those markets. This is consistent with the idea that firms can benefit from positive word of mouth effect from one country to another with sequential launch.

Result 3. International launch time window is negatively related to foreign demand responsiveness to prelaunch advertising ($\delta_a$), all else equal.

$$\frac{\partial t_F^*}{\partial \delta_a} = -\frac{m_F e^{-rt_F} e^{-\beta_a t_F} (\beta_a + r)(2A\beta_F + 2Ar + m_F \delta_a e^{-rt_F} e^{-\beta_a t_F})}{(\beta_F + r)^2} \leq 0 \quad (11)$$

This result suggests that firms will launch their new products faster into international markets if they are supported with higher prelaunch advertising. This result reflects the idea that firms can utilize the cross-country advertising spillover effect by launching the products quickly into foreign countries.

For prelaunch advertising spending, I obtain the following two results.

Result 4. Domestic prelaunch advertising is positively associated with foreign opening demand potential ($\alpha_0$), all else equal.

$$\frac{\partial A^*}{\partial \alpha_0} = \frac{r m_F^{\,2} \delta_a e^{-2rt_F} e^{-\beta_a t_F} (\beta_a + r)}{(\beta_F + r)^2} \geq 0 \quad (12)$$

The result says that firms will spend more on prelaunch advertising if they expect good foreign opening demand. This result indicates that firms want to leverage advertising spillover effect across countries by supporting their new products with large prelaunch advertising if they expect good foreign demand.

Result 5. Domestic prelaunch advertising spending is negatively related to responsiveness to word of mouth ($\kappa_w$), all else equal.

$$(13) \qquad \frac{\partial A^*}{\partial \kappa_w} = \frac{{m_F}^2 W \delta_a e^{-2rt_F} e^{-\beta_a t_F} (\beta_a + r)(rt_F - 1)}{(\beta_F + r)^2} \leq 0$$

This result suggests that firms will spend less on prelaunch advertising if they expect good word of mouth. It also implies that firms will complement lower expected word of mouth with high prelaunch advertising support.

## *Data, Variables, and Measures*

### *Data*

My analytic model captures key aspects of the tradeoff between the effects of prelaunch advertising and word of mouth on international launch time window. I test the analytic results and explore related issues using data from the motion picture industry by augmenting those predictions with additional variables that may influence the time window decision. The data consist of 207 movies launched between 2003 and 2006. Each movie was released in about 20 to 70 countries and I have a total of 78 countries in my dataset. Although the list of movies in my data is not exhaustive, they cover around 70-80 % of worldwide box office revenues each year. Table 1 summarizes the variables, measures, and data sources. The variables related to the movie characteristics include U.S. and international theatrical release dates (www.boxofficemojo.com, hereafter "Mojo")[3], production budget (Mojo), U.S. opening weekend box office revenues (Mojo), total box office revenues for each country (Mojo), average user rating (Internet Movie

[3] Several studies used data from Boxofficemojo. For example, Wiles and Danielova (2009), Chintagunta, Gopinath, and Venkataraman (2009), Duan, Gu, and Whinston (2008), Dellarocas, Zhang, and Awad (2007).

Database, hereafter "IMDB"), MPAA rating (G, PG, PG13, and R, Mojo), producer (Mojo), genre (IMDB), whether a movie cast includes a star actor/actress or star director (Premiere Magazine), whether a movie is a sequel (the-numbers), critical reviews (www.metacritic.com, hereafter "Metacritic"), and advertising spending for the U.S. release (TNS Media Intelligence, hereafter "TNS"). The country-specific variables include cultural distance (Hofstede), degree of globalization (KOF Institute), piracy rate (Business Software Alliance, "BSA" hereafter), real GDP per capita (World Development Indicators by the World Bank, "WDI" hereafter), and seasonality (Mojo). I operationalize discount rate by six-month U.S. Treasury bill interest rate (Federal Reserve Board, hereafter "FRB").

Table 1
VARIABLES, MEASURES, AND DATA SOURCES

| *Variables* | *Descriptions (Measures)* | *Data Sources* |
|---|---|---|
| WIN | Time difference between U.S. and country launch date (days) | Mojo |
| REV | Gross box office revenues in the country ($) | Mojo |
| PAD | Advertising expenditures before U.S. release ($) | TNS |
| PROD | Production budget ($) | Mojo |
| USOPENWKND | US opening weekend revenues ($) | Mojo |
| USERATING | User rating (1-10 scale) | IMDB |
| CRITIC | Critic rating (0-100 scale) | Metacritic |
| CD | Index of country's cultural distance from the U.S. | hofstede.com |
| GLOBAL | Index of country's globalization (1-100 scale) | KOF |
| PIRACY | Country piracy rate (%) | BSA |
| GDP | Country GDP per capita (2000 figure in $) | WDI |
| SEASON | A weekly index based on total revenues (0 - 100 scale) | Mojo |
| COMP | Total production budgets of all movies released in the country in two weeks prior to the focal movie's launch date ($) | Mojo |
| RATE | Interest rate on six-month U.S. Treasury bills (%) | FRB |
| STUDIO, STAR, DIRECTOR, SEQUEL, YEAR, MPAA RATING, GENRE, COUNTRY | Dummy variables (0 or 1) | Mojo, Premiere, the-numbers.com |

A few comments are in order about the dataset. In a few cases, Mojo reports only combined data for some countries. For example, it aggregates data from Belgium and Luxembourg. In these cases, I also combine or average relevant country variables such as cultural distance and degree of globalization. If one country dominates other countries in GDP per capita or box office revenues, I simply use the data for the dominant country. Examples include France (France, Algeria, Monaco, Morocco, and Tunisia) and United

Kingdom (United Kingdom, Ireland, and Malta). Mojo sometimes divides release dates for Switzerland into three regions: the German-, French-, and Italian-speaking regions. If two or three of these dates are available, I use the earliest release date. I collected data for Taiwan from the International Monetary Fund (IMF) because WDI does not separately report data for Taiwan.[4]

Table 2 presents the descriptive statistics of the data. The final dataset includes 8,987 movie-country pairs. There are a few independent film studios in my dataset such as Lionsgate, Newmarket Films, and the Weinstein Company (Dimension Films). However, six major studios who are also members of MPAA—Paramount Pictures, Sony Pictures Entertainment, Twentieth Century Fox Film, Universal Studios, Walt Disney Studios, and Warner Bros.—dominate the industry. Some of these large studios also have subsidiaries for smaller art-type movies in addition to the division for the mainstream releases. Although consumers rarely consider the studio when they decide whether to watch a movie, studio-specific factors can affect international release time window. Previous research shows that large studios have very different parameters for their mainstream and their art labels (Ainslie, Dreze, and Zufryden 2005). Therefore, in the empirical model I subsequently discuss, I create a dummy variable for each studio instead of one 'major' studio dummy to control for studio-specific effects.

[4] World Bank does not add the numbers for Taiwan to the data cited for China.

Table 2
DESCRIPTIVE STATISTICS

| *Variable* | *Mean* | *SD* | *Min* | *Max* |
|---|---|---|---|---|
| WIN | 56.08 | 55.18 | 0 | 659 |
| REV | 2.82e+06 | 7.15e+06 | 443 | 1.22e+08 |
| PAD | 1.98e+07 | 7.11e+06 | 1.46e+05 | 3.50e+07 |
| PROD | 7.72e+07 | 4.79e+07 | 1.20e+06 | 2.70e+08 |
| USOPENWKND | 3.19e+07 | 2.35e+07 | 1.80e+05 | 1.36e+08 |
| USERATING | 6.59 | 1.04 | 3.2 | 8.8 |
| CRITIC | 56.17 | 15.7 | 19 | 94 |
| CD | 2.52 | 1.41 | 0.02 | 5.27 |
| GLOBAL | 71.23 | 12.28 | 34.33 | 91.67 |
| PIRACY | 51.05 | 18.81 | 21.00 | 93.00 |
| GDP | 14287 | 11946 | 409 | 40947 |
| SEASON | 1.96 | 0.62 | 0.30 | 6.03 |
| COMP | 1.43e+08 | 1.08e+08 | 0 | 5.85e+08 |
| SEQUEL | 0.23 | 0.42 | 0 | 1 |
| STAR | 0.57 | 0.49 | 0 | 1 |
| DIRECTOR | 0.24 | 0.43 | 0 | 1 |
| G | 0.04 | 0.19 | 0 | 1 |
| PG | 0.19 | 0.39 | 0 | 1 |
| PG13 | 0.53 | 0.50 | 0 | 1 |
| R | 0.25 | 0.43 | 0 | 1 |
| ACTION | 0.32 | 0.46 | 0 | 1 |
| ADVENTURE | 0.08 | 0.27 | 0 | 1 |
| ANIMATION | 0.10 | 0.30 | 0 | 1 |
| BIOGRAPHY | 0.03 | 0.18 | 0 | 1 |
| COMEDY | 0.24 | 0.43 | 0 | 1 |
| CRIME | 0.05 | 0.21 | 0 | 1 |
| DOCU | 0.00 | 0.06 | 0 | 1 |
| DRAMA | 0.14 | 0.35 | 0 | 1 |
| HORROR | 0.03 | 0.16 | 0 | 1 |
| ROMANCE | 0.00 | 0.06 | 0 | 1 |
| SCIFI | 0.01 | 0.08 | 0 | 1 |
| THRILLER | 0.00 | 0.05 | 0 | 1 |
| RATE (%) | 2.84 | 1.49 | 1.05 | 4.81 |

N=8,987

*Focal Variables*

*Box office revenues.* As discussed in Result 1 and Result 4, the demand potential for a movie in the focal foreign country will likely affect the launch time window and prelaunch advertising spending for the U.S. release. I use the foreign country box office revenues as a proxy for the demand potential in that country.

*Word of mouth.* As Result 2 and Result 5 suggest, I expect word of mouth to influence launch time window and prelaunch advertising. Consistent with Luan and Sudhir (2006), I capture the word of mouth for a movie through user rating from IMDB. The user rating is 1-10 scales and represents the valence of word of mouth. I do not include the volume of word of mouth for several reasons. First, my analysis requires cross-sectional data, but the volume of word of mouth changes every day. Second, previous studies measure word of mouth in terms of volume and valence of user ratings (e.g., Dellarocas, Zhang, and Awad 2007; Duan, Gu, and Whinston 2008; Liu 2006). These studies find that the volume of online user reviews of a movie is the highest during the prelaunch and the opening weeks, but then decreases gradually. The major driver of this volume of word of mouth activities is prelaunch marketing or advertising effort of the firm. Therefore, I capture the volume effect of word of mouth by prelaunch advertising. This is also consistent with the idea that word of mouth is perishable (Elberse and Eliashberg 2003). Perishability refers to the volume rather than the valence of word of mouth. Therefore, capturing the volume effect by advertising which is assumed to decay over time in my model is consistent with the idea of perishability of word of mouth. Third, several studies find that while the volume of user reviews has a positive impact on box-office

performance, the valence has no effect (Duan, Gu, and Whinston 2008; Liu 2006). However, this result may be due to a spurious correlation instead of true causation because those studies suffer from potential endogeneity due to the presence of unobserved movie characteristics that may be correlated with the valence and volume of user reviews. After controlling for the effect of the unobservables, Chintagunta, Gopinath, and Venkataraman (2009) find that valence of word of mouth (user rating) has a significant and positive impact on box-office revenues. Therefore, the common argument that volume of word of mouth is generally more important can be misleading. Fourth and most important, the focus of this study is to find the impact word of mouth as a quality measure on launch time window. The reason that firms want to delay foreign launch is to take advantage of positive word of mouth effect. Therefore, valence rather than volume of word of mouth is meaningful to my analysis. For these reasons, I operationalize word of mouth using valence of user reviews.

*Prelaunch advertising*. From Result 3, I expect prelaunch advertising expenditures to be positively related to launch time window. I obtained weekly advertising expenditures for the U.S. release from TNS. I calculated total prelaunch advertising spending based on U.S. opening day. The average prelaunch advertising to total advertising ratio in the data is 65.2%.

*Control Variables*

*Cultural distance*. I also expect a country's culture to be related to launch time window in foreign markets. A country's culture affects the diffusion of new product or service

(e.g., Gatignon, Eliashberg, and Robertson 1989; Takada and Jain 1991; Tellis, Stremersch, and Yin 2003). For example, by analyzing data from 299 movies released in the U.S. and in eight foreign countries, Craig, Greene, and Douglas (2005) find that U.S. films are substantially more successful in culturally closer countries than in countries that are culturally distant. If this is true, firms may want to launch their products faster into countries that are culturally close to the home country. To control for the influence of cultural proximity on entry time window and performance of a movie, I use a four-dimensional measure of the Hofstede index (e.g., Craig, Greene, and Douglas 2005; Gielens and Dekimpe 2007; Mitra and Golder 2002). These dimensions are: power distance, individualism, masculinity, and uncertainty avoidance. These dimensions represent the "collective programming of the mind" that distinguishes one national culture from another (Hofstede 2001, p.1). I construct a composite index of cultural distance from the U.S. for each country using these four dimensions, following Kogut and Singh (1988). For a few countries, for which the Hofstede index is unavailable, I use the average regional score as a proxy for the index.

*Critic's review*. Previous studies show a positive relationship between critic's review and movie performance (e.g.,Basuroy, Desai, and Talukdar 2006; Boatwright, Basuroy, and Kamakura 2007; Reinstein and Snyder 2005). To control for the effect of critical acclaim, I include "metascore" from Metacritic. Metascore is a weighted average of all of the scores assigned by individual critics to a movie from 42 magazines, major newspapers, and websites. Weights are based on the overall stature and quality of film

critics and publications. The resulting scores range from 0-100, with higher scores indicating better overall reviews.

*Production budget*. Production cost represents the biggest chunk of movie cost. Big production budgets are associated with high-profile stars or expensive special effects. Previous research shows that big budgets enhance box office revenue (e.g., Basuroy, Chatterjee, and Ravid 2003; Ravid 1999). To control for this effect, I include production budget.

*Star and director power*. Following prior research on the role of star actorand director power in a movie's success (e.g., De Vany and Walls 1999, 2002; Elberse 2007; Liu 2006), I use the "Power List" published by Premiere magazine to identify stars and directors and measure their appeal. I classify a person as a star actor or director if he/she is listed on Power List for the past five years.[5]

*Sequel*. Prior research shows that if a movie is a sequel, then it is associated with significantly higher box office revenues than when it is not (e.g.. Basuroy, Desai, and Talukdar 2006; Ravid 1999; Ravid and Basuroy 2004). To control for the effect of a sequel on performance and entry time window, I collect data on the 'sequel' variable. I operationalize sequel as a dummy variable, which takes the value 1 if the movie is a sequel.

*Economic wealth.* Consumers in wealthy countries adopt a new product more quickly than consumers in poor countries. Following previous research that shows that economic

[5] *The Hollywood Reporter*'s Star Power Survey used in several studies (e.g., Ainslie, Dreze, and Zufryden 2005; Elberse and Eliashberg 2003; Luan and Sudhir 2007) is not available after 2002. The list of stars in StarBond market on the Hollywood Stock Exchange used by Elberse (2007) has little discriminating power in my data.

wealth affects the diffusion of an innovation in a country (e.g., Chandrasekaran and Tellis 2008; Stremersch and Tellis 2004; Talukdar, Sudhir, and Ainslie 2002), I use GDP per capita.

*Degree of globalization.* Advertising spillover and word of mouth is affected by the speed of information transmission from the home country to the foreign country. This transmission depends on the degree of globalization in that country. I use the KOF index of globalization to capture a country's degree of globalization. Unlike other measures that incorporate only economic dimensions such as trade openness and foreign direct investment (FDI), the KOF index measures the economic, social, and political dimensions of globalization on the basis of a comprehensive set of 24 variables. The resulting index ranges from 0-100, with higher scores indicating a higher degree of globalization. I replace missing values for a few countries with regional averages.

*Seasonality*. Seasonality is one of the most important considerations when studios set both the domestic and the international release date because seasonality greatly affects performance of a movie. Studios typically release movies with higher anticipated box office revenues during weeks with higher seasonal demand. To control for seasonality for the U.S. release, previous studies use weekly dummy variables (e.g., Einav 2007), dummies for the major movie release seasons (e.g., Jedidi, Krider, and Weinberg 1998; Joshi and Hanssens 2009; Moul 2007), or construct a weekly index based on past weekly box office revenue (e.g., Ainslie, Dreze, and Zufryden 2005; Basuroy, Desai, and Talukdar 2006; Elberse and Eliashberg 2003). In my case, creating weekly dummy variables for each of 78 countries would not make much sense. Therefore, I opt for a

weekly index variable for each country. I collect weekly revenue data[6] from 2002 to 2008 and calculate average weekly revenue share for top 10 movies each week and each country.[7]

*Competitor strength*. Studios trade off the effects of seasonality and competition in their launch timing decisions. While they prefer releasing a movie during periods with higher seasonal demand, they also want to avoid head to head competition with other movies. Therefore, they will likely release movies into countries when competitor movies are not strong. Competitor movies are likely to have a negative effect on a movie's revenues in a country (Basuroy, Desai, and Talukdar 2006; Elberse and Eliashberg 2003). Consistent with Luan and Sudhir (2006), I measure competitor strength using the total production budgets of all competitor movies that were released in a two-week period prior to the focal movie's launch in the focal country.

*Piracy*. For products with intellectual content such as movies, music albums, and books, piracy concern may affect launch time window decision. It is argued that studios use a simultaneous launch strategy to combat piracy. For example, when *Spider-Man 3* was released in 16 overseas markets including China on May 1, 2007, three days prior to the U.S. release, the move was viewed as a means to secure a strong opening at the countries' box offices before pirated copies had a chance to flood those markets (*The Hollywood Reporter* 2007). Piracy rate can also affect the financial performance of

[6] I use weekend revenues in each country instead of total weekly revenues due to data unavailability. Revenue data are adjusted for inflation.

[7] There are two potential problems with this approach. First, major holidays might be slightly different from year to year in some countries. Second, weekly revenues are not available for some weeks and countries, especially for early years. However, averaging weekly revenues from multiple years mitigates these problems.

movies. To control the effect of piracy on time window and country revenue, I use software piracy rate in each country from BSA. In a few cases, where the piracy data have missing values, because piracy rates show little variation year to year, I use the following year's figures. I use average regional data for a few countries for which piracy rate is missing.

*Discount rate.* The discount rate represents the cost of delaying the release of a movie in international markets. A higher discount rate reduces the present value of box office revenues. Therefore, all else equal, I expect higher discount rate to reduce time window. I measure discount rate by the annual interest rate on six-month U.S. Treasury bills.

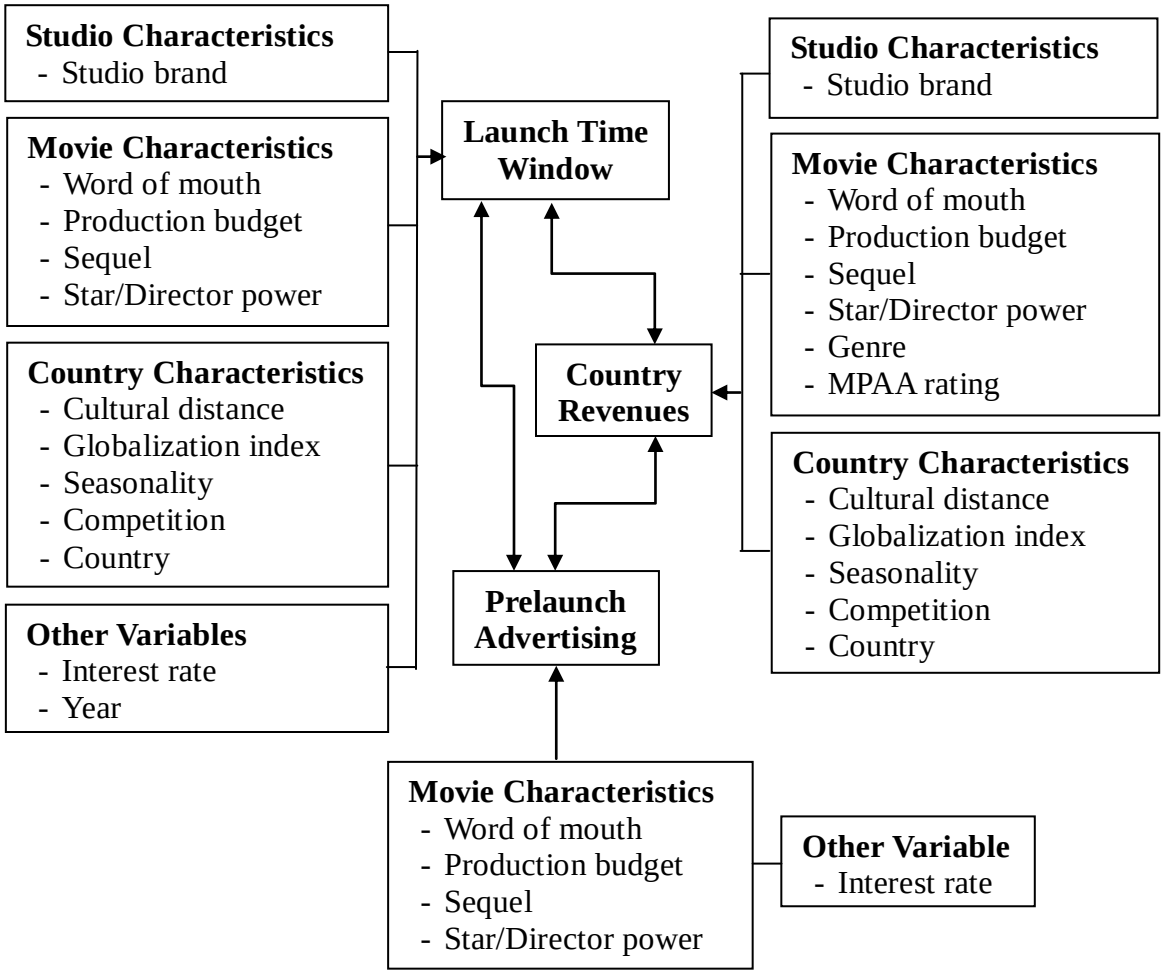
In addition, the number of screens is a potential determinant of country revenues (Neelamegham and Chintagunta 1999; Elberse and Eliashberg 2003). I do not include the number of screens because my analysis requires data on the film's entire run in each of the countries rather than weekly data. The number of screens varies week by week or even day by day (Duan, GU, and Whinston 2008), making including only one number for screens inappropriate. Furthermore, the impact of screens on opening revenues is different from the impact on revenues in subsequent weeks (Elberse and Eliashberg 2003). For similar reasons, Craig, Greene, and Douglas (2005) do not include the screen variable in their analysis. Whether a movie is dubbed into the local language or not is a potential factor that may affect launch time window decision. Dubbing depends on country practice. For example, movies are generally dubbed in Germany and France, but subtitled in Greece and Croatia. However, many movies are simultaneously introduced into 50-70 countries, suggesting that dubbing is not a defining factor that affects entry

timing. That is, whether dubbing affects launch time window depends on the studio's capability and resources. I control for this studio specific factor by including studio dummy variable. Movie lead-lag experience is another potential determinant of launch time window and performance. The measure for this variable, the number of countries in which the product was previously launched, however, is correlated with word of mouth, precluding its inclusion.

### *Empirical Model*

Figure 1 shows the conceptual model for my empirical analysis. The model presents the determinants of time window, prelaunch advertising expenditures, and box office revenues in foreign countries. Three main sets of factors affect entry time window: studio characteristics, movie characteristics, and country characteristics. I also include two other types of variables: interest rate to control for the effect of discount rate on time window and year dummy variables to account for potential time trend in entry time windows. Two sets of factors affect the decision of prelaunch advertising spending level for U.S. release of a movie: movie characteristics and interest rate. Finally, three sets of factors affect the financial performance of a movie: studio characteristics, movie characteristics, and country characteristics.

Figure 1 A CONCEPTUAL MODEL OF THE DETERMINANTS OF LAUNCH WINDOW, COUNTRY REVENUES, AND PRELAUNCH ADVERTISING




For To incorporate this conceptual model and to test the predictions from my analytic model, I develop a system of three equations.

$$(14)\quad \ln WIN_{mc} = \alpha_0 + \alpha_1 \ln REV_{mc} + \alpha_2 \ln PAD_m + \alpha_3 \ln X_{1m} + \alpha_4 \ln Y_{1c} + \alpha_5 D_{1m} + \alpha_6 D_{1c} + \alpha_7 \ln Z_{1mc} + \varepsilon_{mc}$$

$$(15)\quad \ln REV_{mc} = \beta_0 + \beta_1 \ln WIN_{mc} + \beta_2 \ln PAD_m + \beta_3 \ln X_{2m} + \beta_4 \ln Y_{2c} + \beta_5 D_{2m} + \beta_6 D_{2c} + \beta_7 \ln Z_{2mc} + \eta_{mc}$$

$$(16)\quad \ln PAD_m = \gamma_0 + \gamma_1 \ln WIN_{mc} + \gamma_2 \ln REV_{mc} + \gamma_3 \ln X_{3m} + \gamma_4 D_{3m} + \nu_m$$

*WIN* is the time window (in days) between the launch dates in the U.S. and the focal country *c*, *REV* is the total box office revenues, *PAD* is the prelaunch advertising spending, *X* is a vector of non-dummy movie-specific characteristics, *Y* is a vector of country-specific characteristics, *Z* is movie- and country-specific characteristics, *D* is a vector of movie- and country-related dummy variables including release year dummies, *m* is movie, $\varepsilon$, $\eta$, and $\nu$ are error terms, and $\alpha$, $\beta$, and $\gamma$ are parameter vectors associated with different variables in the equations.

The decision of launch time window and prelaunch advertising depends on the expected values of box office revenue and word of mouth in my model. Some scholars construct expected values using weekly revenue data. For example, Elberse and Eliashberg (2003) and Basuroy, Desai, and Talukdar (2006) employ an exponential smoothing procedure to derive the anticipated revenues. My analysis does not allow us to adopt this method because it requires cross-sectional rather than panel data. Instead of constructing anticipated values of a movie by an arbitrary method, I assume that the expected revenue is the same as the actual values based on the theory of rational expectations (Muth 1961). Rational expectations is a basic building block for many important theories such as the efficient markets hypothesis of stock prices, the theory of hyperinflations, and the permanent income theory of consumption. The theory says that economic agents use all information available when forming their forecasts, therefore, the forecast error is not correlated with the information available when the forecast was made. This implies that economic outcomes do not systematically differ from what people expected. I rely on this theory for two reasons. First, in econometric point of

view, using actual values instead of expected values may create potential endogeneity due to forecasting errors. I deal with this issue using an instrumental variable method.Constructing expected values does not alleviate the issue of endogeneity because neither do I, as a researcher, know the exact procedure used by each studio manager for each movie, nor have the same level of industry-specific knowledge as managers. The question boils down to whether firms' expectations are accurate enough to allow us to rely on rational expectations. Hollywood Stock Exchange, a virtual stock market for movies and Hollywood stars, provides excellent support in this regard. In Hollywood Stock Exchange, people trade unreleased movies based on their expected box-office revenues. Several papers are published based on data on this market (e.g., Elberse 2007; Elberse and Anand 2007). According to the data used by Elberse (2007) and Elberse and Anand (2007), correlation between expected revenues and adjusted revenues based on actual performance after opening is 0.94.[8] This fact shows that using actual values based on rational expectations is well supported. Second, using actual revenues also makes sense for managerial implication. Forecasting techniques of box office revenues have significantly improved as evidenced by previous studies (e.g.,Eliashberg et al. 2000; Neelamegham and Chintagunta 1999; Sawhney and Eliashberg 1996). My analysis aims to find the effect of the tradeoff between prelaunch advertising and word of mouth regarding launch time window by estimating related parameters assuming that managers have reasonably good expectations. Given that the main purpose of this research is not offering a reliable method of forecast, using actual values relying on rational expectation

[8] The correlation between the expected revenues and actual revenues four weeks after the release is 0.89. Four-week revenues, on average, account for around 85% of total revenues of a movie (Elberse 2007).

will provide managers with better implications. Basuroy, Chatterjee, and Ravid (2003) also assume that the expected revenue in the first week of a movie is the same as the actual revenue.

I also address the issue of negative time windows. In my data, time windows range from -14 to 659 days with about 6.6% being negative windows (-1 to -14). Trade journals cite several reasons why studios release movies in foreign countries before they release them in domestic market. One reason is that the typical opening day of the week in each country is different from that in the U.S.— Friday. In this case, a few days of negative window can appear. A more important reason for negative windows is seasonality. For example, *Constantine* (2005) was released in South Korea, 10 days before the U.S. release to take advantage of Lunar New Year's Day, one of the biggest national holidays in that country. As long as distributors release their films outside the U.S. first to take advantage of local holidays, negative windows do not pose a problem if I properly control for country-specific seasonality. They can be set to zero if necessary because those windows can be considered simultaneous releases.

However, if negative windows are due to concern about piracy, then I cannot set those windows to zero. My data, however, do not support this possibility. The correlations between time window and piracy rate are only 0.035 in the entire sample and 0.126 in the sample containing only negative windows. To explore this issue further, I estimated several OLS models of time window with various specifications of piracy, using observations with negative windows. In all the models, the coefficient of piracy is insignificant ($p > 0.10$). In fact, this result makes sense because studios do not have to

release films first outside the U.S. even if they are concerned about piracy. They will be more effective in preventing piracy if they release movies on the same date as the U.S. release because the domestic market can be hurt if the movie is released first in foreign markets. Therefore, I conclude that negative windows are due to differences in seasonality or in the typical opening day of week. Thus, negative windows can be regarded as simultaneous releases. This practice is also consistent with previous research in marketing and economics. For example, Elberse and Eliashberg (2003), who use A.C. Nielsen EDI data, report the range of international time windows as 0 to 514 days and use a logarithmic transformation of time window. Engen and Gale (2000) apply the natural logarithmic transformation to median regression after setting negative values to one using a technique outlined in Johnson, Kitamura, and Neal (2000).[9] I set negative and zero windows to one to enable log-transformation.

I finally estimate a log-linear model. An advantage of this specification is that the estimated coefficients represent the elasticity of the dependent variables with respect to changes in the independent variables. A similar specification is used by Basuroy, Desai, and Talukdar (2006) for domestic market and Elberse and Eliashberg (2003) for international markets. I estimate this system of three equations using three-stage least squares (3SLS). The OLS estimator is inconsistent due to endogeneity of time window, country revenue, and prelaunch advertising in the equations. In addition, the errors in the three equations may be correlated. For example, a new release of a blockbuster movie in

[9] In median regression, if the conditional median is greater than zero, this recoding does not affect the coefficients, but affects standard errors in some cases because it changes the distribution of the residuals (Pence 2001).

one country can affect revenues of the movie in the country and the time window decision for the country. In this case, a three-stage least square (3SLS) procedure is more efficient than a two-stage least squares (2SLS) procedure (Zellner and Theil 1962). I also treat word of mouth as endogenous to account for the potential presence of movie-specific unobserved factors such as quality.

I do not include MPAA ratings and genre in the Window equation in my final model. Correlation between time window and these variables are low (Corr < 0.1 in most cases). Most of them are not significant in the Window equation when I include them. Therefore, I conclude that MPAA ratings and genre do not theoretically affect the time window decision. I do not include critic's review in the final model estimation due to its high correlation (0.8) with user rating. Likewise, I also do not include piracy rate and real GDP per capita due to their high correlations with globalization index (-0.73 and 0.68, respectively). Instead, I use these variables to check for the robustness of my results.

## *Results and Robustness Checks*

### *Results*

The results from the time window, prelaunch advertising, and country revenues equations appear in Table 3. With regard to the window equation, I expected foreign demand potential to be negatively related to launch time window (Result 1). The negative and significant ($p < 0.01$) coefficient of country revenues suggests that distributors launch movies with higher expected revenues faster into foreign markets. This strategy helps them realize worldwide revenues sooner. The coefficient of user rating, the measure of word of mouth, is positive and significant ($p < 0.05$), consistent with my expectation (Result 2). Distributors delay international releases of a movie with high word of mouth. A delayed entry allows the word of mouth effect to build over time and have a stronger effect when the product is launched into the country. The coefficient of prelaunch advertising is negative and significant ($p < 0.01$) as predicted by Result 3. With higher level of prelaunch advertising spending, distributors launch a movie faster into foreign markets to take advantage of advertising spillover across countries.

Table 3
EMPIRICAL RESULTS OF THE WINDOW, REVENUE, AND PRELAUNCH ADVERTISING EQUATIONS

| *Effect of* | *Time Window* | *Country Revenue* | *Prelaunch Ad* |
|---|---|---|---|
| LNREV | -0.848 (0.068)*** | | -0.000 (0.004) |
| LNWIN | | -0.294 (0.019)*** | -0.020 (0.011)* |
| LNPAD | -0.295 (0.073)*** | 0.092 (0.028)*** | |
| LNUSERATING | 0.456 (0.226)** | 1.937 (0.238)*** | -1.837 (0.077)*** |
| LNPROD | -0.206 (0.046)*** | 0.271 (0.025)*** | 0.464 (0.011)*** |
| STAR | 0.388 (0.031)*** | 0.095 (0.021)*** | 0.173 (0.014)*** |
| DIRECTOR | -0.240 (0.043)*** | 0.024 (0.032) | 0.023 (0.019) |
| SEQUEL | -0.417 (0.045)*** | 0.224 (0.028)*** | -0.115 (0.018)*** |
| LNCD | 14.692 (1.547)*** | 0.303 (1.245) | |
| LNGLOBAL | -0.639 (0.598) | 0.187 (0.417) | |
| LNSEASON | 0.261 (0.077)*** | 0.483 (0.048)*** | |
| LNCOMP | 0.001(0.002) | -0.001 (0.002) | |
| LNRATE | -0.244 (0.027)*** | | 0.066 (0.012)*** |
| YR04 | -0.034(0.030) | | |
| YR05 | -0.222 (0.028)*** | | |
| G | | -0.025 (0.057) | |
| PG | | 0.013 (0.033) | |
| R | | -0.030 (0.029) | |
| ACTION | | -0.110 (0.151) | |
| ADVENTURE | | -0.032 (0.151) | |
| ANIMATION | | 0.010 (0.152) | |
| BIOGRAPHY | | - 0.713 (0.157)*** | |
| COMEDY | | -0.083 (0.151) | |
| CRIME | | 0.055 (0.150) | |
| DOCU | | 0.803 (0.192)*** | |
| DRAMA | | -0.152 (0.153) | |
| HORROR | | 0.301 (0.167)* | |
| ROMANCE | | -0.532 (0.199)*** | |
| SCIFI | | -0.370 (0.184)** | |
| $R^2$ | 0.374 | 0.778 | 0.271 |

N = 8,987. Standard errors are in parentheses. Window equation includes studio, year, and country dummies and revenues equation includes country dummies. The parameter estimates corresponding to these variables are not shown to save space. Year 03, PG13, and THRILLER are the base cases. YR06 is dropped due to its collinearity with interest rate, in particular.
* Significant at 10%; ** significant at 5%; *** significant at 1%.

The effects of control variables in the window equation are generally in the expected directions. I expected cultural distance from the home country and degree of globalization to affect launch time window. Consistent with my expectation, the coefficient of cultural distance is positive and significant ($p < 0.01$), suggesting that movie studios launch a movie faster into culturally proximate countries. The coefficient of globalization index, however, is not significant ($p > 0.10$), although it is in the expected direction. The coefficient of sequel is negative and significant ($p < 0.01$), suggesting that distributors tend to release sequels faster into international markets. The up-front investment in making a sequel is typically much higher than that of a non-sequel because actors and actresses have more bargaining power in sequels. The average production budget of sequels ($95.3 million in my data) is also higher than that of non-sequels ($72.2 million in my data). Sequels serve as quality signals (Basuroy, Desai, and Talukdar 2006) and have less uncertainty than do non-sequels. The coefficient of sequel in the revenues equation is consistent with this explanation. It is positive and significant ($p < 0.01$), indicating that sequels generate greater revenues than do non-sequels. Production budget is negatively associated with launch time window ($p < 0.01$), consistent with my expectation. The signs of coefficients of star and director power, however, are mixed. Studios release movies with prominent directors faster into foreign countries, but launch movies with star actors slower into international markets. Competitor strength is insignificant ($p > 0.10$). The coefficient of interest rate is negative and significant ($p < 0.01$), suggesting that a higher interest rate is associated with a

shorter time window to launch in the foreign country. The coefficients of year dummies show that international launch time window has shortened over the years.

The results from the revenues equation offer important insights that are consistent with those from the window equation. The coefficient of launch time window is negative and significant ($p < 0.01$), consistent with my expectation. This finding suggests that the shorter the window, the higher the revenues from international markets, controlling for other factors. The coefficient of prelaunch advertising is positive and significant ($p < 0.01$). This result confirms the existence of cross-country advertising spillover that can be utilized by using a simultaneous release strategy. The coefficients of user rating, production budget, star power, and sequel all have the expected signs (positive) and are significant ($p < 0.01$). The coefficients of cultural distance, globalization index, and competitor strength, however, are not significant ($p > 0.10$). Genres such as biography, documentary, horror, romance, and sci-fi have significantly different ($p < 0.10$ or better) base revenues from thriller, which seems to have similar base revenues as action, adventure, animation, comedy, crime, and drama genres.

For the prelaunch advertising equation, the coefficient of launch time window is negative ($p < 0.10$), reinforcing the negative relationship between launch time window and prelaunch advertising uncovered in the window equation. Consistent with my prediction (Result 5), the coefficient of user rating is negative and significant ($p < 0.01$). Firms tend to spend less in prelaunch advertising for products with greater expected word of mouth. They seem to understand and take advantage of the complementary role of consumer word of mouth with prelaunch advertising. This result also provides

evidence for studios compensating lower expected user ratings with high prelaunch advertising. Together with the result about the effect of prelaunch advertising spending on launch time window, this result shows that firms take into consideration the tradeoff between prelaunch advertising and word of mouth effect when deciding a foreign release strategy. Two studies provide supporting evidence for my finding. Basuroy, Chatterjee, and Ravid (2003) find that star power and big budgets do not influence revenues for films that receive predominantly positive critical reviews, but they are positively correlated with box office performance for films that receive predominantly negative reviews. That is, firms seem to use star power and big budgets to blunt the impact of negative reviews. Another study by Joshi and Hanssens (2009) find that movies with above average prelaunch advertising have lower postlaunch stock returns than films with below average advertising.

I expected foreign demand potential to be positively related to prelaunch advertising (Result 4). However, the coefficient of country revenues is not significant ($p > 0.10$). Studios spend more on prelaunch advertising for movies with higher production budgets and stars ($p < 0.01$). An interesting finding is that sequels spend less on prelaunch advertising than do non-sequels. This is because sequels are already known, so they may leverage the quality signal rather than depend on advertising spending (Basuroy, Desai, and Talukdar 2006). The coefficient of interest rate is positive and significant ($p < 0.01$), suggesting that studios spend more on prelaunch advertising with higher interest rate.

*Robustness Checks*

I performed several robustness checks. First, I tried GDP per capita and piracy rate instead of globalization index. Although I could not add these variables to my model due to their collinearity with globalization index, I obtain the same results when I included these variables in lieu of globalization index. Second, I estimated a model with critic's review as an alternate measure of word of mouth. I could not include both critic's review and user rating in the same model due to high correlation between them. The substantive results remain unchanged. Third, to control for different operationalizations of seasonality, I constructed an alternative measure of seasonality. I created a dummy variable for each holiday in each country by manually coding all the major holidays for each major country that generates a significant portion of foreign revenues. The results were similar. Fourth, to see whether negative windows create any estimation bias, I ran the same model after dropping the negative windows instead of setting them to zero. The results were the same.

Finally, I performed additional analyses to rule out whether there is any systematic bias due to potential missing observations. A possible reason why I do not observe all 78 countries for each movie could be that either a movie was released into only specific set of countries or that data were simply missing even if the movie was released into larger set of countries. To investigate this issue, I estimated several probit models. I selected the top10 and top 20 countries in number of movies released and created dummy variables which take 1 if a movie was released into all those top 10 or top 20 countries and 0 otherwise. I also created dummy variables based on whether a

movie was released into more than 50 or 60 countries. I estimated probit models in which the dependent variables are those dummy variables. The independent variables are genre dummies (Craig, Greene, and Douglas 2005). In all four probit models, the overall model was not significant ($\chi^2 = 3.63$, degrees of freedom [df] = 5; $\chi^2 = 6.20$, df = 7; $\chi^2 = 3.63$, df = 7; $\chi^2 = 8.52$, df = 8). Thus, I do not find any evidence for a systematic bias due to missing data.

A summary of the key results with brief explanation and rationale appears in Table 4. Among the determinants of launch time window, word of mouth (+), prelaunch advertising (-), foreign demand potential (-), and cultural distance (+) are the key variables and their relationships are in the expected directions. With regard to the determinants of revenues equation, launch time window (-), word of mouth (+), and prelaunch advertising (+) have important effects in the right directions. For prelaunch advertising, time window (-) and word of mouth (-) are the key variables and their relationships are in line with my predictions.

Table 4
SUMMARY OF KEY RESULTS

| *Variable* | *Effect* | *Brief Interpretation and Rationale* |
|---|---|---|
| Launch Time Window | | |
| Word of mouth | + | Firms delay launch of new products in a foreign country if the word of mouth for those products is higher. By entering the foreign market later, firms can leverage the positive word of mouth built over time. |
| Prelaunch advertising | - | Firms enter a foreign country earlier if they spend more on prelaunch advertising in their home market. Entering early enables them to leverage the global buzz created by a large advertising campaign. |
| Country demand potential | - | Firms launch products into a foreign country more quickly if the market potential in that country is higher. Early entry in high-potential markets can earn greater revenues and profits faster before competitors can make inroads into the markets. |
| Cultural distance | + | Firms enter those countries that are more culturally distant from their home country later than when they enter culturally closer countries. Consumer acceptance of new products is faster and home country management practices are more effective in culturally closer countries. |
| Country Revenue | | |
| Launch time window | - | All else equal, the longer the launch time window in a country, the smaller the sales revenues in that country. Early entry in a country earns greater revenues and profits faster before competitors can make inroads into that country. |
| Word of mouth | + | Firms earn greater revenues in a foreign country when the positive word of mouth effect is larger. Positive word of mouth acts as an effective advocate for the product in that country. |
| Prelaunch advertising | + | Firms earn greater revenues for their products in a foreign country if they spent more on their advertising before launching in their home country. |
| Prelaunch Advertising | | |
| Launch time window | - | All else equal, the longer the launch time window for foreign countries, the smaller the prelaunch advertising for domestic release. To leverage the global buzz created by advertising spillover across countries, firms need to enter early into foreign markets. |
| Word of mouth | - | Firms spend less in prelaunch advertising for products with greater expected word of mouth. They take advantage of the complementary role of consumer word of mouth with prelaunch advertising by compensating lower expected user ratings with high prelaunch advertising. |

## *Managerial Implications, Limitations, and Future Research*

### *Managerial Implications*

What should managers do as a result of the findings? First, managers should carefully balance the tradeoff between prelaunch advertising and word of mouth effects when deciding international entry time window. If domestic prelaunch advertising spending budget is low, they should delay release in the foreign country. However, if firms can support a new product with high prelaunch advertising, then they should not delay international release because the advertising spillover effect can dissipate quickly. Managers should, however, delay international launch if they expect positive user reviews so that they can better leverage the word of mouth effect from those reviews. User ratings typically depend on the quality of new products. Thus, the international entry timing decision is a tradeoff between leveraging product quality versus marketing effort. On the one hand, if managers believe that product quality is the stronger driver of performance, then they should delay foreign entry to take advantage of the positive word of mouth effect. On the other hand, if they anticipate marketing effort to more strongly drive revenues, then they should enter foreign markets as quickly as they can. Second, managers also need to consider several country-specific factors when deciding foreign entry timing. My results suggest that they should consider such factors as cultural distance and seasonality. Managers should consider launching new products faster into countries that are culturally closer to their home country.

Finally, what strategy do/should managers follow if they do not or cannot spend a high amount on prelaunch advertising? One strategy comprises the following steps. (1) Spend as much as their budgets allow before the product release, anticipating the opening demand in the home country and (2) use the opening performance as an additional guide for determining launch time window in each country. To analyze such a strategy, I estimated my model on a subset of my sample containing observations with foreign launch time windows longer than seven days (to allow for studios to observe the opening week revenues) and prelaunch advertising ratio less than the average (65.2%). In this model, I also included U.S. opening week revenues as an independent variable to examine its influence on launch time window. The results appear in Table 5. The coefficient of U.S. opening revenue in the window equation is positive and significant ($p < 0.01$). This result suggests that managers delay foreign release if they do not have a large prelaunch advertising budget and if the initial response to the product (initial domestic revenues) is high. This result is consistent with the idea that firms should delay foreign launch if they expect a strong word of mouth effect.

Table 5
SELECTED RESULTS OF THE WINDOW, REVENUE, AND PRELAUNCH ADVERTISING EQUATIONS
(Window > 7 days and Prelaunch Ad/Total Ad < Mean value [0.65])

| *Effect of* | *Time Window* | *Country Revenue* | *Prelaunch Ad* |
|---|---|---|---|
| LNREV | -0.544 (0.043)*** | | 0.008 (0.011) |
| LNWIN | | -0.363 (0.066)*** | -0.437 (0.049)*** |
| LNPAD | -0.163 (0.039)*** | 0.014 (0.04) | |
| LNUSOPENWKND | 0.056 (0.014)*** | 0.106 (0.017)*** | |
| $R^2$ | 0.316 | 0.809 | 0.331 |

N = 2,417. Standard errors are in parentheses. Model specification is the same as in the previous model. Only U.S. opening weekend revenues is added as additional independent variable. The estimates of the remaining variables are not shown to save space.
* Significant at 10%; ** significant at 5%; *** significant at 1%.

To summarize, my research has important implication on current practice of the motion picture industry and potentially on other industries with short life cycle products. For example, studios are increasingly relying on day-and-date practice worldwide –a simultaneous launch strategy. My findings suggest that overemphasizing day-and-date practice can be misleading. One of the main reasons that studios are leaning toward simultaneous launch is the concern about piracy (DiOrio 2003). However, the impact of piracy on revenues is still controversial (e.g., see Oberholzer-Gee and Strumpf (2007) for music industry) or even can be positive in some cases (Jain 2008). To see the effect of piracy, I included piracy rate instead of globalization index as an independent variable. Table 6 shows the result from this regression model. The coefficient of piracy is positive and marginally significant ($p < 0.1$) in the revenues equation. I need to be

cautious in interpreting this result because the piracy rate I used is overall software piracy rate rather than movie piracy. However, movie piracy will be highly correlated with software piracy in general. Therefore, my finding provides a caveat against overemphasizing piracy concern. Firms can increase return on investment by leveraging word of mouth effect instead of overly relying on advertising spending.

Table 6
EMPIRICAL RESULTS OF THE WINDOW, REVENUE, AND PRELAUNCH ADVERTISING EQUATIONS WITH PIRACY RATE

| *Effect of* | *Time Window* | *Country Revenue* | *Prelaunch Ad* |
|---|---|---|---|
| LNREV | -0.865(0.068)*** | | -0.001(0.004) |
| LNWIN | | -0.299(0.019)*** | -0.021(0.010)** |
| LNPAD | -0.312(0.073)*** | 0.101(0.028)*** | |
| LNPIRACY | 0.308(0.218) | 0.288(0.154)* | |
| $R^2$ | 0.378 | 0.783 | 0.272 |

N = 9,183. Standard errors are in parentheses. Model specification is the same as in the previous model. Only globalization index is replaced by piracy rate. The estimates of the remaining variables are not shown to save space.
* Significant at 10%; ** significant at 5%; *** significant at 1%.

# CHAPTER III

# DOES COUNTRY SEQUENCE MATTER IN THE INTERNATIONAL ROLLOUT OF NEW PRODUCTS? EVIDENCE FROM THE MOTION PICTURE INDUSTRY

## *Introduction and Related Literature*

Previous studies on international market entry and diffusion have explored issues such as international market entry mode, the timing of international rollout, and time to takeoff. However, very little is known about the important issue of the order or sequence of countries in which firms introduce new products.

Country sequence matters in the international rollout of new products because it affects overall product performance in foreign markets. First, the international diffusion literature suggests the existence of a lead-lag consumer learning effect in which the diffusion of an innovation is faster in the lag countries than in the lead countries (e.g., Dekimpe et al. 2000; Ganesh and Kumar 1996; Putsis et al. 1997). Lead (lag) countries refer to those into which a new product is introduced early (late). One reason for the lead-lag effect is that potential adopters in the lag countries can observe market performance in lead countries and lower their risk of trial by making suitable adoption decisions. The strength of consumer learning effect may not be the same in all countries. That is, the effect of market performance in one country on another country can be different for different countries. The diffusion of the product in some countries may be strongly affected by diffusion in other countries or have stronger influence on the

diffusion in other countries. By knowing the lead-lag consumer learning effect, firms can enhance overall revenues from foreign countries by effectively planning the launch sequence of new products.

Second, there may be spillover of the effects of marketing efforts across countries. Marketing spillover refers to the broad effect of domestic marketing efforts on sales in foreign markets. Domestic advertising can affect foreign sales in many ways. Some potential customers in foreign countries may be directly exposed to advertising in the home country. For example, in the motion picture industry, foreign audience can easily watch a trailer for a movie through various websites. Furthermore, the local media are more likely to cover those products with heavy advertising support in their home countries, increasing the awareness and attractiveness of the products among potential consumers in other countries. Local channels and distributors will also likely promote those products that receive large advertising support in other countries (Tellis, Stremersch, and Yin 2003). Indeed, a few studies provide supporting evidence of marketing spillover across countries. A study by Fischer, Shankar, and Clement (2005) examines international market entry strategies in terms of market scope and the speed of rollout. They find that late mover brands that sequentially enter many large international markets show greater marketing spending efficacy through marketing spillover effect. In an analysis of 207 Hollywood movies launched into 78 countries, Song and Shankar (2009) find that domestic prelaunch advertising of a new movie affects box office revenues in foreign countries. Thus, country sequence in market entry affects overall foreign market performance through the marketing spillover effect.

Third, organizational learning from experience in prior countries can enable firms to make smarter launch decisions in countries that come later in the sequence. Mitra and Golder (2002) find that knowledge generated by a firm's subsidiaries in similar markets plays an important role in subsequent foreign market entries. The impact of organizational learning on performance can be also different for different countries. Therefore, country sequence is an important factor that affects overall foreign performance.

Despite the importance of country sequence in the international launch of new products, important questions related to this issue remain underexplored. What are the effects of country sequence on international market performance? What are the determinants of country sequence? I address these important research questions using the motion picture industry as the context. I develop and empirically test several hypotheses related to these research questions.

Although previous research does not directly examine the issue of country sequence, studies on international diffusion of new products provide some implications on the country sequence decision. Putsis et al. (1997) investigate how prior adoption of a new product in one country affects adoption in other countries. Based on the pattern of diffusion interaction across countries in their data, they recommend a strategy of entering Germany, France, Italy, and Spain to seed the diffusion process. Their reasoning is that these countries quickly adopt new products, while having a strong influence on diffusion in other countries.

Tellis, Stremersch, and Yin (2003), who analyze the takeoff of 10 consumer durables across 16 European countries, suggest a different strategy. They find that Scandinavian countries tend to have the shortest time to takeoff of all European countries. They also find that the probability of takeoff of a new product in a country increases with prior takeoffs in other countries. These findings suggest that a strategy of introducing first in the Scandinavian countries because these countries are innovative and have a short time to takeoff.

Van Everdingen, Fok, and Stremersch (2009) examine the global spillover effect of foreign product introductions of ethical drugs and their takeoffs on a focal country's time to takeoff. They recommend launching first in Hong Kong, U.S., Germany, France, U.K., and Switzerland because these countries have short times-to-takeoff and have strong impact on adoption in other countries.

The findings from these studies can be summarized as cross-country spillover effects. As discussed in the introduction section, this spillover phenomenon can be cross-country lead-lag effect or learning effect. These findings, however, are based only on time to takeoff or speed of adoption. These studies do not directly operationalize or study the "country sequence" variable. Nor do they directly examine the impact of country sequence on revenues.

Two other studies examine the issue of entry timing into international markets. Mitra and Golder (2002) examine the impact of dynamic near-market knowledge (a firm's own operations in similar markets) and other economic and cultural variables on foreign market entry timing. Using a hazard model on 722 foreign market entries of 19

multinational firms, they find that near-market cultural and economic knowledge has an important impact on foreign market entry timing. Firms are more likely to enter countries in which they have greater cultural and economic knowledge based on operating in similar countries. Gielens and Dekimpe (2007) also estimate a hazard model on the top 75 European grocery retailers' decisions to enter the Eastern European market and find that firms take their competitors' prior decisions into account when deciding on their own entry timing.

My research also differs from these studies in two important ways. First, these studies focus on firm-level entry decision rather than product- or brand-level entry decision. They examine only the timing of entry. In contrast, I focus on the product-level or brand-level decision on the order or sequence of entry. Second, these studies use a model of dynamic updating of entry decisions. Such a model is not appropriate for short life cycle products such as movies that I use as my empirical context. This is because once media plans are scheduled for short life cycle products, they are hard to change over short time periods. For example, movie studios typically buy the vast majority (as much as 90%-95%) of their TV advertising in the ''up-front'' advertising market, at least several months prior to movies' releases. Based on interviews with studio executives, Elberse and Anand (2007) report that once advertising expenditures are allocated across media outlets, studio executives have limited flexibility in adjusting a movie's advertising campaign in the weeks leading up to the release even if they receive updated information about the movie's potential or changes in the competitive environment.

I extend prior research in several important ways. First, I investigate the effect of country sequence on product performance by directly operationalizing "country sequence." Second, I examine the key determinants of country sequence. Third, I recommend a strategy of entry sequence based on the strength of performance spillover effects across countries.

## *Conceptual Development and Hypotheses*

In this section, I develop hypotheses about the factors that affect foreign market performance of new product and about the determinants of country sequence. I first develop hypotheses regarding the home-foreign country relationship factors that affect foreign market performance and then I formulate hypotheses on the factors that determine the country sequence.

### *Home-Foreign Country Relationship Factors*

*Performance spillover*. The market performance of a product in a country affects its performance in other countries due to cross-country lead-lag effect, consumer learning, or organizational learning effect. There can be also word-of-mouth effects generated from lead countries (Kalish, Mahajan, and Muller 1995). Good performance in other countries implies more adopters, so that a consumer in a focal country has a higher probability of contacting adopters from other countries.[10] For example, in the motion

[10] 'Social interaction' is a broader term that includes both communication (word of mouth) as well as

picture industry, as movies are often sequentially released into foreign countries, consumers who watch a movie in one country post their opinions on websites even before the movie is released in other countries. These online and offline contacts can increase the acceptance of the new product in the target country. For these reasons, I advance the following hypothesis.

*H1*: A new product's past revenues from countries in which it has been introduced are positively related to its current revenues in a focal foreign country.

*Marketing efforts spillover*. As mentioned earlier, marketing efforts in one country can spillover to another country. Potential customers in foreign countries can be directly exposed to advertisements in another country. The local media and distribution channel are more likely to promote those products with heavy advertising support in other countries. Therefore, if cross-country marketing spillover effect exists, then countries that come later in the launch sequence can benefit from the new product's marketing efforts in previous countries.

*H2:* Marketing spending for a new product in countries in which it has been introduced is positively related to its revenues in a focal foreign country.

*Cultural distance.* A country's culture affects the diffusion of new product or service (e.g., Gatignon et al. 1989; Takada and Jain 1991; Tellis et al. 2003). Furthermore, cultural goods, such as movies and music, may perform better in countries culturally closer to the home country. [11] For example, by analyzing data from 299 movies released

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observation (of other consumers' actions) (Godes et al. 2005).

[11] UNESCO (2005) defines cultural goods as consumer goods which convey ideas, symbols, and ways of life.

in the U.S. and in eight foreign countries, Craig, Greene, and Douglas (2005) find that U.S. films are substantially more successful in culturally closer countries than in countries that are culturally distant.

*H3*: A foreign country's cultural distance from the home country of a new product is negatively related to the revenues of that product in that country.

*Economic openness*. The penetration potential of a new product is higher in countries whose economies are more open than those whose economies are less open (Talukdar, Sudhir, and Ainslie 2002). Furthermore, by entering earlier economically open countries, firms can expect larger performance spillover effect on other counties. Cross-country spillover effect will be also affected by the speed of information transmission among countries. The speed of transmission depends on the degree economic openness of a country. Therefore, I expect a positive impact of economic openness on revenue in that country.

*H4*: A foreign country's economic openness is positively associated with the revenues of a new product in that country.

*Order in country sequence*. The order of a country in a new product's international launch sequence may directly affect the new product's revenues in that country. In countries that are earlier in the sequence, new products can influence customers earlier and preempt competition faster than in countries that appear later in the sequence. This phenomenon is likely if customer preferences are uncertain and if the new product may be prototypical of the product category (Carpenter and Nakamoto 1989). Many new products with short life cycle such as movies belong to such product categories.

Therefore, I expect country order in the launch sequence to be negatively related to product performance in that country.

> *H5*: The earlier a country is in the international launch sequence of a new product, the higher its revenues in that country, all else equal.

*Determinants of Order in Country Sequence*

*Market potential.* By launching sooner into countries with larger market potentials, firms can capture larger revenue stream earlier. This action will help firms in two ways. First, firms can recover their investment costs earlier. Second, they can expect the use of their products in the earlier countries to have a demonstration effect on potential customers in subsequent countries. That is, successful performance in previous countries will positively affect the willingness to purchase of potential consumers in other countries.

> *H6*: The greater the market potential for a new product in a foreign country, the earlier that foreign country will be in the international launch sequence of the product.

*Cultural distance.* If cultural goods perform better in countries culturally closer to their home country, firms will want to release their products faster into those countries. They can capture a larger revenue stream earlier by first entering countries that are culturally closer to their home countries.

> *H7a*: The culturally closer a foreign country is to a new product's home country, the earlier that foreign country will be in the international launch sequence for the product.

Furthermore, the effect of culture on the decision of country sequence can be moderated by product characteristics or types of the product. For example, the effect of cultural distance between the home country and the foreign country on market performance will be stronger for culturally-sensitive products. Therefore, the cultural factors imbedded with a new product will moderate the effect of cultural distance on the order in country sequence.

> *H7b*: The more culturally sensitive a new product is, the earlier countries culturally closer to a new product's home country will be in the international launch sequence for that product.

*Economic openness*. If performance of a new product is positively associated with economic openness, firms can benefit from the positive influence of more open countries on other countries' performance by entering earlier into those countries.

> *H8*: The more economically open a foreign country is, the earlier that foreign country will be in the international launch sequence of a new product.

*Product familiarity*. Customer familiarity with the category of a new product will affect firms' country sequence decisions. Compatibility of innovations with the needs of potential adopters accelerates the rate of adoption (Rogers 2003). A high level of familiarity with the new product will help customers understand the relative advantage of the product and decide whether the product is compatible with their needs. Furthermore, word of mouth communications will be strong if customers are familiar with the product category. Therefore, firms will launch new products earlier into those

countries where the potential adopters are more familiar with the product category than in other countries.

*H9*: The more familiar customers are with the new product in a country, the earlier that country will be in the international launch sequence of a new product.

In addition to the factors identified in the hypotheses, piracy can also affect both performance and launch sequence decision for products with intellectual content such as movies, music albums, and books. Firms that are concerned about the potential negative impact of piracy on revenues, plan their international launch sequence to combat piracy (DiOrio 2003). However, the effect of piracy on revenues may be negative or insignificant or even positive. While some researchers find a negative effect of piracy on sales (e.g., Blackburn 2004; Zentner 2005), others find no impact. For example, Oberholzer-Gee and Strumpf (2007), who analyze data on actual downloads of music files, find that the effect of file sharing on the legal sales of music is not statistically distinguishable from zero. Jain (2008) even argues that under some conditions, piracy can increase firms' profits and social welfare because weaker copyright protection can serve as a coordination device to reduce price competition. Therefore, while I control for the effects of piracy on revenues and country sequence, I do not propose specific directional hypotheses on such effects.

*Model*

To test whether country sequence affects performance and to determine the factors that affect new product performance in foreign countries including cross-country spillover effect, I estimate the following panel data model.

$$(17) \quad \ln REV_{mct} = \alpha_0 + \alpha_1 \ln X_{1,mct} + \alpha_2 \ln Y_{1,mc} + \alpha_3 \ln PERFSPILL_{mo(t-1)} + \alpha_4 \ln ADSPILL_{mt} + \alpha_5 \ln P_{1,m} + \alpha_6 \ln Q_{1,c} + \alpha_7 D_{1,m} + u_{1,mc} + \varepsilon_{1,mct}$$

where *m* represents movie, *c* represents country, *o* represents countries than *c*, and *t* represents time (week). *REV* is weekly box-office revenues. *X* is a vector of time-varying movie and country characteristics and includes the number of screens (*SCRN*), word of mouth (*WOM*), competitor revenues (*COMPREV*), and seasonality (*SEASON*). *Y* is a vector of time-invariant movie and country characteristics (non-dummy variables) and consists of country sequence (*SEQ*). *PERFSPILL* is performance spillover from other countries and *ADSPILL* is advertising spillover effect from the home market. *P* is a vector of movie characteristics (non-dummy variables) and includes production budget (*PROD*) and star power (*STAR*). *Q* is a vector of country characteristics (non-dummy variables) and consists of cultural distance from the home country (*CD*) and economic openness (*ECONOPEN*). *D* is a vector of movie-specific dummy variables and includes whether a movie is a sequel (*SEQUEL*) genre, and MPAA (Motion Picture Association of America) ratings (G, PG, PG13, and R). $\alpha$ is a vector of associated parameters to be

estimated. *u* represents unobserved movie and country specific factors and $\varepsilon$ is an *i.i.d.* error term.[12]

*SEQ*, *SCRN*, *PERFSPILL*, ADSPILL, and *WOM* are potentially correlated with *u* due to unobserved movie and/or country specific factors. Therefore, a random effects panel data model is not appropriate. In addition, a fixed effects model is not appropriate because one of my focal variables of interest, *SEQ*, is time-invariant. I opt for the Hausman-Taylor estimation method (Boulding and Christen 2003; Fischer, Shankar, and Clement 2005; Hausman and Taylor 1981). The Hausman-Taylor estimator uses a random effect generalized least squares (GLS) transformation. Therefore, the unobserved factor, *u*, is not removed. To deal with potential endogeneity, the estimator uses the instrumental variable method. For time-varying endogenous variables, the within transformation of those variables are used as instruments. For time-invariant endogenous variables, average values of time-varying exogenous variables over time are used as instruments. I also use bootstrap standard errors to account for possible serial correlation and heteroscedasticity.

To test my hypotheses on country sequence and to determine the key determinants of order in country sequence, I estimate the following model.

$$SEQ_{mc} = \beta_0 + \beta_1 \ln X_{2,mc} + \beta_2 \ln Y_{2,m} + \beta_3 \ln Z_{2,c} + \beta_4 D_{2,m} + \varepsilon_{2,mc} \quad (18)$$

*X* is a vector of movie and country characteristics, including product familiarity (*STARREV* and *PREQUELREV*), average number of screens over a movie's entire run

[12] I do not include international launch time window as an additional covariate because my focus is on the order in country sequence and because it is highly correlated with order in my data, which I describe subsequently.

excluding opening screen (*AVGSCRN*), competition (*COMP*), seasonality (*SEASON*), and interactions of cultural distance with genre dummies. *Y* is a vector of movie characteristics (non-dummy variables) and consists of production budget (*PROD*), and star power (*STAR*). *Z* is a vector of country characteristics (non-dummy variables) and includes market potential (*MKTPOT*), cultural distance from the home market (*CD*), and economic openness (*ECONOPEN*). *D* is a vector of movie specific dummy variables and includes whether a movie is a sequel (*SEQUEL*), genre, MPAA ratings, and studio fixed effects. $\beta$ is a vector of associated parameters to be estimated. $\varepsilon$ represents *i.i.d.* error term. Because *SEQ* is an ordered outcome variable, I estimate this model by ordered probit.

## *Data, Variables, and Measures*

### *Data*

I collected data on 300 Hollywood movies during the years 2007 and 2008 from Boxofficemojo (www.boxofficemojo.com, hereafter "Mojo"). These movies represent over 95% of worldwide gross revenues each year. I selected movies released into at least 10 countries. Each movie was released in 10 to 74 countries and 62 countries are represented in my dataset. I had to drop some movies due to data unavailability such as production budget. The final dataset consists of 228 movies and contains weekly box-office revenues in each country.

Table 7 summarizes the variables, measures, and data sources. The variables related to the movie characteristics include U.S. and international theatrical release dates (Mojo), production budget (Mojo and Internet Movie Database, hereafter "IMDB"), weekly and total box office revenues for each country (Mojo), MPAA rating (Mojo), producer/distributor (Mojo), genre (Mojo), star power (Mojo), whether a movie is a sequel (www.the-numbers.com), , and weekly advertising spending for the U.S. release (TNS Media Intelligence, hereafter "TNS").

The country-specific variables include cultural distance (Hofstede.com), degree of economic openness (KOF Institute), piracy rate (Business Software Alliance, "BSA" hereafter), GDP per capita (International Monetary Fund, hereafter "IMF"), and seasonality (Mojo).

A few comments are in order about the dataset. In a few cases, Mojo reports only combined data for some countries. For example, it aggregates data from Belgium and Luxembourg. In these cases, I also combine or average relevant country variables such as cultural distance and degree of economic globalization. If one country dominates other countries in GDP per capita or box office revenues, I simply use the data for the dominant country. Examples include France (France, Algeria, Monaco, Morocco, and Tunisia) and United Kingdom (United Kingdom, Ireland, and Malta). Mojo sometimes divides release dates for Switzerland into three regions: the German-, French-, and Italian-speaking regions. If two or three of these dates are available, I use the earliest release date. Table 8 presents the descriptive statistics of the data.

Table 7
VARIABLES, MEASURES, AND SOURCES

| *Variables* | *Descriptions (Measures)* | *Sources* |
|---|---|---|
| SEQ | The order of the country in the international launch sequence of the movie (Count) | Mojo |
| WIN | Time difference between U.S. and country launch date for the movie (days) | Mojo |
| REV | Weekly box office revenues in the country ($) | Mojo |
| PROD | Production budget of the movie ($) | Mojo |
| ADSPILL | Advertising expenditures of the movie in the U.S. in previous two weeks ($) | TNSMI |
| STAR | Average box office revenues of the movies in which the actors were starring cast members five years prior to the release of the movie ($) | |
| SCRN | Weekly number of screens | Mojo |
| USERAT | User rating for the movie (1-10 scale) | IMDB |
| WOM | Revenues per screen for the movie in previous week in the country ($) | |
| PERFSPILL | Revenues for the movie from all other countries in previous week ($) | |
| SEASON | Weekly seasonality index based on yearly revenues over six years (%, 2002-08) | Mojo |
| COMP | Total production budgets of all competitor movies released in the country in two weeks prior to the movie's launch date in the country ($) | Mojo |
| MKTPOT | Average annual box office revenues from top 10 movies over six years ($, 2002-08) | |
| CD | Index of country's cultural distance from the U.S. | hofstede.com |
| GDP | Country GDP per capita ($) | WDI |
| ECONOPEN | Index of country's economic globalization (1-100) | KOF |
| PIRACY | Country piracy rate (%) | BSA |
| STARREV | Average box office revenues from the movies in which the actors were cast members five years prior to the release of the focal movie | |
| PREQUELREV | Average box office revenues from prequels five years prior to the release of the sequel movie | |
| STUDIO, SEQUEL, MPAA RATING, GENRE, COUNTRY | Dummy variables (0 or 1) | Mojo, Thenumbers.com |

Table 8
SUMMARY STATISTICS

| *Variable* | *Mean* | *SD* | *Min* | *Max* |
|---|---|---|---|---|
| SEQ | 20.55 | 15.54 | 1.00 | 61.00 |
| REV | 177,312.40 | 738,928.40 | 2.00 | 33,500,000.00 |
| PROD | 70,700,000.00 | 57,800,000.00 | 1,500,000.00 | 300,000,000.00 |
| ADSPILL | 1,297,281.00 | 3,019,152.00 | 0.00 | 25,700,000.00 |
| STAR | 138,000,000.00 | 162,000,000.00 | 0.00 | 1,220,000,000.00 |
| USERAT | 6.64 | 1.14 | 1.60 | 8.90 |
| SCRN | 56.24 | 110.36 | 1.00 | 1,190.00 |
| WOM | 2,103.39 | 4,023.81 | 0.33 | 439,830.10 |
| PERFSPILL | 8,648,417.00 | 22,700,000.00 | 0.00 | 330,000,000.00 |
| SEASON | 1.88 | 0.58 | 0.30 | 6.03 |
| COMP | 253,000,000.00 | 148,000,000.00 | 0.00 | 9,770,000,000.00 |
| MKTPOT | 159,000,000.00 | 216,000,000.00 | 1,861,523.00 | 814,000,000.00 |
| CD | 2.50 | 1.44 | 0.02 | 5.27 |
| GDP | 22,034.14 | 18,817.40 | 762.14 | 72,768.13 |
| POP | 42,200,000.00 | 84,000,000.00 | 298,966.60 | 1,310,000,000.00 |
| ECONOPEN | 75.20 | 11.17 | 42.89 | 95.90 |
| PIRACY | 50.51 | 19.04 | 22.00 | 86.00 |
| STARREV | 527,157.10 | 3,557,650.00 | 0.00 | 132,000,000.00 |
| PREQUELREV | 646,060.60 | 4,826,977.00 | 0.00 | 107,000,000.00 |
| SEQUEL | 0.15 | 0.36 | 0.00 | 1.00 |
| G | 0.05 | 0.22 | 0.00 | 1.00 |
| PG | 0.18 | 0.39 | 0.00 | 1.00 |
| PG13 | 0.46 | 0.50 | 0.00 | 1.00 |
| R | 0.30 | 0.46 | 0.00 | 1.00 |
| ACTION | 0.11 | 0.31 | 0.00 | 1.00 |
| ADVENTURE | 0.06 | 0.24 | 0.00 | 1.00 |
| ANIMATION | 0.13 | 0.33 | 0.00 | 1.00 |
| COMEDY | 0.13 | 0.34 | 0.00 | 1.00 |
| CRIME | 0.04 | 0.19 | 0.00 | 1.00 |
| DOCU | 0.00 | 0.06 | 0.00 | 1.00 |
| DRAMA | 0.10 | 0.30 | 0.00 | 1.00 |
| FAMILY | 0.04 | 0.19 | 0.00 | 1.00 |
| FANTASY | 0.07 | 0.26 | 0.00 | 1.00 |
| HORROR | 0.06 | 0.23 | 0.00 | 1.00 |
| MUSICAL | 0.03 | 0.18 | 0.00 | 1.00 |
| PERIOD | 0.06 | 0.23 | 0.00 | 1.00 |
| ROMANCE | 0.06 | 0.25 | 0.00 | 1.00 |
| SCIFI | 0.04 | 0.20 | 0.00 | 1.00 |
| THRILLER | 0.07 | 0.25 | 0.00 | 1.00 |

N=73,108

*Focal Variables*

*Performance spillover.* To test performance spillover effect across countries, I include lagged revenues of the focal movie from all other countries.

*Marketing efforts spillover.* It would be ideal to include lagged advertising expenditures for the focal movie in all other countries to test cross-country spillover effect of marketing efforts. Instead, I include advertising expenditures for the movie in the U.S. due to lack of data. I include up to two lagged periods (weeks) of advertising spending to account for the decay of advertising effect.

*Order in country sequence.* Order in country sequence is operationalized as an ordered count variable. The first country into which a movie is launched is coded as one in the launch sequence, the second country as two, and so on. When a movie is launched into two or more countries at the same time, those countries have the same order.

*Market potential*. I operationalize market potential of each country as the average annual box office revenues from the top 10 movies in that country during 2002-08.

*Cultural distance*. To control for the influence of cultural proximity on country sequence and performance of a movie, I use a four-dimensional measure of the Hofstede index, consistent with Kogut and Singh (1988). These dimensions are: power distance, individualism, masculinity, and uncertainty avoidance. These dimensions represent the "collective programming of the mind" that distinguishes one national culture from another (Hofstede 2001, p.1). I construct a composite index for cultural distance using four dimensions (e.g., Craig, Greene, and Douglas 2005; Gielens and Dekimpe 2007; Mitra and Golder 2002). For a few countries, for which the Hofstede index is

unavailable, I use the average regional score as a proxy for the index. In addition, I construct interaction variables of country cultural distance with movie genres to test whether the fit of movie genre with cultural distance influences the country sequence decision. Some genres such as comedy and drama may be more suited to certain cultures than other cultures.

*Piracy*. To control for the effect of piracy on country revenues and launch sequence decision, I use software piracy rate in each country from BSA. In a few cases, where the piracy data have missing values because piracy rates show little variation year to year, I use the following year's figures. I use average regional data for a few countries for which the piracy rate is missing.

*Economic openness*. I use the KOF index of economic globalization to capture a country's economic openness. The KOF index measures the degree of economic globalization on the basis of a comprehensive set of nine variables such as foreign trade, foreign direct investment, and import barriers. The resulting index ranges from 0-100, with higher scores indicating a higher degree of economic globalization.

*Product familiarity*. I use two variables to measure consumer familiarity with a new movie in a foreign country. First, I construct average box office revenues from the movies in which the actors were cast members five years prior to the release of the focal movie. Second, I include average box office revenues from prequels five years prior to the release of the sequel movie.

*Control Variables*

*Production budget*. Production cost represents the biggest chunk of movie cost. Big production budgets are associated with high-profile stars or expensive special effects. Previous research shows that big budgets enhance box office revenues (e.g., Basuroy et al. 2003; Ravid 1999). To control for this effect, I include production budget.

*Star power*. Following prior research on the role of star (actor) power in a movie's success (e.g., Liu 2006; Walls 2005), I use the average box office revenues of the movies in which the actors were starring cast members five years prior to the release of the focal movie.

*Sequel*. Prior research shows that if a movie is a sequel, then it is associated with significantly higher box office revenues than when it is not (Basuroy et al. 2006; Boatwright 2007; Ravid 1999; Ravid and Basuroy 2004). To control for the effect of a sequel on performance and launch sequence decision, I include the 'sequel' variable. I operationalize sequel as a dummy variable that takes the value 1 if the movie is a sequel.

*Word of mouth.* Word of mouth plays a significant role in the motion picture industry. Consumers often rely on online and offline referral in selecting movies to watch. Consistent with Elberse and Eliashberg (2003) and Luan and Sudhir (2007), I capture the word of mouth for a movie through average revenues per screen during the previous week.

*Seasonality*. Seasonality is one of the most important considerations when studios set both the domestic and the international release date because seasonality greatly affects performance of a movie. Therefore, seasonality will affect launch sequence decision. To

control for seasonality for the U.S. release, previous studies use weekly dummy variables (e.g., Einav 2007), dummies for the major movie release seasons (e.g., Jedidi et al. 1998; Joshi and Hanssens 2009; Moul 2007), or construct a weekly index based on past weekly box office revenue (e.g., Ainslie et al. 2005; Basuroy et al. 2006; Elberse and Eliashberg 2003; Ravid 1999). In my case, creating weekly dummy variables for each of the 62 countries would not make much sense. Therefore, I opt for a weekly index variable for each country. I collect weekly revenue data[13] from 2002 to 2008 and calculate average weekly revenue share for the top 10 movies each week and each country.[14]

*Competitor strength.* Competitor movies are likely to have a negative effect on a movie's revenues in a country (e.g., Basuroy et al. 2006; Elberse and Eliashberg 2003). Furthermore, studios will likely release movies into countries when competitor movies are not strong. To control for the impact of competitive strength on revenues and the sequence decision, I include the total production budget of all the movies released in a two-week period prior to the release of the movie in the focal country.

*Studio fixed effects*. In addition to factors such as movie genre and MPAA rating, unobserved studio-specific factors can affect the country sequence decision. Therefore, in the empirical model, I create a dummy variable for each studio instead of one 'major' studio dummy to control for studio-specific effects.

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[13] I use weekend revenues in each country instead of total weekly revenues due to data unavailability. The revenue data are adjusted for inflation.

[14] There are two potential problems with this method. First, major holidays might be slightly different from year to year in some countries. Second, weekly revenues are not available for some weeks and countries, especially for the early years. However, averaging weekly revenues from multiple years mitigates these problems.

## *Results and Robustness Checks*

### *Results*

The results from the country revenues equation appear in Table 9. I expected positive performance spillover from other countries (H1) and positive marketing efforts spillover from advertising expenditures for U.S. releases (H2). The positive and significant ($p < .01$) coefficients of performance and advertising spillovers confirm these hypotheses. The coefficient of cultural distance from the U.S. is negative as expected (H3), but not significant ($p > .10$). I expected economic openness of a country to be positively related to a new product's performance in that country (H4). The positive and significant ($p < .01$) coefficient supports this hypothesis. I expected the effect of country launch sequence on performance to be negative (H5). The coefficient of country sequence is negative and significant ($p < .01$). That is, countries that are earlier in the launch sequence generate higher revenues, controlling for other factors. The coefficient of piracy is positive and significant ($p < .01$). Piracy rate has a positive effect on country revenues. I are cautious in interpreting this result because the piracy rate I used is overall software piracy rate rather than movie piracy. However, movie piracy will be highly correlated with overall software piracy rate in each country. Surprisingly, the coefficient of competition is positive and significant ($p < .01$). The coefficients of seasonality, screens, and word of mouth are all positive and significant ($p < .01$), consistent with my expectation. Sequels and movies with star actors or directors have negative and significant ($p < .01$) effects on box office revenues. Movies with higher production

budget have a positive and significant effect ($p$ <.01) on box office revenues. Movies with PG13 ratings show lower performance ($p$ < .01) compared with movies with R rating. The coefficients of G and PG are not significant ($p$ > .1). Movies in other genre have positive and significant effects on revenues compared with documentary films ($p$ < .01).

The results from the country launch sequence equation appear in Table 10. The coefficient of market potential is negative and significant ($p$ < .01), consistent with my expectation (H6). I expected countries that are culturally more distant from the home country will be later in launch sequence (H7a). The positive coefficient is in line with my expectation, but is only marginally significant ($p$ < .10). I also hypothesized that the effect of culture on the order in country sequence would be moderated by the cultural sensitivity of the new product (H7b). The coefficients of adventure and animation interacted with cultural distance are negative and significant ($p$ < .05 and $p$ < .01, respectively). these genres of movies, the more culturally distant a country is to the new movie's home country, the earlier the country is in the movie's international launch sequence. The coefficients of the interactions of crime, family, fantasy, period, science fiction, and thriller with cultural distance are not statistically significant ($p$ > .10). For these genres, cultural distance from the home country does not affect the country sequence decision. By contrast, the coefficients of the interactions of comedy, drama, musical, and romance with cultural distance are positive and significant ($p$ < .01). For these genres of movies, the culturally closer a foreign country is to the movie's home

Table 9
EMPIRICAL RESULTS: REVENUE EQUATION
(HAUSMAN-TAYLOR ESTIMATION, DEPENDENT VARIABLE: LOG OF COUNTRY REVENUES)

| *Independent Variable* | *Coefficient* | *SE* |
|---|---|---|
| LNSEQ | -0.186 | (0.070)*** |
| LNPERFSPILL | 0.041 | (0.003)*** |
| LNADSPILL | 0.02 | (0.001)*** |
| LNSCRN | 1.03 | (0.005)*** |
| LNWOM | 0.669 | (0.006)*** |
| LNECONOPEN | 1.577 | (0.265)*** |
| LNCD | -0.031 | (0.025) |
| LNPIRACY | 0.225 | (0.086)*** |
| LNCOMP | 0.01 | (0.004)*** |
| LNSEASON | 0.186 | (0.019)*** |
| LNPROD | 0.144 | (0.039)*** |
| LNSTAR | -0.006 | (0.001)*** |
| SEQUEL | -0.215 | (0.037)*** |
| G | -0.039 | (0.045) |
| PG | 0.022 | (0.039) |
| PG13 | -0.079 | (0.020)*** |
| ACTION | 0.959 | (0.301)*** |
| ADVENTURE | 0.798 | (0.284)*** |
| ANIMATION | 0.894 | (0.288)*** |
| COMEDY | 1.163 | (0.306)*** |
| CRIME | 1.124 | (0.306)*** |
| DRAMA | 1.154 | (0.309)*** |
| FAMILY | 0.944 | (0.291)*** |
| FANTASY | 0.894 | (0.285)*** |
| HORROR | 1.245 | (0.319)*** |
| MUSICAL | 1.123 | (0.308)*** |
| PERIOD | 0.884 | (0.293)*** |
| ROMANCE | 1.213 | (0.308)*** |
| SCIFI | 0.845 | (0.296)*** |
| THRILLER | 1.076 | (0.305)*** |

N = 60,978. Bootstrap standard errors are in parentheses. Documentary and MPAA rating R are the base cases.
* significant at 10%; ** significant at 5%; *** significant at 1%.

country, the earlier the country is in the launch sequence of those movies. Overall, these results are consistent with my expectations.

The coefficient of economic openness is negative and significant ($p$ <.01) as predicted (H8). Firms launch new products earlier into countries with higher degree of economic openness. I expected that consumer familiarity with a new product in a foreign country would affect the order of that country in firms' international rollout. The coefficient of *PREQUELREV* is negative and significant (p < .01), consistent with my expectation. Firms launch sequel movies earlier in countries where revenues from prequels to those movies were higher. However, the coefficient of *STARREV* is positive and significant (p < .01), contrary to my hypothesis.

The coefficient of piracy is negative and significant ($p$ < .01). Even though the effect of piracy on revenues is not significant, firms seem to launch their movies earlier into countries with higher piracy rates. The coefficients of seasonality and competition are negative and significant ($p$ < .01) and marginally significant ($p$ < .10), respectively.

Table 10
EMPIRICAL RESULTS: SEQUENCE EQUATION
(ORDERED PROBIT,
DEPENDENT VARIABLE: COUNTRY LAUNCH SEQUENCE)

| *Independent Variable* | *Coefficient* | *SE* |
|---|---|---|
| LNCD | 0.148 | (0.082)* |
| LNPIRACY | -0.326 | (0.042)*** |
| LNECONGLOBAL | -0.977 | (0.090)*** |
| LNMKTPOT | -0.051 | (0.013)*** |
| LNCOMP | -0.009 | (0.004)** |
| LNSEASON | -0.193 | (0.059)*** |
| LNSTARREV | 0.012 | (0.002)*** |
| LNPREQUELREV | -0.015 | (0.004)*** |
| LNAVGSCRNNOOPEN | -0.038 | (0.015)** |
| LNPROD | 0.079 | (0.021)*** |
| LNSTAR | -0.004 | (0.002)** |
| SEQUEL | -0.133 | (0.040)*** |
| ACTIONLNCD | -0.124 | (0.104) |
| ADVENTURELNCD | -0.321 | (0.137)** |
| ANIMATIONLNCD | -0.287 | (0.111)*** |
| COMEDYLNCD | 0.306 | (0.099)*** |
| CRIMELNCD | 0.158 | (0.144) |
| DRAMALNCD | 0.273 | (0.104)*** |
| FAMILYLNCD | 0.027 | (0.144) |
| FANTASYLNCD | -0.07 | (0.121) |
| MUSICALLNCD | 0.462 | (0.164)*** |
| PERIODLNCD | -0.091 | (0.132) |
| ROMANCELNCD | 0.313 | (0.120)*** |
| SCIFILNCD | -0.052 | (0.132) |
| THRILLERLNCD | 0.072 | (0.116) |
| G | 0.209 | (0.089)** |
| PG | 0.319 | (0.053)*** |
| PG13 | -0.026 | (0.029) |
| ACTION | 0.484 | (0.209)** |
| ADVENTURE | 0.168 | (0.242) |
| ANIMATION | 0.51 | (0.222)** |
| COMEDY | -0.119 | (0.205) |
| CRIME | 0.253 | (0.251) |
| DRAMA | -0.056 | (0.209) |
| FAMILY | 0.126 | (0.250) |
| FANTASY | 0.412 | (0.227)* |
| HORROR | 0.355 | (0.175)** |
| MUSICAL | -0.252 | (0.269) |
| PERIOD | 0.16 | (0.235) |
| ROMANCE | -0.047 | (0.222) |
| SCIFI | 0.336 | (0.236) |
| THRILLER | 0.271 | (0.222) |

N = 8,732. Standard errors are in parentheses. Documentary and MPAA rating R are the base cases. Studio dummies are included in the model, but not reported.
* significant at 10%; ** significant at 5%; *** significant at 1%.

*Robustness Checks*

I performed several robustness checks. For the revenue equation, first, I tried GDP per capita instead of piracy rate. Although I could not add GDP to my model due to its high correlation with piracy rate, I obtain the same results when I included GDP in lieu of piracy. Second, I estimated a model with user ratings as an alternate measure of word of mouth. The substantive results remained unchanged.

For the sequence equation, I first tried an alternative measure of the sequence variable. Within a short time frame – e.g., within the same week -, country sequence might not be very meaningful. To test whether those cases affect my estimation, I coded countries into which a movie is launched within the same week as the same sequence. The estimated results from this coding were the same.

Because the number of countries into which a move is launched is different for different movies, my measure of order in the launch sequence is not normalized for this number. To account for differences across movies, I created a normalized order in sequence variable for each movie by dividing the order in sequence of each country by the total number of countries in which the movie was launched. I estimated our model with this new measure. The results from this model were substantively the same as those from my proposed model

Second, for movies that are almost simultaneously released into a large number of countries, country sequence may have little meaning. To see whether those movies affect my results, I dropped movies with average time window is less than seven days. The substantive results remained the same. Third, as alternative measure of market

potential, I used average number of admissions times average ticket price over 2002-2008. The results were the same.

A summary of my hypotheses and the key results with brief explanation and rationale appears in Table 11. Among the effects on country revenues, performance spillover (+), marketing efforts spillover (+), cultural distance (-), economic openness (+), and country sequence (-) are the key variables and their relationships are in the expected directions. With regard to the determinants of country sequence, market potential (-), cultural distance (+), and economic openness (+) have important effects in the right directions.

### *Country Clout and Susceptibility*

In this section, I suggest an international launch sequence that may enhance overall performance in foreign markets. My recommendation is based on the concepts of clout and susceptibility. I extend this concept of Van Everdingen, Fox, and Stremersch (2009) by proposing a different approach. My approach has an advantage over their approach. Their operationalization of clout and susceptibility is based on potential measures. They measure clout and susceptibility in terms of economic factors (GDP, exports, and tourisms expenditures), cultural factor (Uncertainty avoidance), and demographics (number of inhabitants and population density). That is, they define countries with strong clout, for example, as countries with high GDP, high level of exports, and high level of tourisms expenditures, etc. The authors also admit that their

Table 11
SUMMARY OF HYPOTHESES AND RESULTS

| *Hypothesis* | *Expected Sign* | *Actual Sign* | *Rationale* |
|---|---|---|---|
| Determinants of Country Revenues | | | |
| Performance spillover ($H_1$) | + | + | Potential adopters in the lag countries can observe market performance in the lead countries and lower their risk of trial. It includes cross-country word of mouth effect. |
| Marketing efforts spillover ($H_2$) | + | + | Potential customers in other countries can be exposed to advertisements in one country. The local media and distribution channel are more likely to promote those products with heavy advertising support in other countries. |
| Cultural distance ($H_3$) | - | NS | Cultural goods perform better in countries that are culturally closer to the home country. |
| Economic openness ($H_4$) | + | + | Penetration potential of a new product is higher in countries whose economies are more open |
| Order in country sequence ($H_5$) | - | - | In countries that are earlier in the sequence, short-life cycle new products can influence customers earlier and preempt competition faster than in countries that appear later in the sequence. |
| Determinants of Order in Country Sequence | | | |
| Market potential ($H_6$) | - | - | By launching sooner into countries with larger market potentials, firms can capture a larger revenue stream earlier. |
| Cultural distance ($H_{7a}$) | + | + | If cultural goods perform better in countries that are culturally closer to their home country, firms will want to release their products faster into those countries. |
| Interaction of cultural distance with cultural intensity of product ($H_{7b}$) | + | + | The intensity of a new product's cultural factor will moderate the effect of culture on the decision of country sequence. |
| Economic openness ($H_8$) | - | - | If the revenues of a new product are positively associated with economic openness, firms can benefit from the positive influence of more open countries on other countries' performance by entering earlier into those countries. |
| Product familiarity ($H_9$) | - | Mixed (+/-) | Higher level of familiarity with the new product will help consumers understand the relative advantage of the product and decide whether the product is compatible with their needs. |

estimates are based on *potential* clout and susceptibility rather than actual. Instead of relying on a priori definitions, I directly measure the strengths of clout and susceptibility of each country from the actual effects of cross-country performance spillover effect.

*Clout of Countries*

To measure the clout of a country, I estimate the impact of box office revenues of a movie in a focal country on the revenues of the movie in other countries using the following model.

$$(19)\quad \ln REV_{m\bar{c}t} = \gamma_0 + \gamma_1 \ln X_{3,mct} + \gamma_2 \ln Y_{3,mc} + \gamma_3 \ln REV_{mc(t-1)} + \gamma_4 \ln ADSPILL_{mt} + \gamma_5 \ln P_{3,m} + \gamma_6 Q_{3,c} + \gamma_7 D_{3,m} + u_{3,mc} + \varepsilon_{3,mct}$$

where $REV_{m\bar{c}t}$ is box office revenues of movie *m* in each country other than country *c*. *X*, *Y*, *P*, *Q*, and *D* are vectors that include the same set of variables as in the equation (1). $\gamma$ is a vector of associated parameters to be estimated. $u_3$ represents unobserved movie and country specific factors and $\varepsilon_3$ is an *i.i.d*. error term. The remaining terms are as defined earlier. My goal is to estimate and compare the coefficients of $REV_{mc(t-1)}$. The parameter represents the impact of a country's revenue on other countries' revenues, that is, the clout of that country. I estimate this model for each of 53 countries, dropping nine countries with limited number of observations. I use the Hausman-Taylor estimation method explained in the model section.

Table 12 shows the list of countries and their clouts in descending order of clout. Surprisingly, Hungary, Estonia, Bolivia, and Latvia are ranked at the top, whereas Peru, Argentina, Switzerland, and South Korea are ranked at the bottom. While some western

European countries such as Austria, Norway, and Denmark exhibit strong clout, other countries such as Netherlands, Finland, and United Kingdom have only moderate levels of clout. This result is somewhat different from that of Van Everdingen, Fok, and Stremersch (2009). My interpretation of this somewhat unintuitive result is that although countries ranked at the top may not have large market potentials, the marginal effects of increasing revenues in those countries on other countries are very strong. The correlation between the rankings of countries in clout and market potential is -.3452 ($p < .05$). This correlation suggests that countries ranked at the top in terms of clout do not necessarily have large market potentials.

*Susceptibility of Countries*

To measure the susceptibility of a country, I estimate the impact of a movie's box office revenues in all other countries on its revenues in the focal country using the following model.

$$\ln REV_{mct} = \delta_0 + \delta_1 \ln X_{4,mct} + \delta_2 \ln Y_{4,mc} + \delta_3 \ln REV_{mo(t-1)} + \delta_4 \ln ADSPILL_{mt} + \delta_5 \ln P_{4,m} + \delta_6 Q_{4,c} + \delta_7 D_{4,m} + u_{4,mc} + \varepsilon_{4,mct} \quad (20)$$

where $REV_{mo(t-1)}$ is the total lagged box office revenues from all other countries except country $c$. $\delta$ is a vector of associated parameters to be estimated. $u_4$ represents unobserved movie and country specific factors and $\varepsilon_4$ is an *i.i.d.* error term. The other variables are as defined earlier. My main interest is to estimate and compare across countries, the coefficient of $REV_{mo(t-1)}$, the susceptibility of the focal country. As in the

Table 12
CLOUT OF COUNTRIES
(DEPENDENT VARIABLE: REVENUES IN OTHER COUNTRIES)

| *Country* | *Lagged Revenue of Each Country* | | *SE* | *N* |
|---|---|---|---|---|
| Hungary | 0.2379 | *** | (0.0087) | 12,534 |
| Estonia | 0.2197 | *** | (0.0075) | 14,622 |
| Bolivia | 0.1862 | *** | (0.0083) | 10,574 |
| Latvia | 0.1845 | *** | (0.0075) | 17,238 |
| Austria | 0.1829 | *** | (0.0055) | 20,093 |
| Norway | 0.1829 | *** | (0.0060) | 20,703 |
| Czech Republic | 0.1767 | *** | (0.0076) | 17,444 |
| Iceland | 0.1692 | *** | (0.0061) | 14,325 |
| Denmark | 0.1663 | *** | (0.0061) | 17,755 |
| South Africa | 0.1634 | *** | (0.0057) | 18,741 |
| Slovenia | 0.1623 | *** | (0.0063) | 17,847 |
| Poland | 0.1593 | *** | (0.0067) | 12,331 |
| Germany | 0.1545 | *** | (0.0046) | 23,218 |
| Slovakia | 0.1519 | *** | (0.0080) | 11,071 |
| Sweden | 0.1478 | *** | (0.0056) | 21,289 |
| Belgium | 0.1474 | *** | (0.0051) | 24,061 |
| United Arab Emirates | 0.1412 | *** | (0.0050) | 16,860 |
| Netherlands | 0.1385 | *** | (0.0064) | 18,386 |
| Serbia | 0.1353 | *** | (0.0052) | 21,700 |
| New Zealand | 0.1345 | *** | (0.0046) | 18,925 |
| Uruguay | 0.1323 | *** | (0.0059) | 14,959 |
| Finland | 0.1278 | *** | (0.0063) | 17,065 |
| Greece | 0.1237 | *** | (0.0052) | 12,513 |
| Romania | 0.1226 | *** | (0.0049) | 19,945 |
| UK | 0.1176 | *** | (0.0038) | 21,555 |
| Nigeria | 0.1163 | *** | (0.0070) | 12,157 |
| Singapore | 0.1134 | *** | (0.0036) | 13,241 |
| Bulgaria | 0.1119 | *** | (0.0040) | 21,808 |
| Thailand | 0.1118 | *** | (0.0040) | 12,376 |
| Portugal | 0.1077 | *** | (0.0042) | 21,687 |
| Taiwan | 0.1002 | *** | (0.0039) | 13,390 |
| Venezuela | 0.0949 | *** | (0.0044) | 15,065 |
| Hong Kong | 0.0942 | *** | (0.0035) | 14,086 |
| Australia | 0.0942 | *** | (0.0037) | 20,429 |
| Italy | 0.0942 | *** | (0.0036) | 16,572 |
| Philippines | 0.0925 | *** | (0.0039) | 12,958 |
| France | 0.0920 | *** | (0.0041) | 17,643 |
| Ukraine | 0.0897 | *** | (0.0034) | 15,419 |
| Spain | 0.0894 | *** | (0.0030) | 24,704 |
| Lithuania | 0.0851 | *** | (0.0036) | 20,162 |
| Turkey | 0.0826 | *** | (0.0031) | 23,142 |
| Malaysia | 0.0794 | *** | (0.0033) | 14,938 |
| Russia - CIS | 0.0785 | *** | (0.0034) | 13,889 |
| Lebanon | 0.0724 | *** | (0.0041) | 14,720 |
| Japan | 0.0692 | *** | (0.0061) | 7,613 |
| Brazil | 0.0662 | *** | (0.0030) | 24,339 |
| Colombia | 0.0644 | *** | (0.0039) | 14,607 |
| Chile | 0.0618 | *** | (0.0036) | 18,452 |
| Mexico | 0.0586 | *** | (0.0025) | 23,843 |
| Peru | 0.0584 | *** | (0.0036) | 13,762 |
| Argentina | 0.0546 | *** | (0.0027) | 23,541 |
| Switzerland | 0.0470 | *** | (0.0037) | 19,762 |
| South Korea | 0.0356 | *** | (0.0025) | 13,121 |

Independent variables include cultural distance, piracy rate, economic openness, sequence, screens, word of mouth, production budget, star, seasonality, competition, sequel, and MPAA rating. R is the base case. Countries with insignificant coefficients at 10% level are omitted.

case of Equation (3), I estimate this model for each of 53 countries using the Hausman-Taylor estimation method.

Table 13 shows the list of countries and their susceptibilities in descending order of susceptibility. Countries such as Poland, Switzerland, Estonia, and Lithuania are ranked at the top while countries such as Brazil, Spain, Mexico, and United Kingdom are ranked at the bottom. One interesting result is that countries ranked high on clout are not necessarily ranked low on susceptibility, and vice versa. The correlation between clout and susceptibility rankings is slightly positive, but not significant (.213, $p > .1$). This result is different from the finding of Van Everdingen, Fok, and Stremersch (2009). They find that countries that ranked high on clout are ranked low on susceptibility, and vice versa. These differences probably result from the fact that my estimation is based on actual performance spillover effects while their estimation is a natural result from their definitions of clout and susceptibility based on only *potential*. Table 14 shows the ranking of countries in descending order of market potential.

Table 13
SUSCEPTIBILITY OF COUNTRIES
(DEPENDENT VARIABLE: REVENUES IN EACH COUNTRY)

| *Country* | *Lagged Revenues from Other Countries* | | *SE* | *N* |
|---|---|---|---|---|
| Poland | 0.2602 | *** | (0.0847) | 78 |
| Switzerland | 0.2034 | *** | (0.0266) | 797 |
| Estonia | 0.1954 | *** | (0.0736) | 259 |
| Lithuania | 0.1791 | *** | (0.0569) | 295 |
| Thailand | 0.1782 | ** | (0.0863) | 135 |
| Slovenia | 0.1754 | * | (0.1026) | 189 |
| Greece | 0.1718 | *** | (0.0529) | 206 |
| Hong Kong | 0.1604 | ** | (0.0746) | 284 |
| Singapore | 0.1577 | ** | (0.0754) | 346 |
| Iceland | 0.1555 | *** | (0.0348) | 595 |
| Japan | 0.1155 | *** | (0.0398) | 138 |
| Austria | 0.1054 | *** | (0.0178) | 1,110 |
| Chile | 0.1034 | *** | (0.0151) | 934 |
| Serbia | 0.0903 | *** | (0.0234) | 464 |
| Czech Republic | 0.0877 | *** | (0.0188) | 570 |
| United Arab Emirates | 0.0838 | *** | (0.0172) | 804 |
| Denmark | 0.0721 | *** | (0.0185) | 737 |
| Peru | 0.0719 | ** | (0.0329) | 538 |
| Uruguay | 0.0692 | *** | (0.0177) | 661 |
| Colombia | 0.0658 | ** | (0.0280) | 529 |
| Venezuela | 0.0588 | *** | (0.0163) | 750 |
| Belgium | 0.0558 | *** | (0.0106) | 1,661 |
| Norway | 0.0507 | *** | (0.0118) | 1,266 |
| Netherlands | 0.0450 | ** | (0.0220) | 736 |
| France | 0.0418 | ** | (0.0168) | 701 |
| Sweden | 0.0367 | *** | (0.0103) | 1,321 |
| New Zealand | 0.0319 | * | (0.0177) | 1,019 |
| Germany | 0.0318 | *** | (0.0093) | 1,603 |
| Turkey | 0.0317 | *** | (0.0105) | 1,853 |
| Portugal | 0.0304 | ** | (0.0128) | 1,258 |
| South Africa | 0.0303 | *** | (0.0110) | 1,112 |
| Brazil | 0.0289 | *** | (0.0092) | 1,753 |
| Spain | 0.0252 | ** | (0.0128) | 1,829 |
| Mexico | 0.0228 | *** | (0.0080) | 1,826 |
| UK | 0.0219 | ** | (0.0110) | 1,430 |

Independent variables include cultural distance, piracy rate, economic openness, sequence, screens, word of mouth, production budget, star, seasonality, competition, sequel, and MPAA rating. R is the base cases. Studio dummies are also included in the model, but not reported. Countries with insignificant coefficients at 10% level are omitted.

Table 14
MOVIE MARKET POTENTIALS OF COUNTRIES

| *Country* | *Market Potential* |
|---|---|
| France | 814,000,000 |
| UK | 761,000,000 |
| Germany | 627,000,000 |
| Japan | 615,000,000 |
| Spain | 455,000,000 |
| Mexico | 332,000,000 |
| Brazil | 177,000,000 |
| Netherlands | 115,000,000 |
| Belgium | 98,100,000 |
| Hong Kong | 96,700,000 |
| Austria | 86,800,000 |
| Switzerland | 81,500,000 |
| Sweden | 77,800,000 |
| Turkey | 72,200,000 |
| Denmark | 68,300,000 |
| Greece | 67,100,000 |
| Poland | 65,300,000 |
| Singapore | 61,700,000 |
| Thailand | 60,500,000 |
| New Zealand | 58,000,000 |
| Norway | 58,000,000 |
| Portugal | 53,500,000 |
| Venezuela | 52,900,000 |
| South Africa | 48,700,000 |
| Colombia | 34,700,000 |
| United Arab Emirates | 32,600,000 |
| Chile | 30,000,000 |
| Peru | 27,600,000 |
| Czech Republic | 22,700,000 |
| Lithuania | 7,535,218 |
| Iceland | 7,168,768 |
| Slovenia | 6,144,201 |
| Uruguay | 4,100,213 |
| Estonia | 3,898,027 |
| Serbia | 2,369,618 |

Figure 2 plots clout and susceptibility of countries together. Countries located in the southeast area such as Norway, Denmark, and Austria show strong clout, but weak susceptibility. These countries will be the prime candidates that should come in early sequence in international launch of new products. Countries located in the northwest area such as Switzerland, Lithuania, and Japan have weak clout, but strong susceptibility. It would be a good idea to launch new product later into these countries.

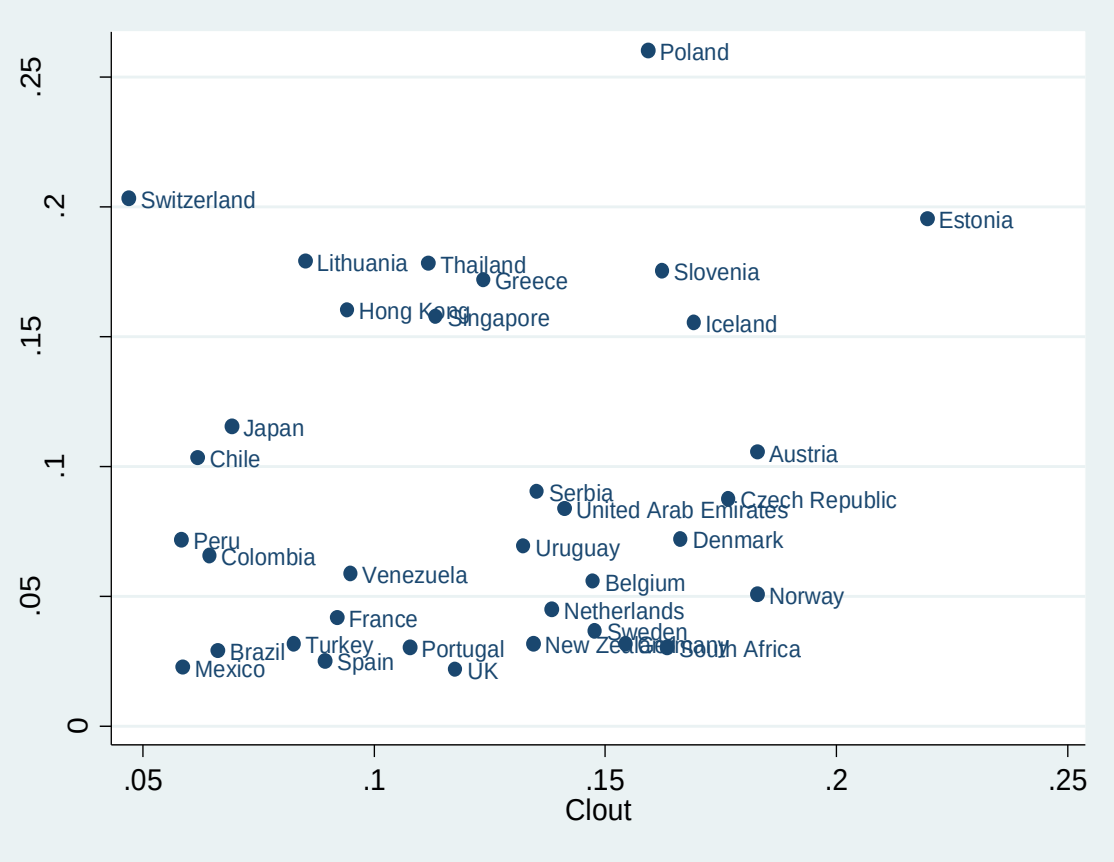
## *Implications, Limitations, and Future Research*

### *Theoretical Implications*

My results have critical implications for theory. First, I find that country sequence affects the international performance of new products. Order in country sequence is negatively related to country revenues. In addition, lagged revenues from other countries are positively related to country revenue. Marketing effort in the home country also affect performance in foreign countries. All these results highlight the phenomenon of global spillover that is gaining increasing attention from both managers and academicians as business is becoming more global.

My findings provide important theoretical insights on research in this area that may spawn some additional research. It is worthwhile to further investigate how those cross-country spillovers happen. Examining the factors that affect the process of globalization and their impact on global spillover can shed additional light on global

Figure 2 CLOUT AND SUSCEPTIBILITY OF COUNTRIES




spillover research. In addition, the strength and speed of these spillover effects will be stronger and faster as the markets become more globalized. Thus, examining the spillover phenomenon longitudinally will have important implications on how firms should change their international market entry strategies and adapt to the changing environment.

Furthermore, why some countries are economically and culturally more open than other countries is an important issue in many fields such as marketing, economics,

and political science. Consumption of cultural goods such as movies and music produced in other countries appears to affect the global mindset of people and has important implication on cultural changes in a society. Examining the role of trade in cultural goods in the globalization process of each country will provide further theoretical insights. Combining my findings about the determinants of country sequence such as culture distance and economic openness, future studies can provide interesting insights on global acceptance and penetration of new products.

*Managerial Implications*

The results from this study present important managerial implications. How should managers decide country sequence based on these results? The general principle is to launch earlier into those countries that demonstrate strong clout, but weak susceptibility and to launch later into those countries that show weak clout, but strong susceptibility. In the case of the motion picture industry, countries such as Norway, Austria, Denmark, and Czech Republic show relatively strong clout and weak susceptibility. Countries Switzerland, Lithuania, Japan, Chile, and Hong Kong have relatively weak clout, but strong susceptibility.

My results provide additional insights on the relationships among market potential, clout, and susceptibility in deciding country sequence. How important is market potential in the country sequence decision? Recall that the coefficient of market potential is negative and significant in the sequence equation. That is, firms launch their new products earlier into countries with large market potentials. Also notice that the

correlation between market potential and clout is negative. That is, countries with high market potential tend to have weak clout. It seems that the current practice of the industry is to launch their products earlier into countries with large market potential instead of strong clout. Launching faster into countries with large market potentials might make sense if firms want to recover their investments fast, but is not recommended if their main objective is to enhance overall performance in all foreign markets. Thus, my study provides important insight on how to weigh different factors in deciding country sequence.

Foreign market entry is one of the most important strategic decisions for firms. This research fills the gap in international market entry strategy by examining the key determinants of international launch sequence of countries and its impact on performance in foreign countries. Managers should consider cross-country spillover effect when they decide country sequence. Firms can increase overall performance in foreign countries, so enhance return on investment by taking advantage of these spillover effects. A firm should launch its products first into countries that are culturally closer to its home country and countries that are more open. Managers also need to consider factors such as potential adopters' familiarity with the new product and cultural fit of the product with the country when deciding the order of country in the international launch sequence. They need to carefully consider the determinants of country sequence because they affect product performance in foreign countries. Finally, my research provides important insights into using the combined effects of market potential, clout, and susceptibility of countries to determine the international launch sequence.

# CHAPTER IV

# CONCLUSION, LIMITATIONS, AND EXTENSIONS

International market entry strategy is critical to the success of new products in several industries. This research fills the gap in international market entry strategy by examining the key determinants of international launch time window and country sequence of new product entries. In Chapter II, I examined the issue of international launch time window. I developed an analytic model of optimal launch time window and prelaunch advertising expenditures and advanced some predictions. I tested these predictions and the effects of other determinants using a unique and large dataset from the motion picture industry. My main findings are that time window is positively associated with word of mouth but negatively related to prelaunch advertising efforts and foreign demand potential.

While these findings offer new insights into the tradeoff between leveraging the word of mouth effect and investing in a prelaunch advertising campaign in determining the international launch time window, this research has some limitations that offer opportunities for future research. First, I used realized values for expected country revenues and word of mouth, relying on rational expectations. Studies that demonstrate techniques to forecast these values can be used to complement my model. Specifically, studies on how to manage consumer word of mouth have important implications to my research. For example, Godes and Mayzlin (2009) discuss how consumer word of mouth campaign created by firms can benefit performance of new products. Future research can

incorporate a model of word of mouth that managers can use when forecasting revenues. Second, I assumed that timing decisions for other subsequent channels such as home video and downloadable formats for domestic markets are independent of international time window decision. Future research could model international time window by simultaneously considering other subsequent channels. Third, I did not include local advertising spending in each country. To maximize cross-country advertising spillover effect, firms will also need to spend on local advertising campaign. In the motion picture industry, studios are increasingly custom-tailoring advertising campaign to local tastes, customs, and beliefs instead of streamlined, one-size-fits-all campaigns (McClintock and Jaafar 2009). Future research can investigate issues related to how entry timing decision and advertising spillover are affected by these customized local advertising campaign. Finally, my model could be applied to other products or industries if appropriate data are available. For example, books, music, and video games exhibit a sales pattern similar to movies. In addition to these short life cycle products, it would be interesting to see whether my results can be also applied to short to medium life cycle products if not durable goods. Analysis of international entry timing in these product categories will be worthwhile.

In Chapter III, I estimated econometric models using a unique dataset comprising 228 Hollywood movies during 2007-08, covering 62 major countries. The results show that a country's order in the international launch sequence of a new product affects the product's performance in that country. Country order is negatively related to country revenues. A country's cultural distance (economic openness) is positively (negatively)

associated with its order in the sequence. I also find that there is cross-country spillover effect--lagged revenues from other countries and marketing efforts in the home country are positively related to a new product's revenues in the focal foreign country. The more culturally sensitive a product, the earlier culturally closer countries are in the launch sequence for that product. These result offer important guidelines for managers in their international launch sequence decisions.

This research also has some limitations that offer opportunities for future research. First, I did not include local advertising spending in each country due to the non-availability of data. Future research can investigate issues related to how launch sequence decision and advertising spillover are affected by customized local advertising campaigns.

Second, analysis of international launch sequence and cross-country spillover effects in other product categories and industries will be worthwhile. For example, other cultural goods such as books, music, and video games exhibit a sales pattern similar to movies. In addition, it would be valuable to conduct studies on other industries. Specifically, my somewhat unintuitive results on clout and susceptibility suggest that countries that have low economic power can have strong cultural impact on other countries. It would be interesting to see whether my results can be generalized across industries.

Third, future studies can examine entry order and country sequence decisions together. Questions that merit research consideration include: Should the country launch

sequence be different for the pioneer and late movers? If so, what factors affect the country sequence decision of each player?

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