

1. Introduction

There is an ongoing debate on whether cultural goods like movies and music albums should be protected from foreign competitors.¹ A country like France, for example, relies on import restriction to protect her domestic film industry. One argument frequently used by protectionists is that domestic movies cannot compete against mega-budgeted Hollywood movies and will disappear if trade protection is lifted. An implicit assumption under this argument is that consumers easily substitute cultural elements for other product characteristics like high quality computer graphics integrated in movies.

On the contrary, one may also argue that preference for cultural goods is *biased* by cultural elements. For example, the utility from watching a Chinese film may diminish if one does not have good understanding of Chinese jokes or Chinese history and tradition. People who share the same ethnic background and social events may appreciate certain topics more than others. Then, cultural goods are naturally protected by cultural elements such as language, history, traditions, ethnic factors, etc.²

Movie producers seem to be aware of the importance of culture. Its evidence is found in movies that are remade in another country even when the original film is available with subtitles. For example, *Shall We Dance?*, directed by Peter Chelsom and featured by Richard Gere, Susan Sarandon, and Jennifer Lopez is a remake of a runaway Japanese hit of the same title. The original Japanese film “contrasts the boldness of social dance with the buttoned-up societal mores of Japan,

¹ Cultural goods are defined by UNESCO (2005) as “consumer goods which convey ideas, symbols, and ways of life. They inform or entertain, contribute to build collective identity and influence cultural practices. They are the result of individual or collective creativity.”

² Although it is not confined to cultural goods, Armington home bias is frequently used in the trade literature to explain preference towards home-produced goods in consumption.

where people avoid public displays of emotion.”³ The Hollywood remake closely follows the storyline of the original film, but does not have this contrast. Instead, it focuses on a workaholic lawyer searching for passion.

In this paper we assess how much consumers value cultural elements by estimating demand for (domestic and imported) films in the Korea film market. This market is an ideal place to estimate preference for culture since culturally homogeneous consumers choose goods from heterogeneous cultures. Only one percent of the Korean population is foreign born and all Koreans speak the same native language, Korean, which is not spoken in any other country (except for North Korea).⁴ This gives our study an advantage since we can bypass the concern of controlling consumer heterogeneity with respect to cultural aspects.

Culture is relatively a new and exotic thing in economics as “economists have been reluctant to rely on culture as a possible determinant of economic phenomena” (Guiso et al., 2006) However, there has been a growing literature on “culture” in economics mainly thanks to data availability. Examples include, among others, are Giuliano (forthcoming), Fernández, Fogli, and Olivetti (2004), Fernández and Fogli (2005), and Ichino and Maggi (2000).

These papers attribute certain cohorts’ economic decisions to cultural elements. For example, Fernández and Fogli (2005) show that the second-generation American women’s decisions for work and fertility are explained by their cultural attributes. They use labor force participation and fertility rate of their ancestry country as cultural proxies. Ichino and Maggi (2000) explain the shirking differential among workers in a large Italian bank based on the place of birth, and characterize it as the north-south cultural differential.

³ David Horiuchi, editorial reviews at www.amazon.com.

⁴ Korea National Statistical Office, Resident registration population, Household <http://kosis.nso.go.kr>.

There are a few other, mainly non empirical, studies that are more relevant to our paper. Francois and Ypersele (2002) show that protection may enhance social welfare as it prevents the domestic cultural good from being produced too little or none at all. Their result is based on the assumption that preference for domestic cultural good (French auteur cinema) is heterogeneous while preference for an import substitute (“generic” Hollywood movies) is homogeneous. The assumption of increasing returns to scale in movie production is also crucial.

Guiso et al. (2007) introduces an interesting survey example on how European managers of different nationalities view each other in terms of trust. The survey shows that everyone trusts the Germans more and Italians less and that most managers trust their own countrymen more: a “home-country bias.” Another interesting finding is that British managers and French managers show antipathy towards each other and rank each other lower than the average of what managers of other nationalities do. This suggests that nationality seems to carry a good deal of information on cultural elements.

Our paper differs from these papers in that we quantify cultural preference by estimating demand and draw welfare implications based on the estimated preference. Our question is whether cultural preference does exist in consumption decisions and how important it is if it does. To our best knowledge, this is the first attempt to estimate the preference and compute welfare for cultural goods.

We use a discrete choice model of differentiated product demand (Berry, 1994), in which we include nationality variables in addition to other movie characteristics. We use monthly data on admissions at the individual movie level from 2002 to 2004 and combine them with data on movie characteristics. The empirical specification is similar to Einav (forthcoming) which estimates demand for films in the US market.

Our result shows that Korean consumers' marginal utility for home production is higher than for foreign counterpart. It suggests that consumers value cultural goods differently by nationality and that there is a significant variation in consumers' valuation for different cultures. Our estimate shows that the probability of watching a foreign movie would increase by 75.9 percent if its cultural elements were replaced by Korean. This can be interpreted as another form (though different by nature) of the "home-country bias" as found in the survey example of Guiso et al. (2007).

One criticism to our result is that the time period of our study falls onto the years when Korean movies were outperforming foreign movies in the Korea film market. Indeed, the average quality of Korean movies has drastically improved in recent years. This quality upgrading is evidenced by the number of awards won by Korean movies, directors, and actors/actresses in many international film festivals. Some industry experts attribute the success of Korean movies in international awards to new and better human capital in the industry such as young and professionally educated directors, actors/actresses, staff members, and so on. A huge increase in production budget must have contributed to the quality upgrading as well.

We include these variables in our estimation with other available movie characteristics to control for the observed movie quality. Estimates show that one million dollar increase in the budget can increase a market share by more than twenty percent and that winning one more international award can increase a share by almost twenty percent. This implies that the estimated cultural preference is not confined to the sample period of this study.

Using the demand estimates we run counterfactual simulations to assess the welfare effect of cultural preference. Our simulations show that welfare is 75 percent of the current level when cultural differences are taken away. On the other hand, welfare increases by 40 percent when all foreign movies incorporate domestic cultural attributes.

The paper is organized as follows. Section 2 briefly describes the film market of Korea. Section 3 describes data. Model and estimation strategies are discussed in section 4. Estimation results are in Section 5. In section 6, we conduct counterfactual exercises and discuss simulation results for welfare implications. Section 7 concludes.

2. Korea Films Market

Demand in the Korea film market has expanded significantly since the late 1990s. This is reflected by an increase in total admissions and admissions per movie. This trend is summarized in Table 1. In 2004, 268 movies were shown in Seoul, the capital city of Korea, and they drew 47 million admissions with about 175,000 admissions per movie. Total admissions as well as admissions per movie have more than doubled in about six years while the number of movies shown per year has remained almost the same; in 1998, total admissions were 22 million for 287 movies with 78,000 admissions per movie.

More than 70 percent of movies shown in Korea have been either Korean or Hollywood movies. They have combined more than 90 percent of total admissions. As shown in Table 1, Korean movies' market share has grown rapidly during the six year span. It has increased from 21 percent of the total admissions in 1998 to 54 percent in 2004 with the admissions per Korean movie almost tripled. Meanwhile, US movies have lost the admissions share from 72 percent to 41 percent with a moderate increase in the admissions per movie.

The eye-catching performance of Korean movies is only a recent phenomenon. Until the late 1990s they were considered to be inferior to foreign movies such as Hollywood blockbusters and protection measures helped them survive in the Korea films market. In 1988, Korea lifted import restrictions on foreign movies and allowed Hollywood film distributors to open branches in Korea

for direct-distribution of Hollywood movies; the first such case is UIP. As a result, Korean movies' admissions share had declined and recorded the lowest mark of 15 percent in 1993.

A screen quota system, which was created in 1966, did not receive much attention until the restriction was lifted. The screen quota initially requires theaters to exhibit at least 146 days of Korean movies, which is equivalent to 2/5 of exhibit days per year, during our sample period.⁵ The *effective* screen quota requirement, however, is only 106 days because of special reduction allowances.⁶

Arguably, the screen quota system may have prevented a total collapse of the Korean movie industry during the 1990s, although it was not fully complied by all theaters due to the light penalty for violating the requirement. However, the exhibition days of Korean movies have surpassed the requirement by 38 percent or more and the Korean movies' admissions share has skyrocketed to more than 50 percent since 2001. While the screen quota may have played a role before the renaissance of Korean films, it does not seem to be a binding requirement in our sample period.

The recent surge of Korean movies can be explained in part by a big increase in production and advertising budget, which is closely related to the entry of big conglomerates, the so-called *Chaebol*. Samsung was the first conglomerate to enter the films industry in 1992. In time these conglomerates transformed the structure of the business, introducing a vertically integrated system whereby the finance, production, exhibition, distribution, and video release of films was all controlled by a single company.

⁵ The screen quota requirement was halved to 73 days effective on July 1, 2006.

⁶ Summer peak exhibition days are counted as one and 2/3 days for each day of exhibition up to 20 days and there is an additional 20 day reduction for theaters participating in the integrated electronic network.

Although many *Chaebol* including Samsung dropped out of the industry after the 1997 financial crisis, major conglomerates such as CJ, Lotte and the Orion Group still remain the industry's most powerful players. In 2004, those movies distributed by the big three led total admissions with about 60 percent of all movies of the year. Korean movies distributed by them captured more than 80 percent of Korean movie admissions. Table 2 shows the average production and advertising budgets of Korean films from 1996 to 2004. The average production budget has doubled from 1998 to 2004 and the advertising budget has more than quadrupled.⁷

Aided by the budget increase in production and advertising, Korean movies began to produce a string of box office hits. *Shiri*, the first Korean blockbuster movie, was released in 1999 and recorded then all-time high 6.2 million admissions. Following *Shiri* and a few other record-breaking movies, *Taegukki* (2004) and *Silmido* (2003) each attracted more than 11 million consumers. Before *Shiri*, the previous record was set by *Supyunje* (English title: The sorrow of Korean singer) which had broken one million admissions mark (Seoul only) in 1993 for the first time ever in the Korean films history.

3. Data

Data availability limits our study to the most recent years. Monthly admissions data for 764 films shown from 2002 to 2004 are provided by the Korean Film Commission. Movie characteristics include opening date, nationality, distributor, producer/importer, movie rating, production budget and number of screens. For Korean movies we also use the number of awards won in international film competitions as one of characteristics. We consider each month a separate

⁷ They are in nominal value. The annual inflation rate for the six year span was about 4 percent.

market, which results in 1,294 observations. The geographic area is confined to Seoul, the capital city of South Korea, which accounts for more than one-third of the Korea film market.

Summary statistics for the entire sample period are provided in Table 3. An age variable is constructed by calculating the number of days a film has been shown since the opening date to the end of the month. Five observations are missing for the age variable. Some of them appear with a long lag between exhibitions such that their ages are extremely large. The others have an error on their opening dates (opening date later than the exhibition month).

There are only 524 movies (870 observations) with budget information. Production budget information for Korean movies is taken from each year's edition of *Korean Cinema* published by the Korean Film Commission. For US and other country films, we use various internet sources to find the information. For US movies, production budgets do not include prints and advertising budgets. For Korean movies, it is not specified whether the amount includes prints and advertising budgets.

We also collected data on the number of awards that Korean films had won in international film festivals. There are 24 Korean movies (69 observations) that have ever won international awards. The number of awards varies from 1 to 7 with the mean equal to 1.99.

Table 4 provides information on the distribution of movie exhibitions by month. Note that the monthly pattern of movies shown in each month is distinguished from the pattern of the United States.⁸ A smaller number of movies are shown in January, July, and August, although admissions

⁸ See Einav (forthcoming).

shares are highest in these months and December.⁹ This particular monthly pattern is less evident with Korean movies while US movies show a similar pattern. One possible explanation is that potential blockbusters, in particular Hollywood blockbusters are more likely set to target a release date in peak seasons. Small budget movies and other foreign movies may want to avoid head-to-head competition with the potential blockbusters.

4. Model and Estimation Strategy

We use a discrete choice model of differentiated product demand to estimate consumer demand for watching movies in theaters. A market is defined as the capital city of South Korea in a given month. In each period a consumer watches a movie that maximizes her utility. She can also choose an outside option of watching no movies. We determine the market size by adding ten percent to the highest monthly admissions. 5.25 million admissions are recorded in January 2004, and by adding ten percent we have 5.78 millions as the market size. This is about sixty percent of the total population in Seoul. This means that we consider this number of people as potential movie goers every month. It is not critical how large the market size is in our model as different sizes only affect the constant term in our regressions.

The indirect utility function for consumer i and product j is

$$u_{ij} = X_j \beta + \xi_j + \varepsilon_{ij} \quad (1)$$

⁹ Our data spans until November 2004 and therefore statistics for December are only for two years. When extrapolated, the number of movies in December is 117, Individual movie's admission shares are calculated as defined by equation (2) in the next section.

where X_j is a set of observed movie characteristics, β is marginal utility with respect to these characteristics, ξ_j is the mean value of unobserved characteristics, and ε_{ij} is an idiosyncratic taste term. There is no price variable since we assume that consumers pay the same admission fee for any movies they watch. There is little variation in the admission fee among theaters in Seoul. The admission fee is largely uniform and is the same for all movies shown in a given theater.

Observable characteristics include rating, age of movies in the market, producer/importer, distributor, nationality, and seasonal dummy variables. Einav (forthcoming) provides useful discussion on the role of the age variable as a movie characteristic. We also include in some specifications a budget variable and the number of awards won by Korean movies in international film festivals.

Although it is not straightforward to interpret the producer/importer and the distributor variables as characteristics of movies, these variables capture important elements that may affect success/failure of a movie. For example, a producer with a considerable market power often casts popular actors and actresses, invests more money in making movies, and advertises more aggressively.

Assuming that the taste term in the utility function is identically and independently distributed with a Type I extreme-value distribution, the probability of movie j being watched in a market with J movies available on screen is

$$s_j = \frac{\exp(X_j\beta + \xi_j)}{1 + \sum_{m=1}^J \exp(X_m\beta + \xi_m)} \quad (2)$$

This also represents a market share equation for movie j .

We can compute the semi-elasticity of demand with respect to characteristics from this probability function. By differentiating s_j by X_j , we have

$$\begin{aligned} \frac{\partial s_j}{\partial X_j} &= \frac{\beta \exp(X_j \beta + \xi_j) \left[1 + \sum_{m=1}^J \exp(X_m \beta + \xi_m) \right] - \beta \left[\exp(X_j \beta + \xi_j) \right]^2}{\left[1 + \sum_{m=1}^J \exp(X_m \beta + \xi_m) \right]^2} \\ &= \beta s_j (1 - s_j). \end{aligned} \quad (3)$$

Thus, the semi-elasticity is simply $\beta(1-s_j)$. This can be used to measure hypothetical impact of changing a movie's characteristics on the probability of watching that movie.

To estimate β we take the log on both sides of equation (2), and have

$$\ln(s_j) - \ln(s_0) = X_j \beta + \xi_j \quad (4)$$

s_0 is the share of the outside option and defined as $s_0 = 1 / (1 + \sum_{m=1}^J \exp[X_m \beta + \xi_m])$. The model is

estimated by using moment conditions that unobserved characteristics of movies are not correlated with observed characteristics. Since we do not estimate a price coefficient, we are not concerned about price endogeneity.

We control unobservable quality with producer/importer and distributor dummy variables. We include 28 producers/importers and 25 distributors. In addition to these we use the random effect at a movie level. Another way to control for the unobservable quality is to estimate the mean quality by using the fixed effect without characteristics, and then to regress the mean quality on characteristics (Nevo, 2001). Einav (forthcoming) uses this method to control unobservable movie quality. However, one needs to observe the same movie over a reasonably long period of time to

consistently estimate the mean quality. As we have monthly data, the average duration of movie in the market is less than 2 periods.

Our main focus is on the nationality variables. Do consumers care about nationality as a movie characteristic when they choose which movie to watch? In a more hypothetical setting, had a Hong Kong movie been made in Korea with Korean speaking actors/actresses, would the same number of Koreans have watched the movie?

An important characteristic of the Korea films market is that almost all consumers are Korean. Therefore, we can infer from the coefficients on the nationality dummy variables how much people from one culture value their own culture compared with other cultures. From the nationality coefficients, we may also see if consumers' valuation varies across foreign cultures.

5. Estimation Results

Table 5 lists demand estimates. We include the producer/importer and distributor effects with the month dummy variables in all specifications. Twenty eight major producers/importers and twenty five major distributors are included. There are some producers/importers and distributors with a small number of movies. Producers/importers that have less than 10 observations are treated as the same producer/distributor. The same treatment is applied to distributors. To control for unobserved movie characteristics not captured by these dummy variables, we use the random effect at the movie level in all specifications. Results remain virtually the same with or without the random effect.

Age measures the number of days a movie is shown from the opening date to the end of a given period. In all specifications the coefficient of *Age* is significant and negative, showing a time decaying effect. Using equation (3) we can infer that with the coefficient -0.033 the probability of watching a movie decreases by 3.24 percent on average as the movie becomes one day “older”.

There are four ratings variables; *All*, *PG-12*, *PG-15*, and *Restricted*, and we drop *All*. The rating system in Korea is different from that in the United States. There are two age levels for parental guidance, and the *Restricted* rating is the same as the NC-17 rating in US. Demand for *PG-12* movies is the highest, followed by *PG-15*, *All*, and *Restricted*, and the coefficients of *PG-15* and *Restricted* are not significantly different from *All* in any specifications. The estimates suggest that the largest consumer group in the Korea movie market is teenagers.

All movies are grouped into five by their nationality, indicating where they are made, and assigned to the corresponding nationality dummy variables: *Korea*, *Asia*, *USA*, *Europe*, and *Others*. We drop *USA* and *Others*. *Others* include movies that were made jointly by more than two countries. We drop them because there are only 15 observations. However, they can provide information on how consumers value the mixture of multiple cultures if there were more observations.

In the first two specifications the coefficient for the Korea dummy variable is significant and positive, implying that consumers prefer watching Korean movies to US movies given the controlled characteristics. In particular, the estimate 0.78 for the Korea dummy in Specification 1 indicates that if a US movie had been made with Korean cultural elements, the probability of watching that movie would increase by 75.9 percent on average. The coefficients for Asian and European moves are negative, although they are not significant, implying that they are less preferred to US movies.

In the following specifications we use the budget and award variables to control for unobserved characteristics that may be correlated with the nationality variables. The huge success of Korean movies in recent years, which coincide with our sample period, may prevent us from freely interpreting our results as an evidence for cultural preference.¹⁰ If the Korean movies' success is adequately explained by increased budget and number of international awards won, however, identified nationality effects can be considered time-unvarying.

To this end, we collect data for international awards won by Korean movies, which are used to control for unobserved characteristics among Korean movies. The budget variable is available only for 870 observations. We treat those missing observations as if they had zero budgets. We also created a separate dummy variable for those observations that have no budget information. However, this variable turns out to be insignificant with an estimate equal to -0.199 and standard error 0.201 and it does not affect other estimates significantly. The international award variable is only available for Korean movies and

In Specification 2 *Budget* and *Budget Squared* are included. Results show that movie quality increases with budget. *Budget Squared* is negative, although not significant, suggesting that there is a diminishing return. The coefficients for the nationality dummy variables change significantly with the budget variables. *Korea* increases from 0.78 to 1.76 and is still significant. *Asia*, which was negative and insignificant, goes up to 0.76 and becomes significant. *Europe* also changes the sign to positive but still insignificant. This result suggests that the preference for US movies can be mainly explained by characteristics attributed to their big budget. Controlling budget, Korean consumers prefer Asian movies to US movies and their probability of watching a Korean movie becomes much higher.

¹⁰ Unfortunately, detailed monthly data are not available for years before 2002, which is the first year of our sample.

In Specification 3 the budget variable is interacted with the nationality variables. An extra dollar spent on a Korean movie is treated differently from the same dollar spent on other country movies. In this specification we test if movies from different cultures have different production functions. *Budget Korea* and *Budget USA* are significant, and the former is higher than the latter by a factor of 13.4, suggesting that extra money spent on Korean movies is much more effective in attracting consumers. However, the nationality dummy, *Korea* goes down to 1.062, indicating that the estimate in Specification 2 is overestimated by applying the same production function.

In Specification 4 the international award variable *Int'l Awards* is added to Specification 3. The estimate is positive and significant, and its magnitude indicates that winning an international award has almost same effect on attracting consumers as increasing the budget by \$1 million. The coefficient for *Korea* decreases to 1.035 but is still higher than the estimate in Specification 1 and much higher than those of the budget and award variables.

Equation (3) and Tables 1 and 2 can be used to assess impact of the Korean movies' quality improvement on the market share. From 1999 to 2004 the Korean movies' market share increased by 50 percent. During the same period, their average production budget increased from 1.4 million dollars to 2.8 million dollars.¹¹

The coefficient estimate on *Budget Korea* suggests that this extra 1.4 million dollars increases its market share by 25 percent, which is a half of the actual change. In addition, the coefficient estimate on *Int'l Awards* suggests that if a Korean movie's quality improves such that it wins one more international award, its market share increases by 18.5 percent. This shows that the recent success of Korean movies can be explained to a large extent by the increased budget and improved movie quality, supporting our claim that the identified preference for nationality is time-unvarying.

One factor we do not separate from other cultural elements is language. Consumers should read subtitles when watching foreign movies. This may cause disutility in movie consumption. In a regression not reported here we include the interaction term of the nationality and the *All* rating variable. Movies for children are likely to be dubbed and therefore this interaction term may capture the non-language related cultural preference. However, the coefficient for dubbing is not statistically significant and the inclusion of the variable does not change our main results.

In table 6 we report estimates on the month dummy variables, which are included in all four specifications. Demand for movies is the highest in August, July, January, and December (in the order from the highest), and it is the lowest in April, September, and October. This seasonal demand is different from the US movie market where a high demand season starts on Memorial Day and ends on Labor Day. The difference is mainly due to school schedules.¹² For schools in Korea the winter break spans over more than two months from the middle of December and the summer break is only one month long from the mid-July, whereas US schools have a long three months summer break starting around Memorial Day.

6. Welfare Effects of Cultural Preference

In this section we assess welfare effects of cultural preference. Our benchmark case is welfare in the market we observe. In the logit model consumer welfare (cw) is defined as

$$cw = \log\left(1 + \sum_{j=1}^J \exp(\delta_j)\right) \quad (5)$$

¹¹ For simplicity we applied the approximate exchange rate of US\$1 = 1,000 Korean won.

¹² Recall that teenagers are the biggest customers in the Korea films market.

where $\delta_j = X_j\beta + \xi_j$. As shown in this equation, welfare increases with the quality as well as the number of movies.

In the first column of Table 7 welfare is computed based on the demand estimates for each period and then the monthly average over three years is reported. January is the base month and its welfare is set to 100.

Welfare in August is the highest, closely followed by September. These two months present an interesting comparison. 105 movies were shown in August over three years, while 128 movies were shown in September (Table 4.) About 20 percent more movies were shown in September than in August. This suggests that large welfare is mainly driven by quality in August, while it is by the number of movies in September.

February records the third highest welfare, followed by March and January. Only 82 movies were shown in January, but its welfare is similar to March where 105 movies were shown. April records the lowest welfare, but 126 movies were shown that month, suggesting individual movie quality was low. Note that December's welfare is fairly low, in particular, considering its relatively high demand. This may be due to the fact that the number of movies in December is only for two years in our data rather than three years for other months.

The monthly pattern of welfare similarly follows seasonal demand shown in Table 6. That is, welfare is high around school breaks. There are a few exceptions, however. In Table 6 July shows higher demand than January, the second highest after August, but its welfare is only 83 percent of the January welfare. In contrast, February and September show lower demand than January, but welfare is higher than in January. These differences suggest that movie producers/importers do not

fully exploit high demand in July, but release “too many” movies in February and September.¹³ Einav (forthcoming) discusses this issue in details regarding the US movie market.

Now let us conduct some counterfactual exercises to appraise the effects of cultural preference on consumers’ welfare. We report in Table 7 the results of four counterfactual exercises for the following cases:

1. Consumers do not have cultural preference.
2. No foreign movies are imported and not replaced by domestic movies.
3. All domestic movies are replaced by foreign movies (through a random process).
4. All foreign movies are replaced by domestic movies:
 - I. through the random process, or
 - II. by converting foreign movies to domestic movies.

Replacement methods used in case 3 and 4 are described below. These counterfactual exercises, although somewhat extreme, yield concrete figures that can be used for welfare comparisons.

In our first counterfactual exercise we assume consumers do not have cultural preference. All other things equal, cultural elements should not change consumer utility. We do this exercise by setting the estimates on the nationality dummy variables to zero. The second column of Table 7 reports welfare in this case. Welfare is computed in comparison to the base month (January in the benchmark case). On average, welfare goes down to 75 percent level of the benchmark welfare, and

¹³ February’s high welfare might be due to simultaneous occurrences of two historically ranked Korean blockbusters in February of 2004. Korean Thanksgiving, which follows the lunar calendar and usually falls onto September, may explain a large number of movie releases that month.

decreases most significantly in November, October, May and March in a percentage term. Welfare in these months is less than 70 percent of the benchmark case. This simulation suggests that on average about 25 percent of the current welfare is explained by the cultural preference.

In the second counterfactual exercise, reported in the third column, we rid the market of all foreign movies. It is as if no foreign movies were allowed to be imported. However, we assume Korean movies do not replace foreign movies so that the total number of movies goes down to that of Korean movies in our data. We also assume that the quality of domestic movies does not change when import is not allowed. It may well be the case that movie quality improves as a result of competition with foreign movies. However, this consideration is beyond the scope of this paper.

Welfare is 64 percent of the benchmark case without foreign movies. April, July, and January show the largest percentage drop, implying that the welfare contribution of foreign movies is relatively large in these months. In particular, January and July are the months, in which Hollywood blockbusters are imported to attract teenagers on school breaks.

Nonetheless, this does not mean that the contribution of domestic movies to welfare is 64 percent and that of foreign movies is 36 percent. Total welfare is a nonlinear function of the individual movie quality as shown in equation (5). When we compute welfare only with foreign movies, it is 60 percent of the benchmark case. Together with the fact that the number of Korean movies constitutes only 34 percent of total movies, we can infer from this that domestic movies contribute to welfare more than foreign movies do.

In our third counterfactual exercise, we measure welfare changes when all Korean movies are replaced by foreign movies. This is an extreme case of all imports and no domestic cultural goods. We first take out domestic movies and replace them with randomly selected foreign movies. We

repeat this for 1,000 times and take the average. In this random replacement process, we keep the total number of movies in the market the same as the benchmark case so that the welfare effect can be free from changes in the number of goods available.

August is the only month with slightly higher welfare than the benchmark case. Welfare in January and July, the months that foreign movies dominate, is 95 percent and almost 90 percent of the benchmark welfare. The September's welfare is 94 percent. Overall, welfare is lower than in the benchmark case, averaging about 80 percent. Consumers are hurt by the absence of domestic goods in their choice. This is consistent with the result of the second counterfactual exercise that domestic movies contribute to welfare more than foreign ones do.

In the last two columns we compute welfare when all foreign movies are replaced by domestic movies. We do this in two different ways. In the first one we replace foreign movies with domestic movies in the data. Similar to the last counterfactual exercise, we take out foreign movies and replace them with randomly selected domestic movies while keeping the total number of movies unchanged. In the second one we just replace foreign movies' nationality dummy coefficients with the Korean one. For US movies we add the Korean dummy coefficient and for Asian movies we add the difference between the two nationality dummy coefficients, (Korean-Asian), and so on. This is as if all the foreign movies in the data were made with Korean cultural aspects while keeping all the other observed characteristics intact. That is, consumers are offered with the same number and exactly same movies as in the benchmark case except that the cultural elements of foreign movies were switched to Korean ones. It is just changing the nationality coefficient to the benchmark case.

Welfare, compared to the benchmark case, increases in both cases with an exception of August in the first case, 4.I. Welfare increases even more in the second case where only the nationality

variables are adjusted. Consumers' welfare increases by 28 percent in the first case and by 40 percent in the second case. The 40 percent increase in the second case is solely attributed to putting domestic culture in all movies currently available.

To assess more precisely the role of cultural preference in the first case, we re-run the simulation but this time we take the cultural preference out. That is, all foreign movies are replaced by domestic movies through the random process with no cultural preference attached. The result shows (not reported here) that welfare is 92 percent of the benchmark case, suggesting that the cultural preference is the main contributor of the welfare improvement in that case.

Out of all the counterfactual exercises, the most welfare enhancing case is when all foreign movies are converted to domestic ones without changing non cultural attributes. The second most welfare enhancing case is when no foreign movies are imported and domestic movies replace them. However, the welfare increase mainly comes from the cultural preference. The difference between these two cases is the quality of non cultural attributes of domestic movies replacing foreign ones; they have the same number of movies with the same cultural orientation. These two cases are the only cases that generate higher welfare than the current one. When all domestic movies are replaced by foreign ones, welfare is 80 percent of the current one. When no foreign movies are imported and the number of domestic movies does not change, welfare is only 64 percent of the current level.

A caveat is that we keep the total number of movies unchanged when we replace foreign movies with domestic movies. This assumption allows us to concentrate on the welfare effect of the cultural preference by neutralizing the welfare implications of changes in the number of variety. However, replacing all foreign movies with the same number of domestic movies would be impossible due to resource constraints and economies of scale in producing and distributing movies.

In fact, the other extreme case (complete import ban with no replacement) generates a big welfare decrease, which is obviously the variety effect.

In a more realistic scenario, protection would reduce imports but not entirely. Whether this will raise or reduce welfare depends on the degree of the resulting change and requires more sophisticated simulation in a general equilibrium model setup that must encompass domestic movie makers' reaction, effects on other markets, effects on the quality stemming from competition with imports, and producer surplus changes, etc. Again, these issues are beyond the scope of this study.

7. Conclusion and Discussion

In this paper we have examined how much consumers value cultural elements by estimating demand for films in Korea. Consumers' willingness to pay for cultural elements is measured by the nationality variable in a discrete choice model of differentiated product demand while controlling for other movie characteristics.

Our result shows that Korean consumers are willing to pay more for home-produced movies compared to imported foreign movies. Our estimate indicates that the probability of watching a foreign movie would increase by 75.9 percent if its cultural elements were replaced by Korean. According to our findings, the preference for cultural goods seems to play a role in consumption behavior.

The counterfactual analysis suggests that the cultural preference does exist and it matters for welfare. The consumers' welfare is determined by the number, quality, and cultural orientation of

movies. Other things equal, welfare improves with more variety in the market, better non cultural observed characteristics, and more of domestically oriented cultural goods.

The cultural preference we estimated in this paper bears important implications for trade and competition policies. Our counterfactual exercises seem to suggest that there is a potential benefit from import protection because of the cultural preference. However, they also show that this cultural preference plays a crucial role as a built-in protection as consumers value domestic culture integrated in the cultural good. Because of this built-in protection, protection for cultural goods may not be necessary.

A caveat is that this built-in protection does not guarantee a success of domestically produced cultural goods. When the quality of the domestic good is sufficiently low, it may not survive from the competition with foreign imports. We can easily find countries where Hollywood movies possess more than 80 or 90 percent of the market share. This was also the case in Korea during the early to mid 1990s.

The collapse of domestic production of cultural goods can lower welfare as shown in one of the counterfactual exercises and also argued by Francois and Ypersele (2002). Does this mean that countries should protect their domestic markets from competition? The answer would be not necessarily. The key reason for the possible collapse of domestic production is the quality gap between home produced goods and imports. Protection does not automatically raise quality.

On the contrary, Eswaran and Kotwal (2007) showed theoretically that trade liberalization can be welfare enhancing through the forced quality upgrade of domestically produced goods. Besides, a subsidy should be better than a tariff because of the welfare deteriorating effect of tariff protection and the potential quality improvement effect of the subsidy.

The cultural preference can create more regional economic integration efforts. It is often the case that some cultural aspects are shared by more than one country. In that case, the preference for cultural goods may facilitate trade among culturally similar countries. Meanwhile, multi-cultures may coexist in one country. The coexistence of multi-cultures then becomes a channel for more international trade, which is identified in the literature as the network effect by Rauch and Trindade (2002).

We acknowledge limitations of our work due to the data availability and somewhat unrealistic counterfactual exercises. Nonetheless, we find the result interesting by itself and it provides meaningful policy implications. The recent trend indicates that more attention is being paid to “culture” in various fields of economics. By providing empirical evidence for cultural preference, this paper contributes to this trend.

References

- Berry, S., 1994. "Estimating Discrete Choice Models of Product Differentiation" *Rand Journal of Economics*, 23(2), 242-262.
- Einav, L., forthcoming. "Seasonality in the U.S. Motion Picture Industry," *Rand Journal of Economics*.
- Eswaran, M. and Kotwal, A., 2007. "Quality Enhancing Trade Liberalization," *Journal of Development Economics*, 83(2), 549-561.
- Fernández, R., and Fogli, A., 2005. "Culture: an Empirical Investigation of Beliefs, work, and Fertility," NBER Working Paper No. 11268.
- Fernández, R., Fogli, A., and Olivetti, C., 2004. "Mothers and Sons: Preference Formation and Female Labor Force Dynamics," *Quarterly Journal of Economics*, 119(4), 1249-1299.
- Francois, P., and Ypersele, T., 2002. "On the protection of cultural goods," *Journal of International Economics*, 56, 359-369.
- Giuliano, P., forthcoming. "On the Determinants of Living Arrangements in Western Europe: Does Cultural Origin Matter?" *Journal of the European Economic Association*.
- Guiso, L., Sapienza, P., and Zingales, L., 2007. "Cultural Biases in Economic Exchange," mimeo, University of Chicago.
- _____, 2006. "Does Culture Affect Economic Outcomes?" *Journal of Economic Perspectives*, 20(2), 23-48.
- Horiuchi, D., editorial reviews at www.amazon.com.
- Ichino, A., and Maggi, G., 2000. "Work Environment and Individual Background: Explaining Regional Shirking Differentials in a Large Italian Firm," *Quarterly Journal of Economics*, 115(3), 1057-1090.
- Korean Film Commission, 2002-2004, *Korean Cinema*, Seoul, Korea.
- Korea National Statistical Office, Resident Registration Population, Household at <http://kosis.nso.go.kr>.
- Nevo, A., 2001. "Measuring Market Power in the Ready-to-Eat Cereal Industry," *Econometrica*, 69, 307-322.
- Rauch, J. and Trindade, V., 2002. "Ethnic Chinese Networks in International Trade," *Review of Economics and Statistics* 84, 116-130.
- Unesco Institute for Statistics UNESCO Sector for Culture, 2005. *International Flows of Selected Cultural Goods and Services, 1994-2003*, Montreal, Canada.

Table 1: Recent Trend of the Korea film market (Seoul only)

Year	Number of Movies	Movie Share		Admissions (millions)	Admissions Share		Admissions per Movie (millions)	
		Korea	USA		Korea	USA	Korea	USA
2004	268	0.28	0.44	47	0.54	0.41	0.31	0.30
2003	240	0.27	0.47	44	0.50	0.43	0.32	0.31
2002	274	0.30	0.48	41	0.45	0.49	0.22	0.26
2001	280	0.19	0.49	35	0.46	0.46	0.28	0.23
2000	339	0.18	0.51	27	0.32	0.55	0.15	0.18
1999	275	0.15	0.60	24	0.36	0.56	0.21	0.18
1998	287	0.15	0.60	22	0.21	0.72	0.11	0.22

Table 2: Average Production Budget for Korean Movies (in 100 million Korean won)

Year	Average Total Budget	Average Production budget	Average Advertising budget	Number of Movies	Total Budget for the Year
2004	42	28	14	82	3,411
2003	42	28	13	80	3,328
2002	37	25	13	78	2,902
2001	26	16	9	65	1,658
2000	22	15	7	59	1,269
1999	19	14	5	49	931
1998	15	12	3	43	645
1997	13	11	2	59	767
1996	10	9	1	65	650

Table 3: Summary Statistics for the Sample Period

Variable	Obs.	Mean	Std. Dev.	Min	Max
Market Share	1294	0.017	.035	1.73e-07	0.414
Age	1289	28.2	21.6	1	145
Budget ^a	870	23,600	36,900	59	200,000
Int'l Awards	69	1.986	1.558	1	7
Rating					
All	199	0.1538	–	0	1
PG-12	312	0.2411	–	0	1
PG-15	496	0.3833	–	0	1
PG-18	287	0.2218	–	0	1

Note: ^a in thousand US dollars

Table 4: Number of Movie Exhibitions and Average Admissions Shares by Month

Month	Total		Korea		USA	
	Obs.	Average Admissions Share	Obs.	Average Admissions Share	Obs.	Average Admissions Share
1	82	0.0266	27	0.0349	38	0.0294
2	104	0.0195	32	0.0418	55	0.0106
3	105	0.0128	29	0.0231	61	0.0105
4	126	0.0114	37	0.0231	62	0.0086
5	102	0.0186	38	0.0272	40	0.0194
6	123	0.0148	43	0.0189	44	0.0208
7	90	0.0269	40	0.0239	38	0.0330
8	105	0.0228	38	0.0271	45	0.0270
9	128	0.0135	44	0.0239	56	0.0091
10	122	0.0132	37	0.0274	52	0.0091
11	129	0.0126	43	0.0196	56	0.0125
12 ^b	78	0.0260	31	0.0281	32	0.0349
Avg	110.5	0.0175	37.1	0.0264	49.7	0.0173
Stdev	16.1	0.0057	5.7	0.0067	9.0	0.0091
CV ^a	0.145	0.328	0.153	0.253	0.181	0.527
Total	1,294		439		579	

Notes: ^a CV is the coefficient of variation.

^b Statistics for December are based on two years only.

Table 5: Demand Estimates in the Logit Models

	Specification 1	Specification 2	Specification 3	Specification 4
Age	-0.033** (0.003)	-0.034** (0.003)	-0.035** (0.003)	-0.036** (0.003)
Budget		0.033** (0.007)		
Budget Squared		-0.00008 (0.00005)		
Budget Korea			0.295** (0.057)	0.282** (0.057)
Budget USA			0.022** (0.003)	0.022** (0.003)
Budget Europe			0.072 (0.039)	0.071 (0.039)
Budget Asia			0.032 (0.038)	0.032 (0.038)
Int'l Awards				0.290* (0.136)
Korea	0.779** (0.242)	1.760** (0.263)	1.062** (0.274)	1.035** (0.274)
Asia	-0.136 (0.288)	0.760* (0.300)	0.555 (0.297)	0.565 (0.296)
Europe	-0.330 (0.288)	0.377 (0.292)	0.084 (0.295)	0.098 (0.294)
PG-12	0.665** (0.232)	0.541* (0.222)	0.526* (0.220)	0.541* (0.220)
PG-15	0.189 (0.215)	0.306 (0.206)	0.236 (0.204)	0.261 (0.204)
Restricted	-0.261 (0.237)	-0.055 (0.228)	-0.038 (0.226)	-0.054 (0.225)
Constant	-5.134** (1.807)	-6.733** (1.735)	-6.566** (1.707)	-6.578** (1.705)
R ²	0.427	0.466	0.478	0.480
Obs.	1289	1289	1289	1289

Note: The random effect model is used in all specifications. Dummy variables for month, distributor, and producer/importer are included in all specifications, although they are not reported in the table.

*significant at the 5% level, **significant at the 1% level

Table 6: Seasonal Effects

	Specification 1	Specification 2	Specification 3	Specification 4
February	-1.109** (0.318)	-1.017** (0.294)	-0.986** (0.289)	-0.984** (0.289)
March	-1.171** (0.320)	-1.089** (0.307)	-1.005** (0.300)	-0.995** (0.299)
April	-1.644** (0.310)	-1.604** (0.301)	-1.459** (0.294)	-1.465** (0.293)
May	-1.099** (0.322)	-0.906** (0.315)	-0.833** (0.307)	-0.830** (0.306)
June	-1.068** (0.317)	-0.916** (0.311)	-0.932** (0.302)	-0.936** (0.302)
July	0.557 (0.334)	0.603 (0.327)	0.466 (0.319)	0.477 (0.318)
August	0.680* (0.321)	0.855** (0.314)	0.702* (0.306)	0.720* (0.305)
September	-1.426** (0.308)	-1.237** (0.302)	-1.292** (0.294)	-1.272** (0.293)
October	-1.418** (0.310)	-1.396** (0.304)	-1.292** (0.295)	-1.277** (0.295)
November	-1.272** (0.306)	-1.182** (0.298)	-1.032** (0.291)	-1.008** (0.290)
December	-0.380 (0.342)	-0.374 (0.319)	-0.394 (0.313)	-0.383 (0.312)

*significant at the 5% level

**significant at the 1% level

Table 7: Welfare Simulation

	Benchmark	No Cultural Preference	No Foreign Movies	All Domestic Movies Replaced by Foreign Movies	All Foreign Movies Replaced	
					I*	II**
January	100	81.97	58.04	95.43	107.38	144.27
February	125.48	104.12	79.75	111.93	135.90	171.01
March	100.89	69.54	78.23	61.45	148.21	127.84
April	50.71	36.91	28.47	36.61	73.93	78.81
May	56.15	38.39	37.62	36.83	89.50	80.95
June	85.74	63.27	56.79	67.68	106.94	119.60
July	83.06	65.66	47.25	73.41	95.45	121.02
August	144.82	122.11	87.93	148.98	135.48	194.91
September	142.84	119.61	90.54	134.37	150.15	191.75
October	72.50	48.51	50.95	49.43	103.05	97.83
November	65.43	42.82	46.60	41.20	104.25	88.71
December	66.96	49.42	41.15	53.52	88.97	99.02

* All foreign movies are replaced by domestic movies.

** All foreign movies are replaced by foreign-movie-quality domestic movies.