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The Impact of Korean Wave on the Distribution of Consumer Goods Exports

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Abstract

Purpose: The purpose of this study is to provide a basis for establishing a policy to promote the export of Korean goods through the economic ripple effect of the Korean Wave. From 2001 to 2017, cultural goods exports and consumer goods exports data to 102 countries were used to estimate the effect of cultural goods exports on domestic consumer goods exports. **Research design, data and methodology:** Based on the Gravity Model, we analyzed the effects of domestic film, publishing, music, broadcasting, clothing, cosmetics, processed food, IT products, and automobiles on the export of consumer goods. **Results:** The empirical analysis estimated the trade creation effect of exports of cultural products driving exports of consumer goods and found that a 1% increase in exports of cultural products increased 0.136% in exports of consumer goods. **Conclusions:** The average rate of change in consumer goods exports due to changes in cultural product exports was 22.44, which could be interpreted as an increase of \$2,244 in exports of consumer goods such as IT products, cosmetics, clothing, and processed foods. According to the analysis of export-driven effects of each consumer item by dividing cultural products by sector, the effects of export of processed foods, clothing, cosmetics, IT products, and film, music, publishing exports were statistically significant.

Keywords : Korean Wave, Cultural Goods Exports, Consumer Goods Exports, Distribution channel

JEL Classification Code: F14, M31, Z11

1. Introduction

The cultural goods market has been not only globalized,

but also a very extensive scale. In 2021, the global contents industry is expected to be about 2.5 trillion and the average annual growth rate is 4.2%. Among many countries, Korean cultural contents have secured significant positions in the global market, and especially 'Korean wave' (Hallyu in Korea) is considered as factor affecting this development. As of the first half of 2018, Korea's exports of the content industry amounted to approximately \$ 3.44 billion, which is the seventh largest after France (KOCCA, 2019).

The Korean wave triggered in South Korea is one of the cultural phenomena in which foreigners follow and consume Korean pop culture contents (Chen, 2016). It was widely shared among fans of Asian countries in the late 1990s (Park et al., 2017; Truong, 2018). Initially, dramas and K-pops were recognized as the representative Korean wave, but recently, the popularity of Korean wave has spread to various areas such as games, characters,

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knowledge information, cartoons, Korean foods, and even Hangeul (Ko, 2009).

In particular, the popularity of Korean wave, which has spread only in East Asia such as China and Japan, is now spreading beyond Asia to the world with the appearance of global k-pop idols such as BTS with the rapid spread of social media (Park et al., 2017). The Korean wave is not only consumed within fandom, but also affects the mass consumption of Korean wave-related products such as fashion, food, and beauty products (Jia, Park, & Kim, 2018). Therefore, the ripple effect of Korean wave can occur in all Korea-related fields (Nguyen, 2020).

In particular, effects of Korean Wave are divided as three dimensions. First, Korean Wave contents positively affect to improve Korea's image. This is related to the effect of mass media. Some studies identified the role of mass media as a major factor influencing what foreigners thought of Korean culture (Kunczik, 2016; Moffitt, 1994). The majority of Korean Wave contents are media contents such as films, TV programs, and music, and also Korean Wave contents are promoted through media. Therefore, there is a strong connection between the popularity of Korean content and its' global image.

Second, the Korean Wave is basically considered as a factor to promote interesting related cultural contents to overseas or inducing tourists to visit Korea. Indeed, in 2018, K-pop's exports nearly doubled compared to the previous year (KOFICE, 2019). In addition, the number of foreign tourists visiting Korea has gradually increased due to the Korean Wave, and it is estimated that 9.6% of all Korean tourists are interested in Hallyu in 2018 (Ministry of Culture, Sports and Tourism, 2019). Specifically, Korea's tourist income through the Korean Wave in 2018 was high at \$ 1.52 billion (KOFICE, 2019).

Finally, from an economic point of view, consumption indicators of Hallyu content serve as an empirical assessment to promote Korea's exports of consumer goods (Huh & Wu, 2017). Interestingly, exports of Korean consumer goods also increased considerably since the juncture of the increase in the export of Korean Wave contents (Kim & Ahn, 2012; Huh & Wu, 2017). For example, the success of BTS is expected to affect the average annual increase in consumer goods exports of US \$ 1.117 billion, which is about 1.7% of total consumer goods exports (HRI, 2018). This, in a broad sense, means that the cultural goods, such as the Korean Wave contents, determine the export of consumer goods. In fact, cultural factors, which are components of the Korean Wave content, are regarded as non-economic factors affecting commercial exchanges between countries (Huh & Wu, 2017). The spread of cultural goods or emotional goods, such as the Korean Wave content, provides an opportunity to share same ideas between Korea and other countries. In terms of

cultural proximity, the spread of the Korean Wave content allows consumers in other countries to share a common identity, feel like belonging to the same group, and become close to the culture with intimacy with Korea (Felbermayr & Toubal, 2010). Countries that are close to each other culturally get higher interest in each other's products, thus increasing trade between countries (Carrère & Masood, 2018; Park & Choe, 2009).

A small number of studies related to Korean Wave content have verified its ripple effect to export. For example, Kim and Ahn (2012) found when cultural goods exports increase, total exports increase from 3.9% to 4.7%. Huh and Wu (2017) also found that the export of Korean Wave content has a positive effect on the export of consumer goods. These studies not only showed the consistent results that Korean Wave contents affect consumer goods exports, but also explain the relationship between Korean Wave content consumption and consumer goods exports in terms of cultural proximity. Subsequent research should examine the influence of each Korean Wave contents such as broadcasting, films, and music as well as publication on consumer goods, and also it is necessary to comprehensively examine the influence of these variables on cosmetics, processed food, clothing, IT products, automobiles and so on. In addition, previous studies did not consider a large number of countries for research. Some studies have only partially examined in leading Asian countries, which are main markets for Korean Waves (Yang, 2012; Park, 2014), and North American markets. Some studies have considered Asia, North America as well as European countries as analysis object region, but only few studies were conducted (Kim & Ahn, 2012; Park, 2015). Future research will need to address the many countries in which Korean Wave content and Korean consumer goods are exported, and similar considerations should be given to new markets for Korean wave content consumption, such as Europe. Considering the fact that the Korean Wave is known as a cultural product in various countries and various products are released, this study examines how exports of Korean films, publications, music, broadcasting affect export of consumer goods such as clothing, cosmetics, foodstuffs, IT products and Automotive, by using Gravity Model. Given that this study identifies the impact of the level of exports of cultural goods on trade between countries for general goods, the Gravity Model is an appropriate framework for examining the factors affecting the level of trade between two countries. Indeed, the Gravity Model is frequently used to identify factors that determine the flow of trade between two countries (Tinbergen, 1962). On the other hand, this study applies the concept of cultural proximity. Cultural goods provide indirect experiences with the countries' cultures (Straubhaar, 1991). The intimacy created by this experience on cultures

is expected to influence the recipient's product selection. Cultural proximity was applied as the main basis for the assertion that the level of cultural similarity between countries had a positive effect on the acceptance of a country's products (Lee, 1998). Therefore, this study is also based on the concept of cultural proximity to examine how Korean cultural goods are related to the export of general goods.

This study provides the basic data systematically analyzing the economic ripple effect of Korean Wave contents and introduces practical implications for establishing policies to promote the export of cultural goods to foreign countries. Furthermore, this study aims to lay the methodological basis for the follow-up studies through the results of gravity equation and panel data analysis.

2. Literature Review

2.1. Global Content Industry and Korean Wave's Exports

2.1.1. Global Content Industry

The global content market was \$2.81 trillion in 2016, an increase of 5.5% over the previous year. In 2021, the global content market is estimated to be \$2.5 trillion with an average annual growth rate of 4.2%. In 2017, the United States was the largest country in the global content market, accounting for approximately \$800 billion. China (\$24 billion) ranks second, followed by Japan (\$800 billion), Germany (\$12 billion), the United Kingdom (\$10 billion), and France (\$7 billion). In 2012, China ranked third with Japan at approximately \$130 billion, surpassing Japan in 2014. The size of the Chinese content industry is expected to grow to approximately \$324 billion in 2021, nearly triple that of 2012. In the global content industry, Korea is the seventh-largest market following France.

Regarding the detailed industry domain, the knowledge and information field is the largest in the global content industry. The market was estimated at \$750 billion in 2018 and is expected to grow gradually to \$860 billion in 2021 (from \$49 billion in 2012). Figure 1 illustrates the size and growth of the global content industry (KOICA, 2019). The most prominent phenomenon in the global content market is the slowdown of the publication and printing industry and the growth of the digital content industry. The publication and printing industry has stagnated, expected to shrink to \$320 billion by 2021 (from \$340 billion in 2012). The increasing penetration of mobile devices is expected to affect the publishing industry. The game industry, on the other hand, was only \$45 billion in 2012 but is expected to reach \$150 billion by 2021, more than tripling in just one decade.

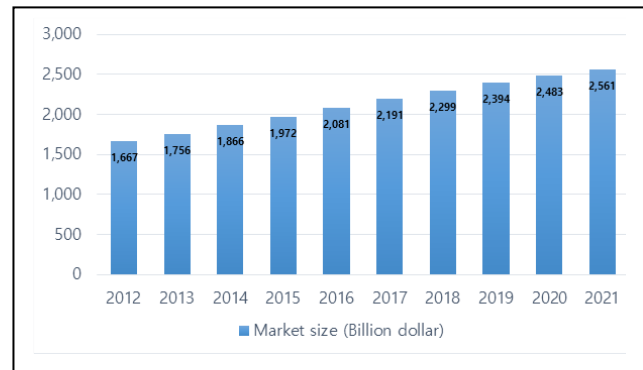


Figure 1: The size of world content industry

2.1.2. Korean Wave Exports

As of the first half of 2018, the Korean Wave content industry's exports were approximately \$3.4 billion. Considering that Korea's exports of the content industry in the first half of 2017 were \$2.7 billion, this is an increase of approximately 27% over the previous year. The largest field of Korean content exports is games, which account for 62.1%, followed by the character (8.4%), knowledge information (8.1%), music (5.9%), broadcasting (5.6%), publishing (2.9%), and film (0.8%) industries. In the publishing and broadcasting industries, Korean content exports account for a high percentage of the total sales of domestic content, although these are lower than games, characters, and knowledge industries.

In the first half of 2018, the game, character, and film industries showed high export growth. The game industry increased its exports by approximately \$705 million year-on-year, followed by the character industry's exports by approximately \$21 million. The film industry increased its exports by approximately \$19 million over the previous year (258.6% year-on-year), the largest increase in the Korean content industry. The comics and music industries experienced a slight increase in exports from the previous year; in contrast, the publishing and broadcasting industries experienced reduced exports. In the first half of 2018, the cartoon industry rose by \$3.1 million and the music industry by approximately \$1.8 million, but these represent a slightly higher rate than other content industries. The publishing and broadcasting industries experienced a decrease in exports compared to the previous year, with broadcasting decreasing by more than \$48 million.

2.2. The Relationship between Cultural and Consumer Goods Exports

Basically, cultural goods exported overseas are likely to facilitate that consumer have cultural intimacy or develop their preference to product origin. For example, Throsby

(1999) argued that the level of cultural intimacy can be determined by the level of accumulation of the cultural capital. To accumulate cultural capital, frequent cultural exchanges between the two countries must occur. Smooth cultural flows also have a positive impact on trade and form preferences for specific cultures (Disdier et al., 2010). Based on these arguments, intimacy with cultural goods is likely to affect the export of consumer goods, which is from the origin of cultural goods. In particular, both academia and industry have been interested in the ripple effect in export of Korean content, which is based on the creation of the cultural phenomenon called Hallyu through cultural products.

Early research on the ripple effects of the Korean Wave were still at the stage of analyzing the ripple effects between cultural goods of the Korean wave. For example, Park (2013) found that the popularity of the Korean Wave in United States led to interest in Korean cultural contents and the purchase of goods. These studies not only examined the influence of various Korean Wave contents, but also verified their influence considering individual countries. However, these studies did not specifically examine the impact of the Korean Wave on general consumer purchases.

On the other hand, as the consumption and export scale of Korean Wave contents increased, some researchers empirically analyzed the influence of Korean Wave contents on the export of consumer goods. Some studies consistently argued that Korean Wave such as films, dramas and music have a positive effect on consumer goods exports (Choi, 2012; Kim & Ahn, 2012; Kim, 2014; Huh & Wu, 2017). Park (2015) examined the trade creation effects of the Korean wave on Korean cosmetics exports and proved that the Korean wave strongly lead to cosmetics exports to ASEAN countries. Huh and Wu's (2017) study applied the Gravity Model to examine the impact of Korean Wave content on consumer goods exports to 40 countries, where account for a high trade portion with Korea. The previous studies that looked at the relationship between the Korean Wave and consumer goods exports have two things in common.

First, many studies have used Gravity Models. The Gravity Model was proposed by Tinbergen (1962) and has been applied primarily to identifying factors that affect the flow of trade between countries. Recently, Gravity Model was applied steadily to examine the influence of cultural goods (Giuliano, Spilimbergo, & Tonon, 2006; Disdier & Mayer, 2007; Fidrmuc & Fidrmuc, 2016; Kim & Ahn, 2012). Cultural goods studies using Gravity Models found that linguistic, geographic and ethnic linkages have a significant positive effect on trade flow.

Therefore, previous studies attempted to verify the flow of trade through cultural products as an explanatory factor reflecting the unique character of a particular country. The

Korean Wave is a representative cultural product, and previous studies applied cultural proximity as a theoretical basis for examining the differences between them.

2.3. Cultural proximity

Cultural proximity implies a minimal cultural gap between the two countries. In the case of distributing cultural goods from one country to another, if the consumer's awareness of cultural proximity is high, cultural goods are easily spread and accepted (Schmitt & Van Biesebroeck, 2013). The smaller the cultural difference between countries, the more similar the cultural characteristics (Cyrus, 2011). The level of cultural proximity might be increased with a greater similarity of sentiment or values between countries (Disdier & Mayer, 2007; Felbermayr & Toubal, 2010). Strabhaar (1991) suggests that ethics, language, locality, and religion are used to bring cultures closer and reinforce traditional identities and that these can be national or local. For example, China and Korea have high levels of cultural proximity because they have similarities in religion like the Confucian (Lu, Liu, & Cheng, 2019).

On the other hand, cultural proximity is commonly applied to examining the influence of Hallyu content on consumer goods exports—such as the international trade of cultural goods and their ripple effects. Yang (2012) finds that major East Asian countries share similar cultures with Korea, and cultural proximity factors in these countries positively affect the level of Korean drama viewing. Kim and Ahn (2012) applied cultural proximity to the international trade of cultural goods. Meanwhile, cultural proximity explains the sustained growth of several cultural goods produced in Hollywood, which are distributed around the world (Georgiou, 2012). Straubhaar (2008) emphasizes that cultural proximity can be changed dynamically and continuously by the experiences of content users, which increases cultural proximity through cultural content. These experiences also affect the acceptance of general goods, which are produced in the countries of origin for cultural content. In recent years, the concept of cultural proximity has been widely used to examine the factors affecting the distribution of cultural content (Rohn, 2009).

Studies examining the impact of Korean Wave content on consumer goods exports are based on cultural proximity and apply a Gravity Model approach. Previous studies did not consider various countries, consider cultural and consumer goods and also, or reflect recent industry changes. Therefore, it is necessary to expand the quantitative and qualitative levels of variables regarding the influence of Korean Wave content on consumer goods exports and analyze trends by reflecting the latest data.

3. Research Methods

3.1. Research Questions

The purpose of this study is to quantitatively analyze the effects of exports of film, publishing, music, and broadcasting on the export of consumer goods such as clothing, cosmetics, foodstuffs, IT products, and automobiles. Based on the purpose of this study, which is to estimate the different consumption effects through the consumption of cultural goods, this study analyzes the effects only on the final consumer goods, except for capital goods and intermediate goods. The main research questions of this study are as follows.

RQ1. How does the export of cultural products (film, broadcasting, music, and publishing) affect the export of consumer goods (foodstuffs, cosmetics, clothing, IT products, automobiles)?

RQ2. How Does the effects of the export of cultural products (film, broadcasting, music, and publishing) on the export of consumer goods (foodstuffs, cosmetics, clothing, IT products, automobiles) vary by region?

3.2. The Analyzing Model

In this study, we analyzed the exports of cultural goods as independent variables based on the gravity equation of the Gravity Model to estimate the relationship between the exports of cultural goods and the exports of consumer goods. The gravity equation was initially used by Tinbergen (1962) and is well known for describing the actual form of trade between countries. It also builds on the premise that the amount of trade between countries is proportional to the product of their economic powers. Equation (1) shows the Analysis Model.

$$\ln X_{kjt} = \alpha_{kj} + \alpha_1 \ln GDP_{kt} + \alpha_2 \ln GDP_{jt} + \alpha_3 \ln Dist_{kj} + \alpha_4 \ln Exchr_{kjt} + \beta \ln Cult_{kjt} + \gamma Year_t + \varepsilon_{kjt} \quad (1)$$

$\ln X_{kjt}$: The amount of exports in consumer goods from Korea to country j in year t (log value)

$\ln GDP_{kj}$: The gross domestic product (GDP) of South Korea in t year (log value)

$\ln GDP_{jt}$: The gross domestic product (GDP) of country j in t year (log value)

$\ln Dist_{kj}$: Distance from South Korea to country j (log value)

$\ln Exchr_{kjt}$: Currency rate of country j against Korean won in t year

$\ln Cult_{kjt}$: The amount of exports in cultural goods from Korea to country j in year t (log value)

$Year_t$: Year (dummy)

In Equation (1), X_{kjt} is the export of consumer goods from country k to country j in year t, and GDP_{kt} and GDP_{jt} are the gross domestic product (GDP) representing the market size of both countries in year t. $Dist_{kj}$ is the distance between the two countries, $Exchr_{kjt}$ is the exchange rate of the exporting country against Korean won in year t, and $Cult_{kjt}$ is the export of cultural goods from country k to j in year t. It also includes a year dummy variable ($Year_t$) to cover the impacts on global trade for each year.

Generally, Fixed Effect Model and Random Effect Model are used in panel data analysis. Fixed Effect Model controls all stable characteristics of the study subject, ignoring between-person variation, and focusing only on within-person variation. The Random Effect Model is used in case of estimating the effect of a stable variable. Model selections are likely to vary depending on whether there is a relationship between the unobserved intrinsic attributes and the observed attributes. For intrinsic attributes that are not related to the observed attributes, the Random Effect Model should be selected. In reverse, Fixed Effect Model will be chosen. This can be seen from results the Hausman test. As a result of Hausman's test for this model, $Cov(X, u) = 0$ was rejected and used as a Fixed Effect Model. Thus, the specific effects of a particular country, such as historical experience and political and social factors (fixed effects), are represented by α_{kj} in the equation.

3.3. Data Collection and Sampling

This study used data from 1,734 'Unbalanced Panel' data. This data was collected for 102 countries, where consumer goods exports are aggregated, from 2001 to 2017. Korea International Trade Association (KITA) provides exports of consumer goods such as foodstuffs, cosmetics, clothing, IT products, automobiles, and cultural goods exports including film, broadcasting, music, and publishing. This data was used in the form of panel data by country and item by standard of US dollar.

This study only considers film, broadcast, music and publishing exports as a significant cultural goods that can influence the selection of Korean consumer goods. Consumer goods such as cosmetics, foodstuffs, IT products, automobiles, clothing items, and cultural goods, music and publication exports are listed in KITA's official website (kita.net) and were coded as amount of individual exports.

Consumer goods such as cosmetics, foodstuffs, IT products, automobiles, and clothing were coded in thousand dollars according to the MTI code. MTI is a system organized by the Ministry of Trade, Industry and Energy, which categorizes multiple HS codes into single codes and item names. Publishing and music cultural product exports from 2001 to 2017 were coded in thousand dollars on the basis of KITA's official website. Film exports data was collected from statistics on exports of Korean films overseas provided by the Korea Film Council (KOFIC) and It is composed of exports every year from 2001 to 2017. Broadcasting export data was utilized from the Broadcasting Industry Survey Report from 2001 to 2017 provided by Korea Information Society Development Institute (KISDI)'s official website (<http://www.kisdi.re.kr>). Specifically, data on current status of each country for import and export was coded, and terrestrial broadcast data and cable broadcasting data regarding exports were coded. In addition, the HS code related to broadcasting provided by the KITA was collected and coded. Lastly, the broadcast export data was re-coded in units of 1,000 dollars by adding HS data and data provided in the Broadcasting Industry Survey Report.

Consumer goods exports were gathered by collecting the HS codes for each sector. Foodstuffs consist of favorite foods, processed agricultural products, livestock products, and processed marine products. Clothing includes fashion accessories and fur as well as clothing. Cosmetics include not only general cosmetics but also makeup, skin care products, perfumes, skin tonics, hair products and oral hygiene supplies. IT products relate to wireless communication devices, computers, refrigerators, color televisions, black-and-white televisions, and video cameras. The exports of cultural goods were gathered from each HS code based on UNESCO's (2005) classification system of cultural goods. A publishing includes a variety of products such as printed books and booklets, newspapers, magazines and periodicals. Music consists of CDs and cassette tapes. In addition, the data regarding GDP of each country, which is the basic variable of the Gravity Model, was collected from the World Bank and International Financial Statistics, and the data about distances between countries were gathered from World Atlas (www.worldatlas.com). Table 1 shows the classification of the cultural goods and consumer goods and the HS code.

Table 1: Cultural goods and consumer goods classification and HS code

		Item	HS code
Cultural goods	Music	Music CD, cassette tapes et al.	8523292119, 8523292129, 8523292139, 8523292919, 8523292992, 8523292999, 8523402119, 8523402120, 8523402992, 8523402999, 8523512190, 852352920, 8523512990, 852410, 852432, 852451, 852452, 852499
	Film	the developed film	3706, 370590
	Broadcasting	The video tape, disk et al.	8524991000, 8523292211, 8524539000, 8524531000, 8524399000, 8523291130, 8523292219, 8523292229, 8523292231, 8523292239, 8523292991, 8523402139, 8523402991, 8523512910, 8523802910, 8528690000
	Publishing	Printed books and booklets, newspaper, magazines and periodicals, children's picture books, sheet music, maps, charts, blueprints and drawings, stamps, revenue stamps, securities, printed postcards, printed cards, calendars, other printed materials	4901, 4902, 4903, 4904, 4905, 4906, 4907, 4908, 4909, 4910, 4911
Consumer goods	Foodstuffs	Favourite foods, processed agricultural products, livestock products, processed marine products	015, 016, 024, 046
	Clothing	Clothing, fashion accessories, fur	441, 518
	Cosmetics	Makeup, skin care products, perfume, skin tonic, hair products, oral hygiene supplies, soap	227320, 227310, 227330, 511640, 227100
	IT products	Wireless communication devices, computers, refrigerators, Color Television, black-and-white Television, video camera	812, 813, 823, 8211, 8212, 821490
	Automobile	Automobile	7411

4. Results

4.1. Evaluation of Measurement Items

Table 2 shows basic statistics of study variables.

Table 2: Basic Statistics of Study Variables

Variable	AVG	SD	MAV	MIV	OV
Consumer goods export	761	2,436	28,454.7	0.7	1,723
Foodstuffs export	27	100	1,071.7	0.0	1,590
Clothing export	32	141	2,413.4	0.0	1,672
Cosmetics export	13	82	1,625.7	0.0	1,524
IT product export	419	1,388	12,414.3	0.1	1,702
Automobile export	288	1,107	17,398.0	1.0	1,668
Cultural goods export	5	21	231.9	0.0	1,661

Music export	1	5	60.5	0.0	909
Film export	1	3	60.3	0.1	576
Broadcasting export	3	13	142.7	0.0	983
Publishing export	2	10	141.7	0.0	1,649
Importing Country GDP	1	2	19.4	0.1	1,717
South Korea GDP	1	0	1.5	533.1	1,734
Distance between two countries (km)	9	4	19.5	942.0	1,734

Note: Unit: million dollars, AVG: Average, SD: Standard Deviation, MAV: Maximum value, MIV: Minimum value, OV: Observed value

Table 3 shows the correlation analysis between study variables.

Table 3: Correlation analysis between study variables

Variable	CGE	CLE	COE	FSE	IPE	AMG	CUE	MUE	FE	PE	BE	ICG	SKG	DBC
CGE	1.00													
CLE	0.70	1.00												
COE	0.44	0.28	1.00											
FSE	0.59	0.60	0.57	1.00										
IPE	0.94	0.67	0.52	0.61	1.00									
AMG	0.87	0.51	0.17	0.34	0.66	1.00								
CUE	0.68	0.73	0.34	0.81	0.64	0.53	1.00							
MUE	0.47	0.77	0.05	0.32	0.40	0.41	0.65	1.00						
FE	0.21	0.33	0.20	0.50	0.21	0.10	0.59	0.32	1.00					
PE	0.76	0.66	0.20	0.55	0.66	0.72	0.86	0.58	0.30	1.00				
BE	0.38	0.47	0.41	0.88	0.42	0.15	0.83	0.30	0.57	0.47	1.00			
ICG	0.93	0.68	0.42	0.64	0.83	0.85	0.74	0.48	0.29	0.79	0.46	1.00		
SKG	0.05	-0.03	0.13	0.10	0.02	0.07	0.03	-0.12	-0.01	0.01	0.07	0.08	1.00	
DBC	-0.08	-0.15	-0.18	-0.30	-0.15	0.06	0.20	-0.04	-0.21	-0.09	-0.31	-0.05	0.00	1.00

Note: CGE: Consumer goods exports, CLE: Clothing export, COE: Cosmetics export, FSE: Foodstuffs export, IPE: IT Products export, AMG: Automobile export, CUE: Cultural Goods Exports, MUE: Music export, FE: Film export, PE: Publishing export, BE: Broadcasting export, ICG: Importing Country GDP, SKG: South Korea GDP, DBC: Distance between countries

4.2. Models Validation

4.2.1. Analysis of the Effects of Korean Wave Content Export (RQ1)

From 2001 to 2017, the panel data consisting of Korea's exports of cultural products and consumer goods to 102 countries were analyzed in a regression analysis, estimating the trade-generating effect of the export of cultural products driving the export of consumer goods.

Depending on the results of the Hausman test, it can be

divided into a Random Effect Model and a Fixed Effect Model. If the null hypothesis cannot be rejected, the Random Effect Model should be estimated because there are no explanatory variables and endogenous problems, and if the null hypothesis is rejected, the Fixed Effect Model should be estimated.

As a result of the Hausman test on this model with panel data models, this $Cov(X, u) = 0$ was rejected and analyzed around the Fixed Effect Model. The following Table 4 is the result of the regression analysis.

Table 4: Regression Analysis Results by Model 1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Consumer goods exports	IT products exports	Cosmetics exports	Automobile exports	Consumer goods exports	IT products exports	Cosmetics exports	Automobile exports	Clothing export	Foodstuffs export	Clothing export	Foodstuffs export
Export of cultural goods	0.136	0.188	0.387	-0.043	0.110	0.145	0.248	0.009	0.283	0.382	0.191	0.248
	0.000 ***	0.000 ***	0.000 ***	0.082	0.000 ***	0.000 ***	0.000 ***	0.712	0.000 ***	0.000 ***	0.000 ***	0.000 ***
Importing Country GDP	0.873	1.221	0.740	0.946	0.886	1.241	0.791	0.928	0.895	0.622	0.930	0.676
	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
South Korea GDP	-	-	-	-	-0.368	-1.790	1.132	0.218	-	-	-1.138	1.128
	-	-	-	-	0.001 ***	0.000 ***	0.000 ***	0.207	-	-	0.000 ***	0.000 ***
Distance between countries	-	-	-	-	-0.304	-0.512	-2.037	0.834	-	-	-1.314	-1.972
	-	-	-	-	0.000 ***	0.000 ***	0.000 ***	0.000 ***	-	-	0.000 ***	0.000 ***
Exchange rate	0.036	0.042	0.110	0.020	0.023	0.021	0.032	0.052	0.063	0.123	0.012	0.046
	0.001 **	0.003 **	0.000 ***	0.301	0.041 **	0.152	0.082	0.007 **	0.000 ***	0.000 ***	0.418	0.015 *
Observation	1655	1661	1661	1661	1655	1661	1661	1661	1661	1661	1661	1661
R^2	0.752	0.782	0.540	0.445	0.755	0.784	0.656	0.479	0.679	0.482	0.735	0.604

Note: 1. The data below the coefficient values represent p-values, with ***, **, and * being significant at significance levels of 1%, 5%, and 10%, respectively.

2. Each result contains a constant term and a dummy year but does not report the result.

Models (1) and (5) are Fixed Effect Models. Dependent variables are the export of consumer goods and independent variables are the export of cultural products, GDP of importers, GDP of Korea, distance between the two countries, and exchange rate ratio. Then we analyzed the regression between variables.

In the Model (1) estimated as a fixed effect, the coefficient of export value (elasticity) of the cultural product is 0.136 and displayed statistical significance at the 1% level. This means a 1 percent increase in exports of cultural products will increase exports of consumer goods by 0.136 percent.

The average rate of change in consumer goods exports from cultural goods exports from 2001 to 2017 was 22.44. An increase of \$ 100 in exports of cultural goods can be interpreted to mean a \$ 2,244 increase in exports of consumer goods such as IT products, cosmetics, clothing, and foodstuffs.

When exports of cultural goods increase, consumer goods that increase with exports are foodstuffs. When the dependent variables were analyzed by exports of consumer goods, the coefficient values were positive in all sectors except automobiles, and statistically significant. The rate of increase in exports of consumer goods through exports of cultural goods was analyzed in the order of cosmetics > processed food > clothing > IT products > automobiles.

Model (9) is estimated by substituting clothing exports for dependent variables. The coefficient value (elasticity) of cultural goods exports for apparel exports was statistically significant at 0.283. In other words, a 1% increase in exports of cultural goods would mean a 0.283% increase in apparel exports. The average rate of change was 2.05, which means that a \$ 100 increase in cultural goods exports increased \$ 205 in apparel exports.

Table 5: Regression Analysis Results of Consumer Goods by Cultural Goods

	(13)	(14)	(15)	(16)	(17)
	Processed food exports	Clothing exports	Cosmetics exports	IT product exports	Automobile exports
Broadcasting export	0.076	0.048	0.106	0.067	-0.048
	0.012 *	0.024 *	0.000 ***	0.003 **	0.190
Film export	0.086	0.164	0.171	0.062	-0.223
	0.043 *	0.000 ***	0.000 ***	0.049 *	0.000 ***
Music export	0.129	0.111	0.150	0.018	0.042
	0.000 ***	0.000 ***	0.000 ***	0.362	0.193
Publishing export	0.576	0.242	0.452	0.302	0.036
	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.574
Importing Country GDP	-0.124	0.370	-0.087	0.366	0.635
	0.045 *	0.000 ***	0.178	0.000 ***	0.000 ***
Exchange rate	0.134	0.107	0.097	0.016	-0.149
	0.000 ***	0.000 ***	0.000 ***	0.362	0.000 ***
Observation	460	460	460	460	460
R^2	0.609	0.714	0.597	0.607	0.305

Note: The data below the coefficient values represent p-values, with ***, **, and * being significant at significance levels of 1%, 5%, and 10%, respectively. Each result contains a constant term and a dummy year but does not report the result.

As shown in Table 5 above, the cultural goods were divided by field and analyzed for the export effect of each consumer goods. The results showed that the export of foodstuffs, clothing, cosmetics, IT products from broadcasting exports, foodstuffs, clothing, and cosmetics exports from film, music, and publishing were statistically significant. However, auto exports of broadcasting exports, IT products of music exports, and automobile exports of publishing exports and publishing exports were not statistically significant.

In the case of music export, the model showed statistically significant coefficient values at the 1% level for the export of processed products, clothing, and cosmetics except IT products and automobiles, and were analyzed to be 0.129, 0.111, and 0.150, respectively. Therefore, the more Korean TV dramas were introduced abroad, the more Korean food consumption increased, and the more exports of music and films increased the interest in Korean clothing.

4.2.2. Analysis on the Effect of Korean Wave Contents Export by Region (RQ2)

Asia Region: From 2001 to 2017, we analyzed data on cultural goods and consumer goods exports to 29 countries. Table 6 shows the regression analysis results of consumer

goods by cultural goods in Asia.

As a result, the effects of broadcasting, music exports, and exports of foodstuffs on films and music were confirmed. The effects of exports of consumer goods on cultural goods exports were analyzed by region and by item. In Asia, broadcasting exports of apparel, cosmetics, IT products, automobile exports, film exports, Automobile exports, music exports, processed food, clothing, cosmetics, and automobile exports were statistically significant. In Asia, the film and publishing export coefficients were negative, and the automobile export effect was statistically significant. In other words, when film and publishing exports increased by 1%, Automobile exports fell by -0.409% and -0.348%, respectively.

Europe: From 2001 to 2017, the effect of IT products exports on broadcasting exports in Europe, apparel exports for film exports, IT product exports, foodstuffs for music exports, foodstuffs for apparel, automobile exports, publishing exports, clothing and cosmetics. The effect of exporting IT products and automobiles was confirmed. In Europe, published export processed food, apparel, cosmetics, IT products, and automobile exports were statistically significant at 1%. This is shown in Table 7.

Table 6: Regression Analysis Results of Consumer Goods by Cultural Goods in Asia

	(18)	(19)	(20)	(21)	(22)
	Processed food exports	Clothing exports	Cosmetics exports	IT product exports	Automobile exports
Broadcasting export	0.094	0.124	0.213	0.108	-0.044
	0.050	0.000 ***	0.000 ***	0.000 ***	0.570
Film export	0.077	0.089	0.082	-0.007	-0.409
	0.195	0.052	0.249	0.845	0.000 ***
Music export	0.149	0.114	0.249	0.009	0.149
	0.000 ***	0.000 **	0.000 ***	0.710	0.021 *
Publishing export	-0.004	0.067	-0.025	-0.072	-0.348
	0.962	0.260	0.790	0.137	0.006 **
Importing Country GDP	0.318	0.525	0.114	0.794	0.519
	0.000 ***	0.000 ***	0.235	0.000 ***	0.000 ***
Exchange rate	0.026	0.052	-0.075	-0.105	-0.262
	0.323	0.010 *	0.019 *	0.000 ***	0.000 ***
Observation	185	185	185	185	185
R^2	0.518	0.770	0.566	0.793	0.240

Note: See Table 10 for a more detailed interpretation. The data below the coefficient values represent p-values, with ***, **, and * being significant at significance levels of 1%, 5%, and 10%, respectively. Each result contains a constant term and a dummy year but does not report the result.

Table 7: Regression Analysis Results of Consumer Goods by Cultural Goods in Europe

	(23)	(24)	(25)	(26)	(27)
	Processed food exports	Clothing exports	Cosmetics exports	IT product exports	Automobile exports
Broadcasting export	-0.033	-0.003	-0.005	0.078	0.038
	0.492	0.934	0.907	0.006 **	0.111
Film export	-0.021	0.120	0.062	0.128	0.057
	0.787	0.016 *	0.392	0.005 **	0.145
Music export	0.089	0.068	0.020	0.048	0.054
	0.049 *	0.018 *	0.626	0.068	0.017 *
Publishing export	0.685	0.257	0.406	0.253	0.273
	0.000 ***	0.000 ***	0.000 ***	0.000 ***	0.000 ***
Importing Country GDP	0.277	0.643	0.842	0.330	0.470
	0.070	0.000 ***	0.000 ***	0.000 ***	0.000 ***
Exchange rate	0.274	0.150	0.368	0.247	0.243
	0.000 ***	0.004 **	0.000 ***	0.000 ***	0.000 ***
Observation	174	174	174	174	174
R^2	0.445	0.653	0.538	0.647	0.678

Note: See Table 10 for a more detailed interpretation. The data below the coefficient values represent p-values, with ***, **, and * being significant at significance levels of 1%, 5%, and 10%, respectively. Each result contains a constant term and a dummy year but does not report the result.

Americas: From 2001 to 2017, export effects of IT products to broadcasting exports to the US, exports of foodstuffs to apparel, music exports, foodstuffs to exports,

apparel, automobiles, and exports of foodstuffs, apparel, IT products, and automobiles. The effect was confirmed and it is shown in Table 8.

Table 8: Regression Analysis Results of Consumer Goods by Cultural Goods in the Americas

	(28)	(29)	(30)	(31)	(32)
	Processed food exports	Clothing exports	Cosmetics exports	IT product exports	Automobile exports
Broadcasting export	-0.007	0.060	-0.046	0.171	-0.069
	0.934	0.312	0.661	0.010 *	0.534
Film export	0.197	0.187	0.027	-0.071	0.278
	0.106	0.029 *	0.856	0.422	0.078
Music export	0.079	0.117	0.053	0.003	0.201
	0.154	0.004 **	0.433	0.943	0.007 **
Publishing export	0.776	0.705	0.153	-0.490	0.762
	0.001 ***	0.000 ***	0.544	0.003 **	0.006 **
Importing Country GDP	-0.583	-0.588	1.027	1.705	-0.919
	0.199	0.066	0.070	0.000 ***	0.118
Exchange rate	-0.579	-0.334	-0.091	0.253	-0.134
	0.000 ***	0.000 ***	0.525	0.005 **	0.369
Observation	54	54	54	54	54
R ²	0.899	0.943	0.803	0.850	0.750

Note: See Table 10 for a more detailed interpretation. The data below the coefficient values represent p-values, with ***, **, and * being significant at significance levels of 1%, 5%, and 10%, respectively. Each result contains a constant term and a dummy year but does not report the result.

Middle East and Africa Region: From 2001 to 2017, we confirmed the effect of exporting cosmetics products to broadcasting exports in the Middle East and Africa, exports

of automobiles to film exports, and exports of processed food, clothing, automobiles and publishing to IT exports. This is shown in Table 9.

Table 9: Regression Analysis Results of Consumer Goods by Cultural Goods in the Middle East and Africa

	(33)	(34)	(35)	(36)	(37)
	Processed food exports	Clothing exports	Cosmetics exports	IT product exports	Automobile exports
Broadcasting export	-0.027	-0.098	0.190	0.020	0.026
	0.886	0.161	0.030 *	0.753	0.743
Film export	-0.373	0.054	-0.218	-0.044	-0.269
	0.150	0.557	0.059	0.596	0.017 *
Music export	0.220	0.051	-0.015	-0.046	0.033
	0.108	0.290	0.799	0.299	0.555
Publishing export	0.098	0.113	-0.127	0.243	0.269
	0.770	0.356	0.388	0.037 *	0.063
Importing Country GDP	-0.263	0.997	1.223	0.656	0.106
	0.784	0.008 **	0.008 **	0.048 *	0.790
Exchange rate	0.144	0.024	0.444	0.091	-0.031
	0.166	0.516	0.000 ***	0.012 *	0.467
Observation	42	42	42	42	42
R ²	-0.188	0.455	0.843	0.425	0.064

Note: See Table 10 for a more detailed interpretation. The data below the coefficient values represent p-values, with ***, **, and * being significant at significance levels of 1%, 5%, and 10%, respectively. Each result contains a constant term and a dummy year but does not report the result.

Summary of the effect of exporting cultural goods on consumer goods.

Table 10 shows cultural goods exports for consumer goods exports. We confirmed the coefficient and average

rate of change of how cultural goods exports such as broadcasting, film, music, and publishing, affect consumer goods. and the meaning of each item is summarized.

Table 10: Summary of the Effects of Cultural Goods Exports on Consumer Goods Exports

Cultural Goods (X)	Consumer Goods (Y)	Coefficient (elasticity)	Average rate of change	Meaning
All cultural products	Consumer goods	0.136***	22.44	-1% increase in exports of cultural goods, 0.136% increase in consumer goods exports -If exports of cultural goods increased by \$ 100, the average export of consumer goods increased by \$ 2,244
	IT Products	0.188***	17.05	-1% increase in exports of cultural goods, 0.188% increase in consumer goods exports -If export of cultural goods increased by \$ 100, IT export average increased by \$ 1,705
	Cosmetics items	0.387***	0.70	-Cosmetic exports increased 0.387% when cultural goods exports increased by 1% -If exports of cultural goods increased by \$ 100, cosmetic exports averaged \$ 70
	Automobile	-	-	-
	Clothing	0.283***	2.05	-Export of consumer goods increased by 0.283% when export of cultural goods increased by 1% -Apparel exports averaged \$ 205 when exports of cultural goods increased by \$ 100
	Processed food	0.382***	1.89	-Exports of consumer goods increased 0.382% when cultural goods exports increased by 1% -On average, exports of processed food products increased by \$ 189
Broadcasting	Processed food	0.076*	1.06	-Processed food exports increased 0.076% when broadcasting exports increased by 1% -On average, exports of processed food products increased US \$ 106 when the US \$ 100 increase
	Clothing	0.048*	1.33	-Apparel exports increase by 48% when broadcasting exports increase by 1% % increase -Apparel exports averaged US \$ 133 on increased US \$ 100 exports
	Cosmetics items	0.106***	0.44	-Cosmetic exports increased 0.106% when broadcasting exports increased 1% -On average, exports of \$ 100 increase in cosmetics exports by \$ 44
	IT Products	0.067**	19.05	-1% increase in broadcasting exports, 0.067% increase in exports of IT products -On average, exports of US \$ 100 in broadcasting increased US \$ 1,905 on average
	Automobile	-	-	-
Film	Processed food	0.086*	10.28	-Processed food exports increased by 0.086% when film exports increased by 1% -Increased exports of foodstuffs increased US \$ 1,028 on average
	Clothing	0.164*	26.55	-1% increase in film exports, 0.164% increase in apparel exports -Apparel exports averaged \$ 2,655 with a \$ 100 increase in exports
	Cosmetics items	0.171	6.83	-Cosmetic exports increased by 0.171% when film exports increased by 1% -Cosmetics exports averaged \$ 683 when the \$ 100 film exports increased
	IT Products	0.062*	129.50	-1% increase in film exports, 0.062% increase in IT product exports -On average, exports of US \$ 100 films increased US \$ 12,950 on average

	Automobile	-0.223***	308.63	-1% increase in film exports -0.223% decrease in Automobile exports -Automobile export average of \$ 30,863 declined with US \$ 100 export increase
Music	Processed food	0.129***	33.15	-Exports of foodstuffs increased 0.129% when music exports increased 1% -\$ 1003 increase in processed food exports
	Clothing	0.111***	25.19	-1% increase in music exports, 0.111% increase in apparel exports -Apparel exports averaged \$ 2,519 with a \$ 100 increase in music exports
	Cosmetics items	0.150***	16.58	-Cosmetic exports increased 0.150% when music exports increased 1% -Cosmetics exports averaged \$ 1,658 with a \$ 100 increase in music exports
	IT Products	-	-	-
	Automobile	-	-	-
Publishing	Processed food	0.576***	6.59	-Processed food exports increased 0.576% when published exports increased by 1% -On average, exports of foodstuffs increased \$ 659 by \$ 100.
	Clothing	0.242***	3.88	-Apparel exports increased by 0.242% when publishing exports increased by 1% -Apparel exports averaged \$ 388 on increased exports of \$ 100
	Cosmetics items	0.452***	2.05	-Cosmetic exports increased 0.452% when publishing exports increased 1% -Cosmetics exports averaged \$ 205 when exports increased by \$ 100
	IT Products	0.302***	62.68	-Export of IT products increased by 0.302% when publishing exports increased by 1% -On average, exports of US \$ 100 increased by \$ 6,268
	Automobile	-	-	-

5. Conclusions

This study empirically confirmed the trade creation effect that exports of Korean Wave contents drives consumer goods exports by applying Gravity Model. As a result of regression analysis of the panel data of 102 countries consisting of Korean cultural goods exports and consumer goods exports from 2001 to 2017, it was found that the export creation of cultural goods led to the export of consumer goods, the trade creation effect that the export of cultural goods drives the export of consumer goods was significantly found. Results of this study are as follows.

Regarding RQ1, the elasticity of cultural goods exports regarding consumer goods exports is 0.136, which means that exports of consumer goods increase 0.136% if cultural goods exports increase by 1%. Second, the average rate of change of consumer goods exports according to the change in the export of cultural goods was 22.44. This means that a \$ 100 increase in cultural goods exports would increase \$ 2,244 in exports of consumer goods such as IT products, cosmetics, clothing, and foodstuffs. These results support that cultural goods have a very high drag effect on consumer goods exports. This result is not only in agreement with previous studies that the export of cultural

goods has positive effect on the export of consumer goods (Kim & Ahn, 2012; Huh & Wu, 2017), but also supports the effect of cultural proximity by cultural goods.

Finally, as a result of individual consumer goods, the export drag effects were significantly found in IT products, cosmetics, clothing, and foodstuffs. The rate of increase in exports of consumer goods from exports of cultural goods was in the order of cosmetics, foodstuffs, clothing, and IT products. The coefficient values (elasticity) of cultural goods exports for each consumer goods were 0.387 for cosmetics, 0.382 for foodstuffs, 0.283 for clothing, and 0.188 for IT products. This means that a 1% increase in exports of cultural goods would increase exports of cosmetics, foodstuffs, clothing, and IT products by 0.387%, 0.382%, 0.283%, and 0.188% respectively. This is similar to the results verified by Huh and Wu (2017) (non-durable> semi-durable> durable consumer goods) and by Kim and Ahn (2012) (non-durable> durable consumer goods). Thus, it is consistently supported that cultural exports have a greater positive impact on non-durable consumer goods such as foodstuffs and clothing.

In the result of RQ2, it was confirmed that the ripple effect of cultural goods is somewhat different depending on each region. In particular, the influence of cultural goods was confirmed the most in the Asian region. Asia is not

only the region where Korean wave content has been exported for the longest period, but also has the highest demand. Compared to other regions, consumers in Asia have a high interest in Korean wave products, and fandom is solidly formed. It is believed that the long-established positive attitude toward Korean wave products has driven the demand for consumer goods. The influence of broadcasting and music exports on consumer goods was also most prominent in Asia. Among broadcast contents, dramas are the most exported to Asia (KISDI, 2020), and recently, various entertainment programs have been aired in Asian countries. Music content also has the largest export volume to the Asian market. Perhaps consumers indirectly experienced various Korean consumer goods through broadcasting and music contents, and it is likely that positive information and recognition of consumer goods obtained through contents led to its' consumption. On the other hand, it was confirmed that the influence of cultural goods export was low in Europe compared to Asia. However, the ripple effect of film and publishing export was remarkable in Europe. Film and publishing content is content that emphasizes literary and cinematic value rather than commercial popularity. These results are considered to reflect the characteristics of the European region, where the level of cultural capital is relatively high.

This study has several implications. First, this study was conducted with considering comprehensively limitations of previous studies such as the lack of empirical analysis data, regional limitations, and item differences. In particular, empirical analysis by applying a Gravity Model was conducted based on the actual export data (panel data) of the economic ripple effect of the Korean wave contents. Through this, effects of the export of cultural goods by each industry, region and period were verified on the actual export volume of consumer goods. Second, we confirmed the necessity of policy support to increase the trade creation effect of cultural goods. As the empirical analysis confirms the trade creation effect of cultural goods, the necessity of a policy approach considering the ripple effect of cultural goods exports in other manufacturing sectors is raised. the trade creation effect might be raised by the fact that cultural products enhance national brand status or have a positive effect on the reconsideration of images of consumer goods (Choi, 2012), in addition, it is estimated to be caused by the indirect experience of Korean culture in the process of consumption of cultural goods. Thus, fostering a globalized culture contents can be an indirect trade policy for creating trade in consumer goods. Third, the importance of policy support considering the differences in the effects of traction by consumer goods is emphasized. The result in this study showed that the drag effects are different according to the genre of cultural products and consumer goods. For example, consumers may be able to purchase a high-cost

product such as a car or an electronic product by considering the functional characteristics of the product. On the other hand, with regard to consumption of cosmetics, foodstuffs and clothing, consumers are more likely to consider cultural factors such as cultural proximity. Despite the differences in the explanation factors between the two product groups, both products were empirically proven to increase purchase intention by indirectly experiencing Korean culture through Korean wave. Fourth, it is necessary to prepare supporting Policy that take into account changes in consumption patterns of cultural products and consumer goods. In the export of cultural goods, it was found that the tendency to consume goods through streaming services on digital platforms is increasing. Thus, support measures should be based on trends of digital platform. Exports of cultural goods were confirmed to increase significantly in not only the film, broadcasting and music industries but also the publishing industry, which is due to the consumption of e-books such as web novels. Therefore, the government needs to provide institutional support for digital cultural goods, such as financial support or language translation support for overseas export of digital cultural goods.

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