

Exporting the Korean Wave to Europe: An Analysis of the Trade Effect

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The growing global popularity of South Korea's culture, known as the *Korean Wave*, has contributed to the country's economic growth by increasing not only the exports of its cultural goods but also pulling other types of exports. Using the theory of dynamic cultural proximity in international trade, this paper shows empirically that South Korea's cultural exports multiply the exports of its consumption goods to Europe where traditional cultural ties with Korea are weak. Examining the panel data of four decades disentangles the positive effect of the country's cultural exports that concurs with the emergence and advancement of the Korean Wave. This finding highlights the role of South Korea's cultural exports in stimulating European consumers' preferences for products 'made in Korea'.

Key Words: The Korean Wave, Consumer Preferences, Cultural Proximity, Trade Effects

I. Introduction

In the two past decades, South Korea has emerged as a transnational cultural influencer as the Korean Wave (South Korea's popular culture, including entertainment, music, TV-dramas, and films, that has been spread and consumed abroad) has gained popularity worldwide. Following the Asian Financial Crisis in the late 1990s, the government of South Korea has promoted the exports of its popular culture as a new economic initiative to achieve the country's economic advancement and sustainability (Kim 2017). Starting with soap operas that have become popular in neighboring Asian countries since the early 2000s, the Korean Wave is now successful in various genres - from popular music

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to films, dramas, and games, etc. - in different parts of the world. The global penetration of Korean culture is more evident when one considers K-Pop (Korean popular music) stars like *Psy* of *Gangnam Style*, a dance pop-song which created an international hit in 2012, and *BTS*, one of the top ten recording artists of 2019 worldwide according to the Global Artist Chart (published by the International Federation of the Phonographic Industry). Also, the film industry of South Korea is making successes, with an example of *Parasite*, which won the best picture prize at the Academy Awards in the United States in 2020 for the first time as a non-English speaking film.

As South Korea's cultural presence has become more eminent worldwide, its cultural exports play a more crucial role in the global and national economy today. South Korea's cultural production is currently the 7th largest in the world (Korea Creative Content Agency 2019) and it forms one of the country's major export items (Figure 1). In 2018, South Korea's exports of cultural products (including music, TV-dramas, and films) exceeded its exports of home appliances that have long been the country's key export commodities. Furthermore, South Korea's cultural exports have grown fast in recent years - with an average growth rate of 9.2 percent for the last five years compared to the country's total export growth at 2.3 percent.¹ With this development, South Korea's cultural industries are expected to become an important contributor to the national economy that has heavily relied on manufacturing sectors.

Recognizing the growing importance of South Korea's cultural economy, this paper aims to identify the role of the country's cultural exports in the economy by examining their multiplying effects on the exports of other goods 'made in Korea'. The literature of international trade suggests that the exchange of cultural goods and services can stimulate bilateral trade beyond the scope of cultural sectors because cultural trade can boost foreign consumers' preferences for other types of goods produced in exporting countries (Schulze 1999). Anecdotal evidence also shows links between the popularity of Korean music, television programs, and films and increasing foreign demand for Korean food, clothes, cosmetics, and tourism (The Economist 2020). For instance, youth K-Pop fans in Europe are eager to buy Korean beauty products and fashion items, which can be witnessed through recent openings of K-Beauty online markets and fan shops that sell Korean consumption goods together with fan character items in Germany, the United Kingdom, and elsewhere in Europe (KOFICE 2019).

1 This pace is slower than the average export growth rate of the OECD countries that is close to 4 percent (OECD Economic Outlook Statistics and Project Database), signaling that South Korea's manufacturing-based export-led growth may not be sustainable in the future.

Observing this trend, this paper provides a systematic analysis of the trade data of four decades that shows the positive effect of South Korea's cultural exports on its exports of other goods to Europe. This study focuses on the European markets, taking into account the rising importance of this region in South Korea's cultural exports. While South Korea exports its cultural products mainly to other Asian countries (comprising about 80 percent of its total cultural exports), the share of its exports to Europe has increased in recent years - from 6.1 percent in 2017 to 10 percent in 2019. Furthermore, the analysis of European countries can identify the net effect of the cultural exports more effectively because their cultural proximities with South Korea are otherwise limited - different from Asian countries which have geographical adjacency, linguistic similarities, and historical ties with South Korea to a greater extent.

The results of the panel analysis based on the bilateral trade model reveal the multiplying effect of South Korea's cultural exports to Europe as they pull the exports of the country's consumption goods (food, clothes, cosmetics, home appliances, etc.) to the respective region. This positive effect is significant and has been increasing during the last two decades upon the emergence of the Korean Wave (2000-2019). On the other hand, prior to the era of the Korean Wave (i.e., 1980-1999), South Korea's cultural exports had no such effect. This difference between the ex-ante and ex-post effects suggests the Korean Wave as a driving force of stimulating consumer preferences for South Korean products in Europe. Especially, the grossing industries of K-Pop, K-Movies, and K-Dramas are the key sources of generating the positive effect of South Korea's cultural exports. This effect is even stronger in Eastern Europe, indicating greater potential gains of market expansion to this area for South Korea's cultural economy.

The analysis of this paper primarily focuses on the commercial aspect of the Korean Wave, the trade effects. However, the Korean Wave also reflects a dynamic order of the global cultural economy that challenges the established center-periphery relationship (Appadurai 1990, De Beukelaer and Spence 2019), as evident in South Korea's recent rise as a cultural power in different parts of the world. In this regard, the international exchange of Korean Wave contents investigated in this paper mirrors not only economic but also cultural influences that South Korea exercises in promoting diversity and sharing experience worldwide.

II. Cultural Proximity and International Trade in the Contexts of the Korean Wave

The literature of international trade proposes cultural proximity as an important stimulator of trade because it accumulates cultural capital that can foster consumer preferences for goods and services produced in a country of similar culture (Schulze 1999). In earlier literature, linguistic similarities, colonial links, migration, shared religions and values², and geographical and genetic adjacency were suggested as indicators of culture proximity that could promote the exchange of goods and services across countries (Melitz 2008, Head and Ries 1998, Rauch 1999, Silva and Tenreyro 2006, Marvasti and Canterbury 2005, Guiso et al. 2009). For instance, Asian countries have already been importers of the Korean Wave since the beginning of the 2000s before the Korean Wave gained its global popularity. Such early recognition and consumption of the South Korean culture in Asia can largely be attributed to their traditional and geographical closeness.

However, this type of cultural proximity is pre-determined through history and does not necessarily represent contemporary dynamics of cultural exchanges that have more increasingly taken place between countries without pre-existing cultural ties. For example, the traditional theory of cultural proximity cannot fully explain the global spread of the Korean Wave - which prevails not only inside Asia but also in the Western hemisphere like Europe. Instead of physical proximity, it is indeed virtual connectivity through which the Korean Wave has become an international cultural phenomenon. Especially, Youtube and online social media have facilitated access to K-Pop or other Korean Wave contents for people in different parts of the world (Jin 2016). The global hit of Psy's Gangnam Style, millions of views of BTS's and Blackpink's performance on Youtube, and ubiquitous downloads of South Korean online games are well-known examples of the spread of the Korean Wave via the internet. Such cyber penetration of the Korean Wave has enabled greater exposure to the South Korean culture even in countries faraway from Korea, through which people there could develop familiarity with and preferences for South Korean products.

Observing this, the exchange of cultural contents can be proposed as a dynamic channel of increasing cultural proximity, alternative to shared fixed country characteristics and tradition. Such cultural exchange can especially be more important in places where

2 For example, Hofstede et al. (2010) introduce the cultural index (based on masculinity, uncertainty, individualism, and power) and apply this index to explain concentration and diversification of a country's exports.

cultural distances were initially large (Rohn 2013) - for instance, between Korea and Europe where their traditional links in terms of shared languages, religions or history are limited. With this in mind, this paper conjectures that South Korea's cultural exports of the Korean Wave lead people in Europe to develop their preferences for various goods and services imported from South Korea by increasing opportunities of experiencing and consuming South Korean culture (Kim 2019, Chang and Kim 2019).

In fact, cultural exports are presumed to create an extensive effect on consumer preferences in importing countries, given their nature of non-excludability and non-rivalry. Consumption of cultural goods influences not only direct consumers but also others who did not pay for the goods because non-consumers are also exposed to such cultural goods, and the usage of the goods can be shared by others beyond the persons who purchased them (Towse 2013). Thereby, cultural goods play a role similar to public goods of which influences can spread throughout an economy. By sharing films, songs, TV programs, games, and books imported from a country, broad spectra of people can further develop appetites and interest in other goods produced in that country (Disdier and Mayer 2007, Takara 2018). According to Rauch (1999), the effect of cultural exports is particularly great on goods that are consumed on a daily basis (for example, clothes, food, home appliances, cosmetics, etc.) because individual tastes are an important determinant of purchase decisions of such goods and preferences for choosing consumptions goods are similar to those for cultural goods to a large extent.

In articulating the role of South Korea's cultural exports in consumer preferences in Europe, two particular characteristics of the Korean Wave additionally motivate this hypothesis. First, the Korean Wave contents are often available in digital forms - online games and streaming of music, dramas, and films, etc. - as mentioned above. Such virtual cross-border accessibility enables outreach of the Korean Wave to large consumer pools abroad. Second, the main consumer group of Korean Wave products is Millennials (younger generations) who tend to be more flexible in their ways of thinking and behaviors, and thus their exposure to the South Korean culture can more easily be transformed to interests in and preferences for wide ranges of Korean products.

Considering these, South Korea's cultural exports are expected to influence decisions of purchasing daily consumption goods in importing countries in Europe. Furthermore, the effect of the cultural exports may not be limited in consumption goods but can be extended to other areas of trade (for instance, value added, high-technology products) if South Korea's cultural exports can contribute to improving the country's overall image and market position in the global economy.

III South Korea's Cultural Economy in the Global and European Markets

While cultural goods include important artistic, historical or archaeological values for the country of origin as defined by the United Nations Educational, Scientific and Cultural Organization (UNESCO), this paper focuses on the industrial aspect of their reproducibility because reproduceable goods can be traded in markets with large volumes and monetary values and therefore influence wide ranges of consumers. In this regard, this paper follows the classification of cultural goods proposed by the Ministry of Culture, Sports and Tourism of the Republic of Korea (South Korea, MCST) that identifies ten major items of the country's cultural industry (KOCCA 2019). Namely, they are publications, comics (including Webtoon), music, (video and online) games, films, animation, character goods, broadcasting and advertisements, knowledge information, and content solutions. These ten items share a great deal of commonality with the scope of the Korean Wave - the main interest of the analysis here.

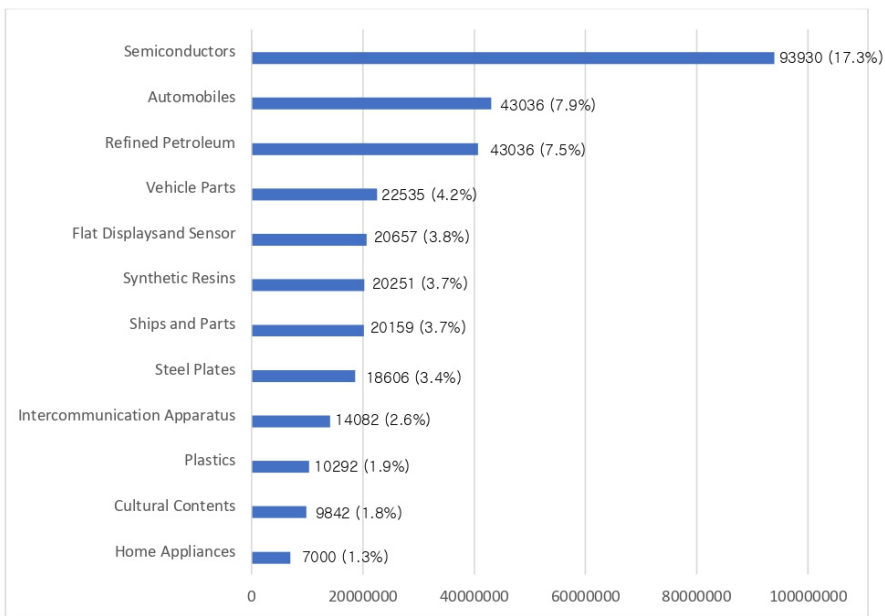
The range of the cultural products incorporated in this paper comprises both physical forms of goods and digitalized services. Digital forms of cultural products are, however, only partly accounted for the analysis because trade data of online services are not always available. For instance, trading volumes of online games and webtoons are partially recorded in the data but other digital forms of cultural products such as instant messengers, emoji, and application downloads are not. Admittedly, digital forms of Korean Wave contents (the so-called digital Hallyu or Korean Wave 3.0) have substantially increased in recent years because of the advancement of digital technology and utilization of social media in the Korean Wave (Jin 2016, Jin and Yoon 2017, Lee and Nornes 2015). This paper could not fully account for all these digital forms given the constraint of the data and thereby acknowledges the limited scope of the analysis that gives more weight to traditionally defined cultural contents. While the data used in this paper can still fairly represent the magnitudes of South Korea's cultural exports as defined here, a more comprehensive analysis of digital Hallyu should be carried out with a finer set of data in the future.

Alongside the advancement of the Korean Wave, South Korea's cultural economy has become more important in recent years. The total cultural production of the country has grown at an annual rate of 5.2 percent on average for the last five years and its cultural exports have grown faster at 9.2 percent for the same period (Kim 2019). In contrast to the slow growth of South Korea's total exports at an annual rate of 1.4 percent in these years, the pace of growth of its cultural exports is remarkable. Moreover,

the contribution of South Korea’s cultural products to the global markets is sizeable. South Korea is the 7th largest cultural producer in the world with a size of USD 60 billion, placing it just behind the United Kingdom and France (KOCCA 2019).³ Given that, the relative importance of South Korea’s cultural economy in commercial terms excels that of its overall economic size (GDP), which is the 10th largest in the world (International Monetary Fund 2020).

Also, cultural products form one of South Korea’s major export items. The size of its cultural exports amounts to USD 9.8 billion (1.8 percent of the country’s total exports) that exceed the exports of home appliances, one of South Korea’s long-standing leading export items (see Figure 1). Since 2010, South Korea’s cultural exports have consistently increased, and their monetary values have almost tripled: from USD 3.49 billion (2010) to 9.8 billion (2017) (see Appendix A). Among the different types of cultural products, video and online games are most sold items with a value of USD 6.3 billion, followed by character goods, knowledge information, and music.

Figure 1. Major Export Items of South Korea



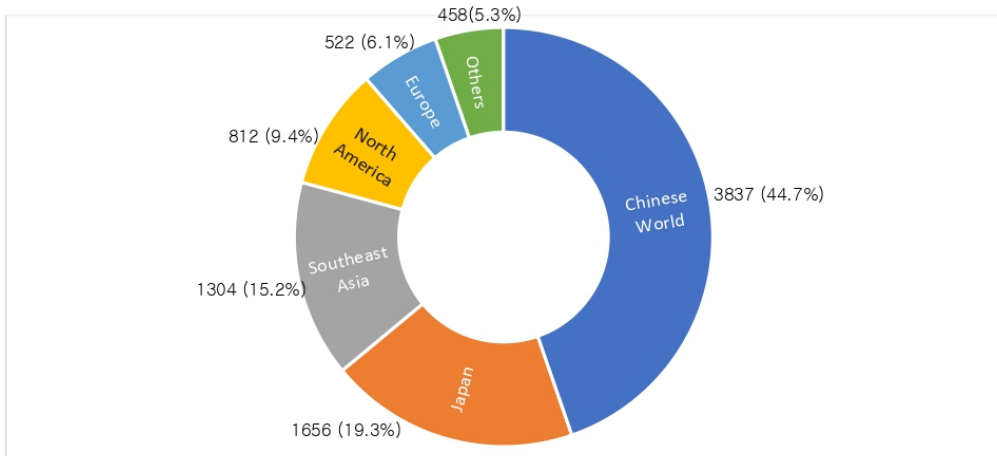
Unit: USD (000 000)

Source: Korea International Trade Association (KITA) Statistics (2019)

3 In particular, South Korea has a prominent position in the game industry because of its lead position in the production of online and mobile phone games. It is the 6th largest game producer worldwide with an annual growth rate of 6.3 percent since 2017 (United Nations Conference on Trade and Development 2017).

South Korea’s main partners in cultural trade are other Asian countries (see Figure 2). The Chinese world including China, Hong Kong, and Taiwan import almost 45 percent of South Korea’s cultural exports, followed by Japan (19 percent) and Southeast Asia (15 percent). The share of South Korea’s cultural exports to Europe is smaller but it is consistently increasing in recent years. In 2010, the value of its cultural exports to Europe was worth USD 27 million but it has almost doubled within seven years (i.e., USD 52 million in 2017) with an annual growth rate of 12 percent on average (see Figure 3). The share of the European markets in South Korea’s cultural exports is currently about 10 percent (2019), up from 6.1 percent in 2017.⁴

Figure 2. Cultural Exports of South Korea, by region and country



Unit: USD (000 000)

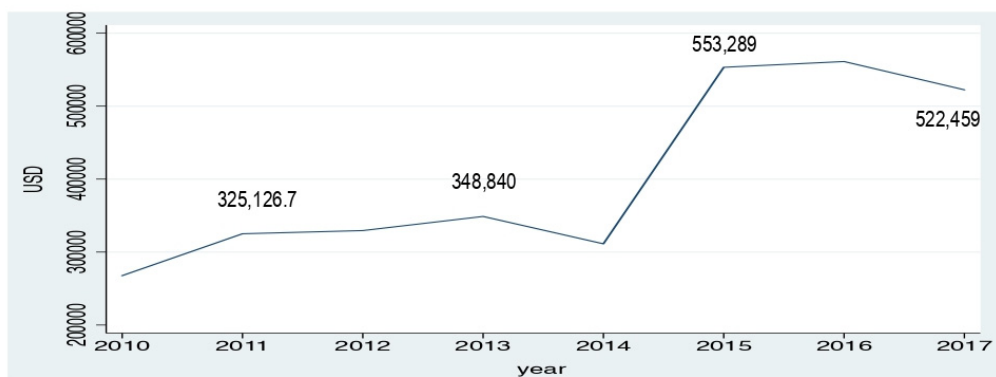
Source: Ministry of Culture, Sports, and Tourism of the Republic of Korea (2017)

Note: The Chinese world includes the People’s Republic of China, Hong Kong, and Chinese Taipei (Taiwan).

In fact, South Korean culture has increasingly become popular in Europe during the last decade, especially after Psy’s Gangnam Style in 2012. Since then, the consumption of K-Pop products (music videos and recordings, etc.) has rapidly grown in the European markets and subsequently, related cultural events and fan clubs have started taking place. For instance, K-Pop fan clubs have been formed in almost all major cities in Europe (Korea Foundation 2018), and K-Pop auditions, competitions, dance festivals, and workshops are today frequently visited scenes by European youths (Sung 2014).⁵ Moreover, the

⁴ The share of South Korea’s exports of consumption goods to Europe is also about 10 percent of its total exports of consumption goods, with home appliances and mobile phones being the main export items.

⁵ Such a phenomenon of K-Pop can be witnessed throughout Europe today - including major countries

Figure 3. Cultural Exports of South Korea to Europe

Unit: USD (000)

Source: Ministry of Culture, Sports, and Tourism of the Republic of Korea (2010-2017).

increasing popularity of K-Pop has prompted interests in other genres of the Korean Wave (e.g., TV-drama and films), as well as Korean food, language, and other South Korean products, and the public perceptions of South Korea have concurrently improved in European countries (Mazana 2014). As a result, the consumption of South Korean cultural products is not limited in K-Pop but extended to various genres. Especially, helped by the growing availability of online platforms, games form more than half of South Korea’s cultural exports (52 percent), followed by character goods (28 percent), animation (6 percent), and content solutions (5.6 percent, see Appendix B). The exports of music products take a share of 1.6 percent (a sales figure of USD 8.5 million), which is indeed a noticeable magnitude relative to its smaller market size than the other genres’.

In the European markets, the largest importers of South Korean cultural products are Europe’s five largest economies - Germany, the United Kingdom (UK), France, Italy, and Spain - which take more than half of South Korea’s cultural exports to Europe (KOTRA 2019). Particularly, Germany, the UK, and France have large cultural economies (ranked the 4th, 5th, and 6th, respectively, worldwide in their sizes after the United States, China, and Japan), and thus, potentials of increasing South Korea’s cultural exports to these countries are considerable. In addition, demand for South Korea’s cultural goods in Eastern Europe has been growing faster than in the other parts of Europe in recent years, inspiring opportunities for market expansion to this region (KOTRA 2019).

of the European Union such as Germany and France (Korea Foundation 2018), central and Eastern European countries like Austria, the Czech Republic, Poland, Hungary, and Romania (Sung 2014, Mazana 2014), Scandinavia (e.g., Sweden, Hubinette 2018), and southern Europe (e.g., Spain, Yoon et al. 2020).

IV. Empirical Analysis

A. Model

The central question of the empirical analysis is whether South Korea's cultural exports can increase the exports of its other goods to Europe. In this inter-industry analysis, cultural exports are used as a proxy to cultural proximity between the exporting and importing countries and increasing exports of other goods as an indicator of growing demand for the respective goods. This setup is designed to examine two channels that generate the effect of cultural exports. First, cultural exports can positively influence consumer preferences for consumption goods produced in the exporting country. Therefore, increasing South Korea's cultural exports to Europe is hypothesized to increase demand for its consumption goods in the European markets. Second, cultural exports are further postulated as playing a positive role in improving the country's overall economic status, as can be seen in the growing popularity of the Korean Wave that stimulates interests in and recognition of South Korea abroad. In this respect, cultural exports may have an effect of increasing exports of other commodities beyond consumption goods - for instance, the exports of high-technology goods that are often regarded as mirroring the recognition of a country's economic advancement.⁶

To test for this relationship, an empirical model is formulated based on the theoretical framework of the standard monopolistic competition trade model that assumes increasing returns to the scale and constant elasticity of substitution under imperfect competition (Dixit and Stiglitz 1977 and Krugman 1980). In this model, exports (x) from country i to country j at given year t are determined by i 's product variety (n) and prices (p), trade impediments (φ), preferences of consumers (α) in j for goods produced in i , and j 's expenditure (Y) and price index (P), as written below.

$$\ln x_{ijt} = \ln (n_{it}p_{it}^{1-\sigma}) + \ln \varphi_{ijt} + (\sigma-1) \ln \alpha_{ijt} + \ln (Y_{jt}P_{jt}^{\sigma-1}) \quad (1)$$

Typically, n_{it} and Y_{jt} represent the exporter's and importer's economic sizes and p_{it} and P_{jt} their respective wealth level. φ_{ijt} is trade costs between the two countries that include transport and information components. Geographical distances and common

6 Moreover, as South Korea has already established comparative advantages in high-technology industries - such as smartphones, display screens, and information and telecommunication technology, it is conceivable to expect that the country can pull additional demand by improving its economic recognition in the global markets.

borders are standard measurements of transport costs, while common language and colonial links stand for information costs (Disdier et al. 2010). In addition, trade policy between the countries that determines bilateral openness is accounted for as a determinant of trade costs. α_{ijt} is consumer preferences that are influenced by cultural proximity. Cultural proximity is commonly proxied by shared country characteristics and cultural exchange - such as cultural exports hypothesized in this analysis.

This model can be simplified in a panel analysis by using country fixed effects (FE) that control for time-constant country heterogeneity such as geographical, linguistic, and historical characteristics (Redding and Venables 2004). Moreover, the inclusion of FE can also address the effects of time-varying country characteristics - e.g., economic sizes, wealth levels, and trade policy - by interacting country fixed effects with year dummies (t). Hence, the model of exports between South Korea and European countries is modified as presented in Equation 2 below (note that the adjusted model includes importing countries' fixed effects and their interactions with year dummies but excludes the exporting country's fixed effects and their interaction term because South Korea is the sole exporter in this setup and therefore its fixed effects are treated as constant for all importing countries).

$$\ln x_{jt} = \beta \ln c_{jt-L} + FE_j + FE_j * t + t + u_{jt} \quad (2)$$

Equation 2 is formulated as a linear regression model with logarithmic transformation of trade variables that accounts for elasticity changes. The dependent variable (x) is the volume of bilateral exports from South Korea to a European country j, measured by three indicators: (i) the exports of consumption goods, (ii) the exports of high-technology goods, and (iii) total exports. Consumption goods include clothes and fashion accessories, cosmetics, processed food, home appliances, and mobile phones that are consumed for daily usage. High-technology goods consist of automobiles, computers, and information and telecommunication (ICT) related goods. Home appliances and mobile phones (in which South Korea has comparative advantages in the global markets) are classified as consumption goods following the definition of the United Nations Conference on Trade and Development (UNCTAD) despite their high technological application.

The explanatory variable of main interest is the volume of the exports of cultural goods and services (c) from South Korea to a European country (j) in a given year (t). As explained in Section III, cultural goods and services in this analysis comprise ten reproduceable sub-items that can achieve the economy of scale and product diversification: i.e., publishing products, music recordings, games, films, character goods, animation,

comics, broadcasting programs, knowledge information, and content solution goods (KOCCA 2019). In this model, monetary values of the cultural exports are lagged up to three years ($L = 1, 2, 3$) in order to account for delayed feedbacks from cultural exports to consumer preferences for other goods.

Other country characteristics that determine the volumes of bilateral trade are controlled for in this model by including importing countries' fixed effects (FE_j) and their interactions with year dummies (FE_j*t). Country fixed effects (FE_j) capture a country's time-invariant heterogeneity (such as bilateral distances between South Korea and European countries⁷) so that cross-country biases can be removed from the model. The interaction term between country fixed effects and year dummy variables (FE_j*t) accounts for time-varying country characteristics. Through the interaction term, key country characteristics proposed in Equation 1 - such as economic sizes and income levels of importing countries - implicitly enter the model. Furthermore, controlling for time-varying country heterogeneity addresses the endogeneity of the model that arises from time-series biases as no time-varying characteristics remain unobserved. Hence, this approach of interacting country- and time-fixed effects has an advantage over selecting a set of explanatory variables in estimating the model free of omitted variable biases (Disdier et al. 2010, Redding and Venables 2004). Moreover, the parsimony of the model that entitles cultural exports as the single variable of cultural proximity (as other cultural factors are muted via country fixed effects) minimizes multicollinearity problems in estimating the effect.

In addition, u_{jt} denotes idiosyncratic errors for which robust errors are applied to correct for heteroscedasticity. The robust errors are clustered at the importer country level so that similarities in patterns of unobserved characteristics within a country can be accounted for.

The model described in Equation 2 assumes a monotonic utility function by removing all country characteristics except cultural exports. While this model is superior in controlling for omitted variable biases, the assumption of monotonicity has the limitation of simplifying potentially varying relationships between the outcome variables and important determinants of bilateral trade - especially, an importer's income level (purchasing power) and population size (consumer pool). Therefore, the model is additionally modified to account for non-homothetic consumer preferences by explicitly controlling for an importing country's key characteristics, following Disdier et al. (2010). Accordingly,

7 Other elements of time-invariant country heterogeneity - such as shared languages, common borders, and colonial links - are not relevant in this analysis because no European country shares such ties with South Korea.

the non-homothetic model additionally includes an importer's income level, population size, and bilateral trade policy as explanatory variables. Here, the European Union-South Korea Free Trade Agreement (FTA) is used as the major trade policy that removes considerable hurdles in bilateral trade between them. As the FTA between South Korea and the European Union (EU) was ratified in December 2015, this variable takes a value of 1 if country j is an EU member state in 2016 and afterwards, and 0 otherwise. Hence, the model is rewritten in the form below that explicitly adds these time-varying key explanatory variables instead of the interaction term between country fixed effects and year dummies. Country fixed effects (FE_j) that address time-invariant country heterogeneity remain in the model.

$$\ln x_{jt} = \beta \ln c_{jt-L} + \eta \text{GDP}_{pc_{jt}} + \theta \text{Population}_{jt} + \lambda \text{FTA}_{jt} + FE_j + t + u_{jt} \quad (3)$$

The model (Equations 2 and 3) has a cross-country time series structure that comprise 30 European countries including 27 EU member states (see Appendix C for the country list) during the period from 1980 to 2019. The period of investigation is decomposed into two parts: the period of main investigation from 2000 to 2019, which is compared to the other period from 1980 to 1999. The two periods represent one after the emergence of the Korean Wave (2000-2019) and the other before the Korean Wave (1980-1999). The effect of South Korea's cultural exports is compared between the two periods in order to single out the role of the Korean Wave in generating the trade effect.

Equations 2 and 3 are estimated by applying a linear estimation method for panel data with two-way fixed effects. The data of the cultural exports is taken from the KOCCA⁸ and the data of the exports of the other goods is from the Korea International Trade Association (KITA). The measurements of income levels and populations sizes are provided by the World Bank's World Development Indicators.

B. The Effect of South Korea's Cultural Goods on its Exports to Europe

The results of the empirical analysis are presented in Table 1. Estimated as a change in elasticity, all five specifications report the positive lagged effect ($L = 1, 2, 3$) of South Korea's cultural exports on the exports of its consumption goods to Europe during

8 The KOCCA data has an advantage of including volumes of cultural exports in both forms of goods and (part of) services. This is important because considerable amounts of South Korea's cultural products are exported as forms of services (e.g., online downloads). In contrast, the KITA data counts physical forms of goods only that are traded through the Korea Customs Service.

Table 1. The Effect of South Korea's Cultural Exports on the Exports of Other Goods to Europe (Panel Analysis, 2000–2019)

Dependent Variable	Ln (Exports of Consumption Goods)			Ln (Exports of High-Technology Goods)			Ln (Total Exports)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Ln (Cultural Exports, t-3)	0.12 (0.05)**	0.12 (0.06)**	0.20 (0.09)**	0.10 (0.14)	0.17 (0.15)	0.09 (0.15)	0.08 (0.19)	0.15 (0.24)	0.15 (0.24)	0.15 (0.15)	0.08 (0.19)	0.15 (0.24)	0.15 (0.24)	0.15 (0.24)	0.11 (0.21)
Ln (Cultural Exports, t-2)		0.12 (0.06)**				0.11 (0.15)					0.07 (0.16)				
Ln (Cultural Exports, t-1)			0.13 (0.06)**			0.11 (0.14)						0.09 (0.17)			
Ln (Cult Exp) × East					0.01 (0.006)*					0.01 (0.01)					0.01 (0.01)
Ln (GDP pc)				0.45 (0.15)**					0.68 (0.20)**					0.54 (0.22)**	
Ln (Population)				0.52 (0.24)**					0.49 (0.21)**					0.61 (0.27)**	
FTA									0.02 (0.01)*					0.02 (0.012)*	
FE _i	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE _i × t	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R ² (within)	0.55	0.56	0.56	0.23	0.57	0.60	0.60	0.62	0.31	0.63	0.53	0.55	0.55	0.27	0.58
Countries	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Observations	552	552	552	552	552	568	568	568	568	568	573	573	573	573	573

* Note: Robust standard errors (clustered at the importing country level) are in parenthesis. $p < .10$, ** $p < .05$, *** $p < .001$. East: Eastern Europe, FTA: membership of the EU-South Korea Free Trade Agreement, FE: country fixed effects, t: time effects.

the period from 2000 to 2019. The results of the desired model that controls for both time-varying and -invariant country heterogeneity show that a 10-percent increase in the volume of the cultural exports from South Korea to Europe results in a 1.2-percent increase in the exports of its consumption goods to the respective European country (Column 1). Replacing the three-year lagged variable of the cultural exports with two- and one-year(s) lag does not alter the finding (Columns 2 and 3). This constant size of the effect over time may partially be driven by high multicollinearity among the lagged values of the cultural exports. Nonetheless, this finding infers that cultural exports can change consumer preferences within a short period (e.g., within a year), and the effect does not diminish over years.

When the model addresses the non-monotonicity of preferences by directly controlling for an importer's purchasing power, maximum consumer pool, and trade policy (Column 4), the effect of the cultural exports remains positive, but the size becomes larger. A 10-percent increase in the volume of South Korea's cultural exports increases the exports of its consumption goods by two percent. The effect in this specification becomes larger probably because much of time-varying country heterogeneity, which shares latent values with the cultural exports, is not controlled for.

In addition, South Korea's cultural exports have a greater effect of pulling the exports of its consumption goods to Eastern Europe. The interaction effect between the volume of the cultural exports and the regional dummy of Eastern Europe is positive, adding the magnitude of 0.01 to the effect of the cultural exports (Column 5). In other words, increasing South Korea's cultural exports by 10 percent raises its exports of consumption goods to Eastern European countries by 1.3 percent - 0.1 percentage point (p.p.) larger than the effect on Western European countries (that is 1.2 percent). Thereby, the effect of the cultural exports is 8.3 percent greater for Eastern Europe than the effect on Western Europe. This is possibly because Eastern European consumers are more flexible with their preferences and choices given dynamic changes in their emerging markets.

The findings so far emphasize the multiplying effect of South Korea's cultural exports that shifts consumer preferences for consumption goods in Europe. Every percent increase in the volume of South Korea's cultural exports results in increasing the exports of its consumption goods by more than every tenth of a percent. In contrast to its sizable effect on the exports of consumption goods, South Korea's cultural exports have no effect on the exports of its high-technology goods and total exports (Columns 6-15). It might be too early for South Korea's young cultural economy to play a significant role in promoting the country's position in technology industries or broad spectra of markets in the global economy. However, another interpretation can also

be conceivable. Purchase of high-technology products is mainly decided based on the quality of technology, thus its association with cultural proximity might be limited.

Considering the results of the control variables in the non-homothetic model, an importer's purchasing power (income level) and potential consumer pool (population size) have significant and sizeable effects on South Korea's exports in all investigated industries. Increasing the national income level of a European importing country by 10 percent raises South Korea's exports to the respective country by 4.5 (consumption goods), 6.8 (high-technology goods), and 5.4 (total exports) percent. Increasing the population size of an importing country by the same margin increases South Korea's exports by 5.2, 4.9, and 6.1 percent, respectively. The income effect is largest for the exports of South Korea's high-technology goods and the population effect is so for the total exports. On the other hand, the free trade agreement (FTA) between South Korea and the EU has generally no effect on the total exports and the exports of its consumption goods. However, the FTA membership increases the exports of South Korea's high-technology goods to Europe by two percent. Presumably, the free trade deal is used as an instrument for South Korea to maximize its comparative advantages in selected high-technology industries in the European markets.

C. The Role of the Korean Wave in the Trade Effect

The findings presented in Section 4.B. highlight the positive effect of South Korea's cultural exports on its exports of consumption goods to Europe. In this section, these results are further investigated by identifying whether one can attribute the positive effect to the recent rise of the Korean Wave. To answer this question, the sample is decomposed to two periods for an additional analysis: 2000-2009 and 2010-2019.⁹ While the Korean Wave emerged initially during the late 1990 and early 2000s, it has become an international phenomenon recognized in Europe and North America more recently since the 2010s - alongside the promotion of K-Pop as grossing music products (for example, boybands like BTS and EXO) and the success of Korean movies in box offices and film festivals in the Western hemisphere (for example, *Parasite*). Thus, the exports of South Korea's cultural goods are expected to have a greater effect on consumer preferences in the European markets in more recent years if the Korean Wave is the

⁹ In a similar approach, Jin (2016) distinguishes the Korean Wave (*Hallyu* in Korean) between Hallyu 1.0 (1997-2007) and Hallyu 2.0 (after 2008). The former is characterized as having focused on TV programs that gained polarity in Asia, while in the later period, K-Pop and K-Movies penetrated in different parts of the world including Europe and North America.

driving force of the positive effect of the cultural exports. With this in mind, the effect of the cultural exports is disentangled between the initial and advanced periods of the Korean Wave with the hypothesis of a larger effect in the later period (2010-2019).

Table 2 shows the comparative findings of the two periods. From 2000 to 2009, the effect of the cultural exports was already positive, but the size was smaller at a moderate significance level of 10 percent. Increasing the cultural exports by 10 percent raised the exports of consumption goods by less than one percent during this period (Columns 1 and 2). This is about 30 percent smaller than the effect reported in the later years from 2010 to 2019 (Columns 3 and 4). Furthermore, the cultural exports to Eastern Europe created no additional effect in the earlier period (2000-2009). In contrast, in the recent years (2010-2019), the effect of the cultural exports to Eastern Europe is 15 percent larger than the effect on Western Europe.

This decomposition analysis signifies that the effect of South Korea's cultural exports on its exports of consumption goods to Europe increases as the Korean Wave progresses. The presumed role of the Korean Wave as a generator of the trade effect is corroborated by comparing the effects of the cultural exports before and after the emergence of the Korean Wave. Accordingly, the model of the cultural exports is estimated for the period from 1980 to 1999 before the arrival of the Korean Wave. If the multiplying effect of South Korea's cultural exports is driven by the Korean Wave, the effect during the ex-ante period (1980-1999) should be smaller than the one after 2000. As seen in Table 3, South Korea's cultural exports produced, indeed, no effect of pulling any types of exports to Europe during the ex-ante period - the finding that further supports the role of the Korean Wave in creating the effect of the cultural exports.

Table 2. The Effect of South Korea's Cultural Exports on the Exports of Other Goods to Europe: the Initial and Advanced Periods of the Korean Wave (Panel Analysis, 2000-2009 and 2010-2019)

Dependent Variable	Ln (Exports of Consumption Goods)			Ln (Exports of High-Technology Goods)			Ln (Total Exports)					
	2000-2009 (1)	2010-2019 (2)	2010-2019 (3)	2000-2009 (4)	2000-2009 (5)	2000-2009 (6)	2010-2019 (7)	2010-2019 (8)	2000-2009 (9)	2010-2019 (10)	2010-2019 (11)	2010-2019 (12)
Ln (Cultural Exports, t-3)	0.09 (0.05)*	0.08 (0.05)*	0.13 (0.05)**	0.13 (0.06)**	0.09 (0.14)	0.10 (0.17)	0.11 (0.12)	0.11 (0.14)	0.07 (0.15)	0.07 (0.19)	0.12 (0.14)	0.11 (0.15)
Ln (Cultural Exports)×East	0.01 (0.01)	0.01 (0.01)**	0.02 (0.01)**	0.02 (0.01)**	0.01 (0.02)	0.01 (0.02)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02 (0.01)*
FE _i	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE _i × t	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R ² (within)	0.49	0.49	0.53	0.53	0.56	0.55	0.59	0.59	0.54	0.54	0.52	0.52
Countries	30	30	30	30	30	30	30	30	30	30	30	30
Observations	275	275	278	278	281	281	288	288	285	285	285	292

* Note: Robust standard errors (clustered at the importing country level) are in parenthesis. $p < .10$, ** $p < .05$, *** $p < .001$. East: Eastern Europe, FTA: membership of the EU-South Korea Free Trade Agreement, FE: country fixed effects, t: time effects.

Table 3. *The Effect of South Korea's Cultural Exports on the Exports of Other Goods to Europe Prior to the Korean Wave (Panel Analysis, 1980–1999)*

Dependent Variable	Ln (Exports of Consumption Goods)			Ln (Exports of High-Technology Goods)			Ln (Total Exports)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Ln (Cult Exp, t-3)	0.07 (0.06)	0.09 (0.08)	0.06 (0.06)	0.05 (0.11)	0.10 (0.12)	0.05 (0.09)	0.08 (0.13)	0.11 (0.12)	0.07 (0.15)
Ln (Cult Exp)× East			0.01 (0.02)			0.01 (0.03)			0.01 (0.06)
Ln (GPD pc)		0.51 (0.21)**			0.50 (0.26)*			0.55 (0.22)**	
Ln (Population)		0.49 (0.15)***			0.39 (0.24)			0.58 (0.21)***	
FE _i	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE _i × t	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R ² (within)	0.48	0.21	0.48	0.45	0.17	0.44	0.39	0.21	0.39
Countries	30	30	30	30	30	30	30	30	30
Observations	452	452	452	463	463	463	469	469	469

* Note: Robust standard errors (clustered at the importing country level) are in parenthesis. $p < .10$, ** $p < .05$, *** $p < .001$. East: Eastern Europe, FE: country fixed effects, t: time effects. The FTA variable is excluded in this estimation because the period of investigation is prior to the enactment of the FTA between South Korea and the European Union (2015). The observations of Eastern European countries were not recorded during the period of the Cold War (1980–1990).

In addition to the cross-time investigation, an additional analysis is conducted to specify types of cultural items that contribute to the positive effect of South Korea's cultural exports. This itemized analysis can reveal to what extent the key industries of the Korean Wave generate the multiplying effect. Hence, cultural goods are broken down into 10 sub-categories for the estimation: publishing products, comics, music, games, films, animation, broadcasting programs, character goods, knowledge information, and content solution products. The results of estimating genre-specific effects show that the positive effect of South Korea's cultural exports is mainly driven by the exports of representative contents of the Korean Wave (see Table 4). The largest effect comes from the exports of music products as predicted through the success of K-Pop. By increasing the exports of Korean songs and recordings by 10 percent, the country's exports of consumption goods to Europe increases by 0.4 percent. Moreover, the exports of music have an even greater effect on Eastern Europe. Increasing the exports of South Korean music to this region by 10 percent increases the exports of its consumption goods by 0.45 percent, which is 12.5 percent larger than the effect on Western Europe.

Table 4. The Decomposed Effects of South Korea's Cultural Exports on the Exports of Consumption Goods to Europe (Panel Analysis, 2000-2019)

Dep. Var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Ln (Exports of Consumption Goods)									
Ln (Publishing)	0.01 (0.005)**									
Ln (Comics)		0.02 (0.05)								
Ln (Music)			0.04 (0.02)**							
Ln (Games)				0.02 (0.01)**						
Ln (Films)					0.03 (0.017)*					
Ln (Animation)						0.01 (0.04)				
Ln (Broadcasting)							0.01 (0.01)			
Ln (Character Goods)								0.01 (0.01)		
Ln (Knowledge Information)									0.03 (0.04)	
Ln (Content Solutions)										0.05 (0.09)
Ln (decomposed item) × East	0.003 (0.005)	0.007 (0.008)	0.005 (0.002)**	0.002 (0.001)**	0.004 (0.003)	0.005 (0.01)	0.01 (0.005)**	0.005 (0.01)	0.004 (0.01)	0.008 (0.01)
FE _i	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FE _i × t	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R ² (within)	0.54	0.54	0.55	0.56	0.54	0.53	0.55	0.54	0.55	0.53
Countries	30	30	30	30	30	30	30	30	30	30
Observations	552	552	552	552	552	552	552	552	552	552

* Note: Robust standard errors (clustered at the importing country level) are in parenthesis. $p < .10$, ** $p < .05$, *** $p < .001$. East: Eastern Europe, FE: country fixed effects, t: time effects. Ln (*) variables are three-years lagged (t-3).

South Korean films are another key contributor of creating the positive effect of the cultural exports. A 10-percent increase in its exports results in increasing the exports of its consumption goods by 0.3 percent (the effect is constant for all sampled European countries as no additional effect is found on Eastern Europe). The exports of games - which form the largest share in the volume of South Korea's cultural exports to Europe - also add a positive effect. Increasing this type of exports by 10 percent increases South Korea's exports of consumption goods to Europe by 0.2 percent. The effect of the exports of games is larger in Eastern Europe where increasing them by 10 percent increases the exports of consumption goods by 0.22 percent. Additionally, an increase in the exports of publishing products by 10 percent adds a 0.1-percent increase in the exports of consumption goods to European countries. On the other hand, the exports of South Korea's broadcast products have a positive effect on Eastern Europe only where an increase in the exports of these products by 10 percent leads to increasing the exports of consumption goods by 0.1 percent. This region-specific effect mirrors the popularity of South Korean TV programs in several Eastern European countries - e.g., Romania, Hungary, and Poland. The itemized results of the decomposition analysis further underscore the importance of the Korean Wave, as the findings attribute the positive effect of South Korea's cultural exports largely to the key contents of the Korean Wave - K-Pop, K-Movies, K-Games, and K-Dramas.

V. Discussion and Conclusion

Through the analysis of the bilateral trade data, this paper finds a sizeable effect of South Korea's cultural exports on the exports of its consumption goods to Europe. Every 10-percent increase in the cultural exports contributes to an increase in the exports of consumption goods by 1.2-1.3 percent. As the exports of consumption goods comprise 10 percent of South Korea's total exports, this multiplying effect is translated to 3.6 percent of the country's export growth in 2019 (that was 3.3 percent), if the result can be generalized.

This finding renders three implications for the economy of South Korea. First, it proposes the Korean Wave as a dynamic stimulator of cultural proximity that can promote international trade. While cultural closeness is often considered pre-determined and static, the recent development of the Korean Wave unravels the dynamic relationship between cultural exposure and consumer preferences.

Second, the multiplying effect of South Korea's cultural exports suggests that the

currently sluggish economic growth of South Korea can be revitalized through the diversification of export items. As an export-oriented economy, South Korea grew fast through the development of its manufacturing sectors until the early 2000s. However, the manufacturing industries are not an engine of growth anymore in recent years because of growing competition in the global markets and economic slowdown in advanced economies which are main clients of South Korea's industrial goods. Instead, the country's burgeoning cultural economy and its positive externalities on other industries found in this paper can offer new sources of incubating sustainable growth.

Third, in addition to the diversification of export items, the finding of this paper underlines the advantage of diversifying trading partners, as evident in the European markets that form a relatively small share in South Korea's exports but show a swift shift in consumer preferences for products 'made in Korea'. In particular, Eastern Europe where South Korea's cultural exports create a greater multiplying effect can be promoted as a niche market with potentials of offering South Korea's cultural industries for larger gains of market expansion.

On the other hand, this paper finds no effect of South Korea's cultural exports on the exports of other types of products beyond consumption goods. For instance, it does not increase the exports of high-technology goods, contrary to the hypothesized positive externality through improving the country's global recognition. Whether this limited role of the cultural exports in high-technology industries can be changed if the Korean Wave becomes more influential in Europe is to be investigated in a future study that incorporates longer periods of observations.

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Appendix

Appendix A. Cultural Exports of South Korea to the World, by item and year

	2010	2011	2012	2013	2014	2015	2016	2017
Total	3,048,979.9	4,146,356.7	4,459,910.48	4,750,293	5,117,369	5,462,458	5,741,660	8,589,464
Publishing	357,881	283,439	245,154	291,863	247,268	222,736	187,388	220,951
Comics	8,153	17,213	17,105	20,982	25,562	29,354	32,482	35,262
Music	83,262	196,113	235,097	277,328	335,650	381,023	442,566	512,580
Games	1,606,102	2,378,078	2,638,916	2,715,400	2,973,834	3,214,627	3,277,346	5,922,998
Films	13,583	15,829	20,175	37,071	26,378	29,374	43,894	40,726
Animation	96,827	115,941	112,542	109,845	115,652	126,570	135,622	144,870
Broadcasting	127,074.9	168,940.7	179,718.48	239,473	256,278	216,032	254,613	230,656
Character Goods	276,328	392,266	416,454	446,219	489,234	551,456	612,842	663,853
Knowledge Information	363,282	432,256	444,837	456,911	479,653	515,703	566,412	616,061
Content Solutions	116,487	146,281	149,912	155,201	167,860	175,583	188,495	201,508

Source: Ministry of Culture, Sports, and Tourism of the Republic of Korea (2010–2017)

Unit: USD (000)

Appendix B. Cultural Exports of South Korea, by region and item

	Total	Chinese World	Japan	Southeast Asia	North America	Europe	Others
Total	8,589,464	3,837,216	1,655,975	1,304,363	811,593	522,459	457,853
Publishing	220,951	17,402	33,606	30,047	75,917	12,304	51,665
Comics	35,262	1,367	9,742	7,094	5,036	11,093	929
Music	512,580	109,931	320,599	64,737	5,468	8,552	3,294
Games	5,922,998	3,413,471	824,036	746,298	410,366	272,311	256,516
Films	40,726	7,733	4,895	8,088	4,933	3,802	11,275
Animation	144,870	2,188	26,461	810	75,286	31,132	8,993
Broadcasting	230,656	68,435	81,952	42,076	16,980	1,315	19,902
Character Goods	663,853	132,059	45,051	86,258	175,028	146,309	79,148
Knowledge Information	616,061	58,616	244,891	282,929	18,068	6,336	5,220
Content Solutions	201,508	26,014	64,742	36,026	24,511	29,305	20,910
Share (%)	100	44.7	19.3	15.2	9.4	6.1	5.3

Source: Ministry of Culture, Sports, and Tourism of the Republic of Korea (2017).

Note: The Chinese world includes the People's Republic of China, Hong Kong, and Chinese Taipei (Taiwan).

Unit: USD (000)

Appendix C. List of European Countries Included in the Analysis (30 Countries)

Austria, Belgium, Bulgaria^E, Croatia^E, Cyprus, Czech Republic^E, Denmark^E, Estonia^E, Finland, France, Germany, Greece, Hungary^F, Ireland, Italy, Latvia^F, Lithuania^E, Luxembourg, Malta, Netherlands, Norway, Poland^E, Portugal, Romania^E, Slovakia^E, Slovenia^E, Spain, Sweden, Switzerland, United Kingdom

* Note: The list includes EU member states and Norway, Switzerland, and the United Kingdom.

^E indicates Eastern Europe (11 countries). While Estonia, Latvia, and Lithuania are geographically located in Northern Europe, they are classified as Eastern Europe because these countries are former members of the Soviet Union sharing developmental and institutional similarities with Eastern European countries.