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Abstract

After a long and heated argument on whether international trade in cultural goods should be an exception to free trade, UNESCO's Convention on Cultural Diversity (CCD) was adopted and entered into force in 2007 to protect and promote cultural diversity. This paper provides the first empirical assessment of the impact of CCD on trade in cultural goods. By using trade data for 2004–2010 and employing the first-differenced difference-in-differences method, we estimate the effects of ratifying CCD on the imports of cultural goods and on the extensive margin of cultural imports. Our estimation results provide little evidence that CCD is an instrument of disguised protectionism. Furthermore, we find that CCD contracting countries tend to increase the country margins of cultural imports for some subcategories of cultural goods more than CCD non-contracting countries. This change implies that CCD contributes to the promotion of cultural diversity.

Keywords: trade and culture; cultural goods; UNESCO's Convention on Cultural Diversity; Difference-in-differences
JEL classification: F13; F14; Z10

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1 Introduction

After a long and heated argument, the Convention on Cultural Diversity (CCD or Convention) [1] of the United Nations Educational, Scientific and Cultural Organization (UNESCO) was adopted in 2005. Countries such as France and Canada strongly supported it, while the United States and Israel objected. In accordance with the CCD Article 29, the Convention entered into force in March 2007. By November 2015, it had been ratified by 140 UNESCO member states.

The major objective of CCD is "to protect and promote the diversity of cultural expressions" (Article 1). In pursuing this objective, CCD defines both the rights and obligations of the contracting parties. Regarding the former, CCD states that "each Party may adopt measures aimed at protecting and promoting the diversity of cultural expressions within its territory" (Article 6). These measures may be inconsistent with the national treatment rules in the General Agreement on Tariffs and Trade/World Trade Organization (GATT/WTO) (Voon 2006). This aspect of CCD has been criticized by the United States and other opponents for its potential protectionist effects (Graber 2006).[2] Regarding obligations, CCD requires parties to endeavor "to create in their territory an environment which encourages individuals and social groups ... to have access to diverse cultural expressions from within their territory as well as from other countries of the world" (Article 7).

CCD has affected the trade-related policies of UNESCO and the contracting countries.[3] First, several countries have introduced measures to facilitate imports of cultural goods and services from developing countries, which may have contributed to the increased access to diverse cultural expressions from other countries. These measures include "invitations for artists or creative entrepreneurs to attend relevant international trade fairs or markets in the cultural and creative industries" (Baltà 2014, p. 24) and the establishment of "special fiscal measures and incentives for cultural enterprises from developing countries, such as tax credits and double taxation avoidance agreements" (Baltà 2014, p. 24). For example, the European Union has implemented the latter measures. Second, several trade agreements by the contracting countries reflect CCD in the manner in which they excluded cultural goods and services from trade agreements or granted them a particular status (Guèvremont and Ostašević 2017). Third, the International Fund for Cultural Diversity (IFCD) was established under Article 18 of CCD to support cultural exports by developing countries. In addition, as stipulated in Article 9(a) of CCD, contracting countries are required to report to UNESCO every four years on their actions to promote cultural diversity at the national and international levels. This reporting system places pressure on the contracting countries to increase access to diverse cultural expressions from other countries.

Strikingly, no empirical studies exist on CCD, whereas the Convention's role has been extensively discussed by both experts in international trade law (Graber, 2006; Hahn, 2006) and economists (Acheson and Maule, 2004; Benhamou, 2004). None of the previous studies have empirically examined the role of CCD. In the field of international economic law, Hahn (2006) argued that CCD aims to create a "safe haven" for cultural policies from GATT/WTO disciplines by establishing the concept of cultural diversity. Although CCD is "an important step towards the recognition of cultural diversity as an internationally recognized public choice of states" (p. 517), Hahn (2006) concluded that the Convention has little effect on the rules and obligations of GATT/WTO laws. Graber (2006) also admitted that most CCD provisions have little normative effect because they do not impose responsibilities or binding commitments on contracting countries. However, he argued that CCD may be "a first step towards the achievement of a more coherent international legal order, where not only economic but also societal values, such as cultural diversity, are taken seriously" (p. 574). In the economic literature, Acheson and Maule (2004) discussed the possible effects of CCD before its adoption and

[1] The formal name is the Convention on the Protection and Promotion of the Diversity of Cultural Expressions.

[2] Article 20 of CCD explicitly states that the Convention does not modify the rights and obligations of the parties under any other treaty to which they are party.

[3] Moreover, for a number of countries that have ratified CCD, the Convention has actually changed their domestic policies and legislation (Baltà, 2014).

concluded that the Convention fails to provide an enforceable mechanism. Benhamou (2004) opposed these prior views and insisted that CCD is useful for reasserting the principle concerning the status and treatment of cultural goods.

Our study aims to answer the question of whether the aforementioned changes in policies and legislation or actions after the ratification of CCD have had any real effect on trade in cultural goods. As previously explained, previous studies have not empirically examined the impacts of CCD on trade. To bridge this gap in the body of knowledge on this topic, we answer this question by using 2004–2010 trade data and the first-differenced difference-in-differences (DID) method. In particular, we address the following two aspects of CCD. First, we examine whether CCD has negatively affected the imports of cultural goods by its parties. In other words, we examine whether CCD has worked as an instrument of disguised protectionism, as the United States argued. Second, we examine whether CCD has increased access to diverse cultural expressions from other countries. We use the extensive margin of cultural imports (i.e., the number of countries from which a country imports cultural goods and the number of cultural products imported by a country) as a measure of the degree of accessibility to diverse cultures in the rest of the world.

The main contribution of this study is to provide the first empirical assessment of the impact of CCD ratification on trade in cultural goods. By using the first-differenced DID method, we obtain the following two main results. First, we find no evidence that CCD has a negative impact on cultural imports. This finding suggests that CCD does not work as an instrument of disguised protectionism. Second, we find a positive impact of CCD on the country margin of cultural imports. Our estimations reveal that, since CCD was entered into force, CCD contracting parties have increased the number of countries from which they import cultural goods more than non-contracting parties. Finally, we confirm the robustness of our results by employing alternative empirical strategies. For example, we combine the first-differenced DID estimation with the matching method based on propensity score matching (PSM).

The remainder of this paper is organized as follows. In Section 2, we review the related literature and explain the economic background. In Section 3, we describe the data used in this study. In Sections 4 and 5, we explain our empirical methodology and present the descriptive statistics of the key variables, respectively. In Section 6, we present the main estimation results. In Section 7, we conduct several robustness checks. Finally, in Section 8, we conclude the study.

2 Background and economic implications

The conflict between free trade and culture has a long history. Regarding cultural goods and services, several trade disputes have occurred that have been filed and settled at GATT and WTO (Footer and Graber, 2000). In the legal discipline of GATT, some cultural goods are allowed to be free from GATT obligations under the concept of cultural exception. Article IV of GATT defines special provisions related to films and allows internal quantitative measures, or screen quotas, whereas Article XX (f) defines general exceptions to the protection of national treasures of artistic, historic, or archaeological value. In the late 1990s, the concept of cultural exception was replaced by that of cultural diversity because it became clear that cultural goods were not excluded from the law of Marrakesh Agreement establishing the WTO (Graber, 2006). Since then, the concept of cultural diversity has been advocated by UNESCO. In 2001, UNESCO's Universal Declaration on Cultural Diversity was adopted at its 31st session of the General Conference, and CCD was adopted by a majority of 148 votes to 2 at its 33rd session four years later.

CCD can potentially affect contracting countries' welfare through a change in cultural imports and a variety of importing cultural goods. First, in general, increased imports of cultural goods can enhance an importing country's welfare by increasing consumers' surplus, as shown in the standard trade theory. However, restrictions on the trade of cultural goods have also been theoretically shown to increase welfare in a limited situation. Francois and van Ypersele (2002) showed that restrictions

on the trade of cultural goods can increase an importing country's welfare under the condition that (i) cultural goods are produced using increasing returns to scale technologies, such as in a film industry and (ii) consumers' valuations for some cultural goods (e.g., French films) are heterogenous, whereas those for other goods (e.g., Hollywood films) are homogenous. If CCD enables trade restrictions on cultural goods imports, such as "printed matter" and "audio and audiovisual media," as described in its Article 6, the Convention can be welfare-improving by decreasing cultural goods imports.

Second, from the viewpoint of love-of-variety trade theories, the increased variety of importing cultural goods through CCD enforcement can result in welfare gains. New trade theories, such as in Krugman (1979), show that the expansion of product varieties available to consumers results in welfare gains from trade when we assume a consumer's love of variety or preference for diversity. Broda and Weinstein (2006) estimated that the overall gains from variety amount to 2.6 percent of GDP between 1972 and 2001 for the United States. Caplan and Cowen (2004) argued that international trade in cultural goods is beneficent by broadening the menu of choice for consumers in a country, although each country's cultural distinctiveness may decline.

Following these arguments, we investigate the impacts of CCD on cultural imports and their extensive margin. We separately estimate the effects of CCD for each category of cultural goods, considering the possibility that the potential impacts on welfare vary across goods, as suggested by Francois and van Ypersele (2002).

3 Data

The data on the imports of goods for 2004–2010 are taken from the *BACI: International Trade Database at the Product Level*, which is constructed by the CEPII from the UN COMTRADE database.[4] BACI covers bilateral trade data at the HS6 level for more than 200 countries. Our sample consists of 108 WTO members, namely 68 CCD contracting countries and 40 CCD non-contracting countries.[5] For a reason that is explained in the next section, countries that have ratified CCD after 2008 are excluded from our sample.

By using data from BACI, for the sample countries, we construct import data on *core cultural goods* and *non-cultural goods*. UNESCO (2005) defined cultural goods as the output of cultural and creative industries and categorized them into "core" and "related" goods. Core cultural goods are defined as the output of traditionally defined cultural industries, whereas related cultural goods are the output of creative industries, such as software, advertising, architecture, and business intelligence services. We define non-cultural goods as all other goods. Therefore, we divide goods into core cultural goods, related cultural goods, and non-cultural goods.

In addition, the UNESCO framework for cultural statistics (FCS) divides core cultural goods into five categories: (i) cultural heritage ("HERITAGE"), (ii) printed matter ("PRINT"), (iii) music and the performing arts ("MUSIC&PA"), (iv) visual arts ("ARTS"), and (v) audio and audiovisual media ("AUDIO&AV") (UNESCO 2005, pp. 91–92). We analyze the effects of CCD for each of these five categories. In the Appendix, Table A.4 provides the descriptive statistics of cultural imports by FCS category, and Table A.5 presents the concordance between the FCS category and HS6 code.

Table 1 shows the descriptive statistics of each category's proportion of imports of the core cultural goods in our sample. The table reveals that "printed matter" and "music and performing arts," on

[4]We acknowledge that many international transactions of cultural content are currently made online, which cannot be captured by trade data. Therefore, those e-commerce transactions are not included in our analysis. However, because data on e-commerce transactions are not publicly available, we focus on trade in goods.

[5]We have 110 countries' trade data, but in the following estimation, one contracting country (Jamaica) and one non-contracting country (Myanmar) are excluded given the lack of data on their GDPs. Therefore, the number of observations in our sample becomes $110 - 2 = 108$. In the Appendix, Tables A.2–A.3 list the sample countries by CCD contracting status. For two reasons, we restrict our analysis to WTO members' imports. First, the primary political dispute is over the relation between CCD and GATT/WTO. Second, WTO non-members account for a small proportion of world trade.

Table 1: Proportion of cultural imports by FCS category

Variable	Mean	S.D.	Min	Max
ALL	1.000	0.000	1.000	1.000
HERITAGE	0.016	0.037	0.000	0.344
PRINT	0.514	0.22	0.029	0.951
MUSIC & PA	0.309	0.176	0.021	0.912
VISUAL ARTS	0.086	0.085	0.002	0.638
AUDIO & AM	0.076	0.115	0.000	0.906

Note: The number of observations is 216 (=108 countries times two periods). The pre-treatment period is 2004–2005 and the post-treatment period is 2008–2010.

average, account for more than 80% of the imports of core cultural goods, whereas "visual arts" and "audio and audiovisual media," on average, account for about 9% and 8%, respectively. The proportion of "cultural heritage" in the import of core cultural goods is, on average, around 2%.

4 Empirical strategy

This study empirically examines how the CCD affects the imports of cultural goods and cultural diversity. First, we investigate whether the imports of core cultural goods relative to non-cultural goods by CCD contracting countries have grown to a lesser degree than those of non-contracting countries after CCD was entered into force in 2007. Second, we examine whether CCD promotes cultural diversity. In this study, to measure cultural diversity, we primarily use the number of countries from which a country imports cultural goods (i.e., the extensive margin of cultural imports). One may argue that the diversity of cultural imports can be more properly measured at the country-product level rather than the country level. However, in the spirit of CCD, an increase in exposure to different cultural spheres will be more important to improve access to diverse cultural expressions than an increase in the variety of imported products from one country. Therefore, the number of countries from which a country imports cultural goods is an appropriate measure of cultural diversity in imports. However, we also use the number of importing cultural products as an alternative measure of cultural diversity. Thus, we analyze whether CCD contracting countries have increased the extensive margin of importing core cultural goods than non-contracting countries relative to the extensive margin of importing non-cultural goods.

As discussed in the large body of the empirical trade literature, we should address the endogeneity of an international convention or agreement when analyzing its effects on economic outcomes. To address the endogeneity of CCD that countries self-select into ratifying CCD, we employ a first-differenced panel data approach. Alternative econometric methods, such as the instrumental variable (IV) approach and PSM approach, can be used to address the endogeneity issue. In our context, the first-differenced panel data approach is preferable because we face a lack of suitable instruments, which are necessary for the IV approach. Furthermore, in Section 7, we check the robustness of our results by combining the PSM method with our first-differenced panel data approach. We also employ the standard gravity framework to access the impacts of CCD on bilateral international trade in cultural goods in terms of trade values and the number of traded products in Appendix 1.

Baier and Bergstrand (2007) analyzed the effects of free trade agreements and revealed that, while IV and control function approaches do not well adjust for endogeneity, a differenced panel approach does. Additionally, the first-differenced DID estimation method has been used to examine the effects of other international agreements. For example, Aichele and Felbermayr (2012) used this estimation method to analyze the effects of Kyoto protocol on CO_2 emissions.

Following these previous studies, we conduct the first-differenced DID estimation. First, we distinguish the post-treatment period (2008–2010) from the pre-treatment period (2004–2005). In the

following analysis, we exclude the years 2006 and 2007 to eliminate any potential effect attributable to the fact that many countries have ratified CCD during these years, before it was entered into force in 2007. Second, we distinguish CCD contracting countries as the treatment group from CCD non-contracting countries as the control group. Third, we classify trade goods into core cultural goods (the treatment group) and non-cultural goods (the control group). As a result, we use the following specification:

$$\begin{aligned} Relative\_Growth_j = \alpha_0 + \alpha_1 \mathrm{d}CCD_j + \alpha_2 \mathrm{dln}GDP_j \\ + \alpha_3 \mathrm{dln}PCGDP_j + \epsilon_j \end{aligned} \tag{1}$$

where

$$Relative\_Growth_j \in \{Relative\_Growth\_IMPORT_j, Relative\_Growth\_EXTEN_j\}.$$

Here, the subscript j indexes the importing country, d indicates the first-difference operator for $t \in \{pre, post\}$ ($T = 2$), and the DID dummy $\mathrm{d}CCD_j$ indicates whether a country ratified CCD before 2008. The nature of DID estimation, which requires a complete panel, necessitates that countries that ratified CCD after 2008 are excluded from our sample.

The dependent variable in Eq. (1), $Relative\_Growth_j$, measures the *relative growth* of an outcome variable for core cultural goods compared to non-cultural goods. We use two outcome variables, namely $IMPORT_{j,t}$ and $EXTEN_{j,t}$, where $t \in \{pre, post\}$. The former is country j's total import value of core cultural goods in period t, $IMPORT\_CUL_{j,t}$, or non-cultural goods, $IMPORT\_NON_{j,t}$, and the latter is the number of countries from which country j imports core cultural goods, $EXTEN\_CUL_{j,t}$, or non-cultural goods, $EXTEN\_NON_{j,t}$, i.e., the extensive margins of imports. Following previous studies (Bertrand et al., 2004; Aichele and Felbermayr, 2012), we take the average value in the pre- and post-treatment periods for each outcome variable to control for the business cycle.[6] To eliminate time-invariant country-specific factors, we take the first difference of an outcome variable, i.e.,

$$\begin{aligned} Growth\_IMPORT\_CUL_j &\equiv \mathrm{ln}IMPORT\_CUL_{j,post} - \mathrm{ln}IMPORT\_CUL_{j,pre}, \\ Growth\_IMPORT\_NON_j &\equiv \mathrm{ln}IMPORT\_NON_{j,post} - \mathrm{ln}IMPORT\_NON_{j,pre}, \end{aligned}$$

and

$$\begin{aligned} Growth\_EXTEN\_CUL_j &\equiv \mathrm{ln}EXTEN\_CUL_{j,post} - \mathrm{ln}EXTEN\_CUL_{j,pre}, \\ Growth\_EXTEN\_NON_j &\equiv \mathrm{ln}EXTEN\_NON_{j,post} - \mathrm{ln}EXTEN\_NON_{j,pre}. \end{aligned}$$

By using these variables, we construct the relative growth variable for both $IMPORT$ and $EXTEN$, i.e.,

$$\begin{aligned} Relative\_Growth\_IMPORT_j &\equiv Growth\_IMPORT\_CUL_j - Growth\_IMPORT\_NON_j, \\ Relative\_Growth\_EXTEN_j &\equiv Growth\_EXTEN\_CUL_j - Growth\_EXTEN\_NON_j. \end{aligned}$$

By subtracting the growth rate of non-cultural imports from that of cultural imports, we can eliminate factors that affect both non-cultural imports and cultural imports. For example, we can control for the effects of the great trade collapse after the 2008 Great Recession as long as it affects non-cultural and cultural imports similarly.

Moreover, to control for the growth in domestic market size and income, we employ the GDP growth rate, $\mathrm{dln}GDP_j$, and the per capita income growth rate, $\mathrm{dln}PCGDP_j$, as the covariates in Eq. (1).[7] As explained for the outcome variables, $\ln GDP$ and $\ln PCGDP$ are averaged over each period to eliminate the effects of country-specific business cycles. Then, they are first-differenced to eliminate time-invariant country-specific factors. This process follows that of Aichele and Felbermayr (2012).

[6] We take the log of the outcome variable plus one to keep the number of sample countries constant and the estimation results comparable rather than throwing away the observations with zero trade flow.

[7] Note that in our first-differenced panel specification, the time-invariant country-specific variables related to the country's "cultural attitudes," such as language, are eliminated from the estimation equation.

Table 2: Comparison of cultural imports by CCD status

Countries	N	Mean	S.D.
(a) Value of imports of core cultural goods (2004–2005, billions of U.S. dollars)			
Non-contracting countries	40	0.456	2.196
Contracting countries	68	0.567	1.361
(b) Value of imports of core cultural goods (2008–2010, billions of U.S. dollars)			
Non-contracting countries	40	0.561	2.555
Contracting countries	68	0.740	1.736
(c) Change in cultural imports (%)			
Non-contracting countries	40	52.224	73.493
Contracting countries	68	69.297	170.654
(d) Relative change in cultural imports compared with non-cultural goods (%)			
Non-contracting countries	40	-27.823	59.391
Contracting countries	68	-9.898	174.136

Note: In panels (a) and (b), the average of the import of core cultural goods is reported. Panel (a) presents figures for the pre-treatment period (2004–2005), whereas panel (b) presents those for the post-treatment period (2008–2010). In panel (c), the percentage growth rate between the pre- and post-treatment periods in the import of core cultural goods is reported. In panel (d), the relative percentage growth rate between the pre- and post-treatment periods in the import of core cultural goods is reported, where the relative percentage growth rate is defined as the percentage growth rate for core cultural goods minus that for non-cultural goods.

5 Comparison of cultural imports by CCD status

Before econometrically examining the effects of CCD, we compare cultural imports by contracting and non-contracting countries, using the descriptive statistics. Tables 2 and 3 show the descriptive statistics and extensive margin of cultural imports by CCD contracting status, respectively.

First, Table 2 compares cultural imports by CCD status, showing that CCD contracting countries tend to import more core cultural goods than non-contracting countries in the pre- and post-treatment periods. This table also shows that CCD contracting countries' growth in imports of core cultural goods is, on average, larger than that of non-contracting countries, although the standard deviations are large. The relative growth in imports of core cultural goods is negative for both contracting and non-contracting countries, suggesting that the growth rate for core cultural goods is smaller than that for non-cultural goods during the sample period of 2004–2010. The average growth rate is also larger in CCD contracting countries than in non-contracting countries, suggesting that ratifying CCD does not allow contracting countries to decrease cultural imports by adopting trade-restrictive measures.

Next, Table 3 presents the mean comparison of an extensive margin of cultural imports by CCD contracting status. Here, we use the number of source countries from which a country imports cultural goods as the extensive margin of cultural imports. Table 3 shows that CCD contracting countries tend to import core cultural goods from a larger number of countries than non-contracting countries in both the pre- and post-treatment periods. In addition, on average, CCD contracting countries' growth in the number of source countries of cultural goods and their growth relative to non-cultural goods are higher than those of non-contracting countries. This finding suggests that CCD achieves success in promoting contracting countries' cultural diversity of cultural imports.

In summary, the mean comparison of the outcome variables suggests that CCD contracting countries tend to increase the country margin of cultural imports relatively more than non-contracting countries. Furthermore, the growth in core cultural imports for CCD contracting countries is larger than that for non-contracting countries. In the next section, we econometrically examine the impacts of CCD.

Table 3: Comparison of extensive margin of cultural imports by CCD status

Countries	N	Mean	S.D.
(a) Number of source countries (2004–2005)			
Non-contracting countries	40	49.788	34.111
Contracting countries	68	68.169	34.848
(b) Number of source countries (2008–2010)			
Non-contracting countries	40	50.575	33.162
Contracting countries	68	69.608	35.127
(c) Change in number of source countries			
Non-contracting countries	40	0.787	5.590
Contracting countries	68	1.439	7.232
(d) Relative change in number of source countries			
Non-contracting countries	40	-1.983	9.910
Contracting countries	68	1.127	14.417

Note: In panels (a) and (b), the average numbers of source countries from which a country imports core cultural goods are reported. Panel (a) presents figures for the pre-treatment period (2004–2005), and panel (b) presents those for the post-treatment period (2008–2010). In panel (c), changes in the number of source countries of core cultural goods between the pre- and post-treatment periods are reported. In panel (d), relative changes in the number of source countries between pre- and post-treatment periods are reported, where the relative change is defined as the change for core cultural goods minus that for non-cultural goods. For simplicity, we present values without taking logarithms.

Table 4: Impact of CCD on imports of cultural goods (2004–2010)

Dependent variable: $Relative\_Growth\_IMPORT_j$	(1) ALL	(2) HERITAGE	(3) PRINT	(4) MUSIC &PA	(5) ARTS	(6) AUDIO &AV
dCCD	0.018	0.120	0.011	-0.023	0.038	0.277
	[0.096]	[0.344]	[0.074]	[0.158]	[0.163]	[0.231]
dlnGDP	-0.569	-0.126	-0.031	-1.058	1.365	-2.514**
	[0.637]	[2.082]	[0.533]	[0.946]	[0.908]	[1.264]
dlnPCGDP	0.421	1.306	0.030	1.448**	-0.682	0.701
	[0.489]	[2.215]	[0.436]	[0.638]	[0.638]	[1.180]
Constant	-0.159	-0.091	-0.264***	-0.404**	-0.312	0.438*
	[0.112]	[0.370]	[0.083]	[0.189]	[0.200]	[0.245]
Observations	108	108	108	108	108	108
R-squared	0.008	0.010	0.000	0.025	0.019	0.066

Notes: Robust standard errors are given in square brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.
The sample includes 68 contracting and 40 non-contracting countries (see Tables A.2 and A.3).

6 Results

6.1 Impacts of CCD on imports of cultural goods

This section presents the estimation results of Eq. (1). Table 4 presents the estimation results using the total imports of core cultural goods as the outcome variable and shows the impacts of the CCD on the imports of core cultural goods. Column (1) of Table 4 reports the results for all core cultural goods, whereas columns (2)–(6) show the results for each category. The coefficients of the CCD dummy are not significant in all columns, which implies that the impact of CCD on the total imports of core cultural goods is negligible.

To summarize, we find no evidence of the negative impact of CCD on imports of core cultural goods. Therefore, the findings in this subsection do not support the fear that CCD works as disguised protectionism.

6.2 CCD and extensive margin of cultural imports

Next, we examine the impacts of CCD on the extensive margin of cultural imports in terms of the number of countries from which a country imports core cultural goods, using the same specification (1) as that in the previous subsection. Table 5 shows that, in columns (4), (5), and (6), the impact of CCD on the number of source countries of cultural goods is positive and significant. This finding indicates that the relative growth in the number of source countries of "music and the performing arts," "visual arts," and "audio and audiovisual media" of CCD contracting countries is significantly higher than that of non-contracting countries.

The coefficients of GDP growth are significantly positive in all columns except columns (4) and (6). This result can be interpreted as growing economies attract cultural goods, such as cultural heritage, printed matter, and visual arts, from more countries. The coefficients of per capita GDP growth are insignificant in all columns.

We also examine whether CCD affects the number of importing cultural products. Based on UNESCO's FCS framework, we have 36 categories of core cultural goods, as shown in Table A.5. We use these 36 categories as the number of cultural products. Table 6 presents the estimation results using the relative growth of the number of importing cultural products ($Relative\_Growth\_N\_PRODUCTS$)

Table 5: Impact of CCD on number of countries from which a country imports cultural goods (2004–2010)

Dependent variable: *Relative_Growth_EXTEN*	(1) ALL	(2) HERITAGE	(3) PRINT	(4) MUSIC &PA	(5) ARTS	(6) AUDIO &AV
dCCD	0.028	0.119	0.022	0.098**	0.061*	0.100*
	[0.021]	[0.077]	[0.026]	[0.039]	[0.035]	[0.057]
dlnGDP	0.335***	0.809**	0.259*	0.343	0.405**	-0.038
	[0.107]	[0.388]	[0.141]	[0.242]	[0.202]	[0.326]
dlnPCGDP	-0.085	-0.287	-0.104	0.151	0.008	-0.133
	[0.079]	[0.356]	[0.111]	[0.237]	[0.173]	[0.276]
Constant	-0.052**	-0.139	0.006	-0.241***	-0.111**	-0.009
	[0.025]	[0.091]	[0.029]	[0.055]	[0.044]	[0.057]
Observations	108	108	108	108	108	108
R-squared	0.089	0.046	0.031	0.151	0.097	0.037

Notes: Robust standard errors are given in square brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.
The sample includes 68 contracting and 40 non-contracting countries (see Tables A.2 and A.3).

as the dependent variable. Table 6 shows no impact of CCD on the number of importing cultural products.

Table 6: Impact of CCD on the number of importing cultural products (2004–2010)

Dependent variable: *Relative_Growth_N_PRODUCTS*	(1) ALL
dCCD	-0.044
	[0.033]
dlnGDP	-0.320
	[0.194]
dlnPCGDP	-0.190
	[0.170]
Constant	-0.042
	[0.039]
Observations	108
R-squared	0.120

Note: Robust standard errors are given in square brackets.
The sample includes 68 contracting and 40 non-contracting countries (see Tables A.2 and A.3).

We obtain similar results when we use the sum of the number of importing cultural products from each source country, as shown in Table 7. The estimation results show that CCD has no effects on the sum of the number of importing cultural products for all categories of cultural goods. Although these results in Table 5 show that CCD has a positive impact on extending country margins for some cultural goods, such as "music and the performing arts" and "audio and audiovisual media," the results in Tables 6 and 7 suggest that CCD has no impact on product margin.

To summarize, this subsection reveals that, more than non-contracting countries, CCD contracting countries have increased the number of source countries of cultural goods for some subcategories of

Table 7: Impact of CCD on the sum of the number of importing cultural products from each source country (2004–2010)

Dependent variable: *Relative_Growth_EXTEN*	(1) ALL	(2) HERITAGE	(3) PRINT	(4) MUSIC &PA	(5) ARTS	(6) AUDIO &AV
dCCD	0.010	0.092	0.001	-0.015	0.033	0.015
	[0.020]	[0.078]	[0.021]	[0.056]	[0.036]	[0.057]
dlnGDP	0.210*	0.268	0.158	0.722**	0.507***	-0.417
	[0.117]	[0.432]	[0.134]	[0.345]	[0.193]	[0.307]
dlnPCGDP	-0.096	-0.075	-0.163	-0.082	-0.045	0.017
	[0.075]	[0.400]	[0.113]	[0.305]	[0.139]	[0.260]
Constant	-0.122***	-0.106	-0.004	-0.728***	-0.134***	0.015
	[0.024]	[0.095]	[0.024]	[0.074]	[0.045]	[0.052]
Observations	108	108	108	108	108	108
R-squared	0.030	0.016	0.021	0.082	0.098	0.026

Notes: Robust standard errors are given in square brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.
The sample includes 68 contracting and 40 non-contracting countries (see Tables A.2 and A.3).

core cultural goods. Yet, CCD contracting countries have not increased the number of importing cultural products. Overall, our estimation results in this subsection suggest that CCD has partly contributed to cultural diversity.

7 Robustness checks

7.1 PSM method

The DID estimator used in our main analysis addresses selection bias on unobservables by allowing us to control for time-invariant unobservable characteristics that may affect a country's decision to ratify CCD. An important underlying assumption is that these unobservable characteristics affect the treated group (i.e., contracting countries) and the control group (i.e., non-contracting countries) in the same way, which is called the "common trends assumption" (Hijzen et al., 2011). However, "there may be unobserved differences that cause both groups to react differently in response to any observed shock" (Hijzen et al. 2011, p. 465). To address this issue, we combine the first-differenced DID estimation with the matching method. In particular, we employ the PSM method to include observable characteristics that explain the propensity to ratify CCD.[8] We first construct matched pairs based on the estimated propensity scores from the PSM method and then implement first-differenced DID regressions over the sample constructed from the matched pairs.

We first estimate the propensity to ratify the CCD[9] using the following logistic regression:

$$\begin{aligned} P(CCD_{j,post} = 1) = F(&\ln GDP_{j,pre}, \ln PCGDP_{j,pre}, \\ &CUL/NON_{j,pre}, NON\_ENGLISH_{j,pre}, \\ &MIGRANT_{j,pre}, UNESCO_{j,pre}), \end{aligned} \tag{2}$$

[8] See Cameron and Trivedi (2005) and Abadie and Imbens (2006) for a more detailed explanation of the PSM method, which is widely used in the trade literature. For instance, in the case of international agreements, Baier and Bergstrand (2009) employed the PSM method to examine the effects of free trade agreements.

[9] Baier and Bergstrand (2004) estimated the determinants of free trade agreements. To the best of our knowledge, our study is the first to econometrically examine the determinants of ratifying CCD.

where F is a logistic cumulative distribution function and the subscript *pre* indicates the pre-treatment period. We expect that non-English-speaking countries have a stronger tendency to ratify CCD to protect their cultural products. Therefore, we include $NON\_ENGLISH$, a binary variable that takes the value of one if a country does not use English as its official language and zero otherwise. We construct $NON\_ENGLISH$ from CEPII's *GeoDist database* (Mayer and Zignago 2011).

We also expect a country with a higher ratio of core cultural goods imports to those of non-cultural goods, CUL/NON, to have a stronger tendency to ratify CCD, because such a country prefers the culture of other countries and respects the value of cultural diversity. The variable CUL/NON is the ratio of the import values of core cultural goods to non-cultural goods, defined as $IMPORT\_CUL/IMPORT\_NON$.

Similarly, a country with a higher percentage of migrants in its population, $MIGRANT$, should have a stronger tendency to ratify CCD because it would place value on cultural diversity. The variable $MIGRANT$ is the percentage of migrants in a country's population constructed from the World Bank's *World Development Indicators*.

We also include a variable $UNESCO$ as an explanatory variable because an earlier member of UNESCO might better understand its policy. The variable $UNESCO$ is defined as 2007 minus the year during which the country joined UNESCO.

Finally, the economic variables $\ln GDP$ and $\ln PCGDP$ are included to control for a country's general economic factors. All explanatory variables are averaged over 2004–2005.

Table 8: Propensity scores for ratifying CCD

	(1) CCD
lnGDP_pre	0.087
	[0.136]
lnPCGDP_pre	0.112
	[0.221]
CUL/NON_pre	2.016**
	[0.877]
NON_ENGLISH	2.174***
	[0.615]
MIGRANT_pre	-0.001
	[0.020]
UNESCO_pre	0.000
	[0.017]
Constant	-5.229**
	[2.429]
N	107
pseudo-R-squared	0.175
log-likelihood	-58.371

Notes: Robust standard errors are given in square brackets. *** and ** indicate significance at the 1% and 5% levels, respectively.
The sample includes 67 contracting and 40 non-contracting countries because one contracting country, Romania, is excluded for lack of data on its migrants. Therefore, the number of observations in Table 8 is $108 - 1 = 107$.

Table 8 presents the estimation results of Eq. (2). The coefficients of $NON\_ENGLISH$ and CUL/NON are significantly positive, as expected. However, the coefficients of the other variables are insignificant at conventional levels, suggesting that they are not major determinants of ratifying CCD.

Based on these estimated propensity scores, contracting countries are matched with non-contracting countries through the nearest-neighbor (one-to-one) matching method with replacement. The non-contracting country $c(j)$ that has the closest propensity score to CCD ratification is selected for each contracting country j as follows:

$$c(j) = \min_{i \in \{CCD_{i,post}=0\}} ||\hat{P}_j - \hat{P}_i||. \tag{3}$$

The balancing property is satisfied for this matching. By using the matched pairs constructed in this manner, we reconduct the first-differenced DID regressions. The common support condition is supposed. Therefore, the 12 contracting countries with the highest propensity scores[10] are omitted from the matching and the subsequent regression analysis.

Table 9: PSM-DID: Impacts of CCD on cultural imports

Dependent variable: *Relative_Growth_IMPORT*	(1) ALL	(2) HERITAGE	(3) PRINT	(4) MUSIC &PA	(5) ARTS	(6) AUDIO &AV
dCCD	-0.015	0.617**	-0.050	-0.082	0.099	-0.187
	[0.086]	[0.283]	[0.068]	[0.130]	[0.122]	[0.203]
dlnGDP	0.625	0.399	1.379**	0.257	1.480***	-2.455***
	[0.385]	[1.586]	[0.531]	[0.664]	[0.541]	[0.864]
dlnPCGDP	-0.330	1.185	-1.092*	0.730	-0.810**	1.117
	[0.303]	[1.855]	[0.585]	[0.473]	[0.381]	[0.854]
Constant	-0.247***	-0.573**	-0.347***	-0.501***	-0.352***	0.802***
	[0.071]	[0.242]	[0.056]	[0.121]	[0.130]	[0.185]
Observations	110	110	110	110	110	110
R-squared	0.015	0.063	0.103	0.039	0.042	0.046

Notes: Robust standard errors are given in square brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.
The 13 contracting countries (Romania, Austria, Cyprus, Denmark, Finland, France, Germany, Iceland, Niger, Norway, Portugal, Spain, and Sweden) are excluded because of the common support condition or lack of data. As a result, the sample includes 55 contracting countries and 55 matched non-contracting countries.

Tables 9 and 10 present the estimation results using the matched countries. Tables 9 and 10 show the impacts of CCD on cultural imports and on the number of source countries of cultural goods, respectively. The results in Table 9 are almost similar to those of Table 4 in the previous section, but column (2) of Table 9 shows that the coefficient of the CCD dummy on "cultural heritage" turns out to be significantly positive, suggesting that CCD contracting countries tend to have increased their imports of "cultural heritage" more than non-contracting countries. The difference between Table 9 and Table 4 might be caused by differences in the sample size. The analysis in this section additionally excludes 13 contracting countries, including large countries such as France and Germany, as explained in the footnote 10.

The results in Table 10 are qualitatively similar to our main results in Table 5 of the previous section, implying that CCD contracting countries tend to have increased the number of source countries for some categories of cultural goods. As columns (3) and (4) of Table 10 show, the coefficients of the CCD dummy on "printed matter" and "music and the performing arts" are significantly positive, whereas those on "visual arts" and "audio and audiovisual media" are still positive but turn out to be

[10] Those countries are Austria, Cyprus, Denmark, Finland, France, Germany, Iceland, Niger, Norway, Portugal, Spain, and Sweden. In addition to the 12 countries, one contracting country, Romania, does not have data on migrants. As a result, the number of contracting countries in our sample becomes $68 - 1 - 12 = 55$, and the number of observations in our matched sample is $55 \times 2 = 110$.

Table 10: PSM-DID: Impacts of CCD on number of countries from which a country imports cultural goods

Dependent variable: *Relative_Growth_EXTEN*	(1) ALL	(2) HERITAGE	(3) PRINT	(4) MUSIC &PA	(5) ARTS	(6) AUDIO &AV
dCCD	0.043**	0.108	0.047*	0.065*	0.027	0.082
	[0.019]	[0.067]	[0.024]	[0.035]	[0.029]	[0.054]
dlnGDP	0.317***	0.684**	0.222**	0.329**	0.242	-0.415
	[0.082]	[0.272]	[0.106]	[0.165]	[0.203]	[0.358]
dlnPCGDP	-0.075	-0.185	-0.100	0.183	0.239	0.409
	[0.061]	[0.277]	[0.084]	[0.168]	[0.206]	[0.391]
Constant	-0.067***	-0.108	-0.011	-0.209***	-0.082**	0.009
	[0.021]	[0.067]	[0.025]	[0.052]	[0.035]	[0.045]
Observations	110	110	110	110	110	110
R-squared	0.132	0.055	0.052	0.139	0.148	0.051

Notes: Robust standard errors are given in square brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.
The 13 contracting countries (Romania, Austria, Cyprus, Denmark, Finland, France, Germany, Iceland, Niger, Norway, Portugal, Spain, and Sweden) are excluded because of the common support condition or lack of data. As a result, the sample includes 55 contracting countries and 55 matched non-contracting countries.

insignificant. In addition, the coefficient of the CCD dummy on "ALL" becomes significantly positive in Table 10. Table 10 again suggests that, more than the non-contracting countries, CCD contracting countries tend to have increased their source countries for some categories of cultural goods.

In summary, this subsection confirms and reinforces the previous results that CCD might contribute to cultural diversity by increasing the country margin of cultural imports. The estimation results in this subsection are in line with the previous results that are inconsistent with the fear of disguised protectionism. Rather, they show that CCD contracting countries tend to have increased their imports of "cultural heritage" more than non-contracting countries.

7.2 Countries ratifying CCD between 2005 and 2009

In the main analysis in the previous section, we use countries ratifying CCD between 2005 and 2007 as treated countries and exclude from the estimation sample countries that ratified the CCD after 2008. Most large contracting countries ratified CCD before 2008, but Switzerland, Australia, and other smaller countries ratified it after 2008. In this subsection, to check the sensitivity of our estimation results, we include in the estimation sample countries that ratified CCD during 2005–2009 as treated countries. We exclude countries that ratified CCD in 2010. The controlled countries are those that did not ratify CCD during 2005–2010. Although 19 contracting countries[11] should be additionally included in our sample as treated countries; one of these countries, Argentina, is excluded because it lacked GDP data. As a result, 85 contracting countries and 41 non-contracting countries are included in the estimation sample. The variables are averaged over 2004–2005 for the pre-treatment period, whereas the 2010 values are used for the post-treatment period.

The estimation results are displayed in Tables 11 and 12. Table 11 confirms the previous results that CCD did not affect the aggregated values of cultural imports. Table 12 shows that, more than non-contracting countries, CCD contracting countries significantly increased the number of source

[11]Those 19 countries are Argentina, Australia, Burundi, Barbados, Switzerland (Liechtenstein), Congo, Dominican Republic, Georgia, Guinea, Grenada, Guyana, Hungary, Nigeria, Nicaragua, Netherlands, Qatar, Chad, Saint Vincent and the Grenadines, and Zimbabwe.

countries from which they import "visual arts." The impacts of CCD on the number of source countries for "music and the performing arts" and "audio and audiovisual media" turn out to be insignificant but still positive. Overall, the results in this subsection are in line with the main results in section 6.

Table 11: Impact of CCD on imports of cultural goods (2004–2010, countries ratifying CCD between 2005 and 2009)

Dependent variable: *Relative_Growth_IMPORT*	(1) ALL	(2) HERITAGE	(3) PRINT	(4) MUSIC &PA	(5) ARTS	(6) AUDIO &AV
dCCD	0.018	0.342	0.057	0.068	0.132	0.318
	[0.113]	[0.367]	[0.100]	[0.163]	[0.200]	[0.242]
dlnGDP	-0.488	-2.732**	0.299	-0.745	0.832	-1.744*
	[0.353]	[1.195]	[0.307]	[0.589]	[0.645]	[1.029]
dlnPCGDP	0.498	0.797	-0.031	1.341**	-0.473	0.430
	[0.431]	[1.403]	[0.329]	[0.582]	[0.642]	[1.042]
Constant	-0.211*	-0.272	-0.404***	-0.605***	-0.328	0.215
	[0.112]	[0.375]	[0.099]	[0.172]	[0.206]	[0.249]
Observations	126	126	126	126	126	126
R-squared	0.010	0.045	0.008	0.029	0.010	0.054

Notes: Robust standard errors are given in square brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.
The sample includes 86 contracting and 40 non-contracting countries. The 18 countries ratifying CCD during 2008–2009 are newly included. They are Australia, Burundi, Barbados, Switzerland (Liechtenstein), Congo, Dominican Republic, Georgia, Guinea, Grenada, Guyana, Hungary, Nigeria, Nicaragua, Netherlands, Qatar, Chad, Saint Vincent and the Grenadines, and Zimbabwe.

7.3 Cultural imports from countries without a common language or distant countries

If a contracting country imports more from countries with similar cultures and reduces its imports from countries with distant cultures, then cultural diversity is not promoted. Therefore, in this subsection, we attempt to control for the similarities among cultures across countries. In particular, we first investigate whether CCD contracting countries increased their cultural imports from countries without a common language.[12] We utilize data on the common language between any country pair from the CEPII's GeoDist database and specify cultural imports from countries without a common language. We define that a country pair has a common language if a language is spoken by at least 9% of the population in both countries or if it has a common official language based on the GeoDist database.

Table 13 shows the impact of CCD on cultural goods imports from countries without a common language, using the same specification as that in Table 4. We find that CCD contracting countries have relatively decreased their imports of "printed matter" from countries without a common language relative to non-contracting countries. The results seem to reflect the fact that "printed matter" is a language-related good. We find that no impact of CCD exists on imports of any other types of cultural goods that are less related to language. In summary, the findings suggest that CCD failed to promote the cultural diversity of language-related goods but did not have any negative impact on less-language-related goods.

[12]We also examine whether CCD contracting countries increased their cultural imports from countries with a colonial link. However, we do not find any significant impacts.

Table 12: Impact of CCD on number of countries from which a country imports cultural goods (2004–2010, countries ratifying CCD between 2005 and 2009)

Dependent variable: *Relative_Growth_EXTEN*	(1) ALL	(2) HERITAGE	(3) PRINT	(4) MUSIC &PA	(5) ARTS	(6) AUDIO &AV
dCCD	0.036	0.092	0.028	0.049	0.096**	0.062
	[0.027]	[0.083]	[0.030]	[0.038]	[0.044]	[0.064]
dlnGDP	0.086	-0.215	0.066	-0.146	0.146	-0.115
	[0.086]	[0.298]	[0.095]	[0.216]	[0.190]	[0.245]
dlnPCGDP	-0.003	0.087	0.024	0.488	0.125	-0.201
	[0.091]	[0.264]	[0.097]	[0.300]	[0.195]	[0.212]
Constant	-0.025	-0.012	0.015	-0.160***	-0.120**	0.006
	[0.031]	[0.093]	[0.034]	[0.041]	[0.054]	[0.066]
Observations	126	126	126	126	126	126
R-squared	0.022	0.014	0.012	0.077	0.052	0.026

Notes: Robust standard errors are given in square brackets. *** and ** indicate significance at the 1% and 5% levels, respectively.
The sample includes 86 contracting and 40 non-contracting countries. The 18 countries ratifying CCD during 2008–2009 are newly included. They are Australia, Burundi, Barbados, Switzerland (Liechtenstein), Congo, Dominican Republic, Georgia, Guinea, Grenada, Guyana, Hungary, Nigeria, Nicaragua, Netherlands, Qatar, Chad, Saint Vincent and the Grenadines, and Zimbabwe.

Table 13: Impact of CCD on imports of cultural goods from countries without a common language (2004–2010)

Dependent variable: *Relative_Growth_IMPORT*	(1) ALL	(2) HERITAGE	(3) PRINT	(4) MUSIC &PA	(5) ARTS	(6) AUDIO &AV
dCCD	-0.193	-0.202	-0.296**	-0.066	-0.142	0.373
	[0.153]	[0.410]	[0.127]	[0.228]	[0.179]	[0.299]
dlnGDP	-0.951	-0.896	-0.674	-0.609	0.418	-2.529
	[0.874]	[2.698]	[0.680]	[1.456]	[0.865]	[1.624]
dlnPCGDP	0.733	2.579	0.377	1.728*	-0.541	0.432
	[0.592]	[2.851]	[0.519]	[0.940]	[0.669]	[1.462]
Constant	0.147	0.021	0.110	-0.310	-0.025	0.389
	[0.187]	[0.477]	[0.135]	[0.285]	[0.219]	[0.339]
Observations	108	108	108	108	108	108
R-squared	0.018	0.019	0.051	0.027	0.013	0.055

Notes: Robust standard errors are given in square brackets. ** and * indicate significance at the 5% and 10% levels, respectively.
The sample includes 68 contracting and 40 non-contracting countries (see Tables A.2 and A.3).

Second, we examine whether CCD contracting countries increased their cultural imports from culturally distant countries. Several studies have proposed a proxy for cultural distance or cultural proximity. Felbermayr and Toubal (2010) employed bilateral scores in the Eurovision song contest as such a proxy. Hellmanzik and Schmitz (2015) used bilateral hyperlinks and bilateral website visits to examine the impact of cultural or virtual proximity on trade in audiovisual services. These proxies are attractive, but our study needs a more general and simpler proxy that covers a broader range of our sample countries. In this respect, Schulze (1999) pointed out that cultural proximity is a function of geographical distance. Following his suggestion, we use geographical distance as a proxy for cultural distance because it enables us to keep the number of sample countries constant, although the former might be an imperfect measure of the latter. We construct a distance-weighted import, $WIMPORT_j$, for each importing country j, as follows:

$$WIMPORT_{ij} = \frac{IMPORT_{ij} \times DISTANCE_{ij}}{\overline{DISTANCE_j}} \tag{4}$$

where $DISTANCE_{ij}$ is the distance between country i and country j, and $\overline{DISTANCE_j}$ is a mean value of all pairs' $DISTANCE_{ij}$ for country j in our sample. Therefore, the distance-weighted imports become larger if a country imports from a more distant country. We conduct the same estimation as those in Table 4 using the aggregated value of distance-weighted imports.

The estimation results are presented in Table 14. We do not find any significant impact of CCD on the distance-weighted imports of cultural goods. In other words, Table 14 shows that no evidence exists that CCD contracting countries decreased their imports of cultural goods from distant countries more than non-contracting countries.

Table 14: Impact of CCD on imports of cultural goods from distant countries (2004–2010)

Dependent variable: $Relative\_Growth\_IMPORT_j$	(1) ALL	(2) HERITAGE	(3) PRINT	(4) MUSIC &PA	(5) ARTS	(6) AUDIO &AV
dCCD	0.056	0.181	-0.020	0.120	0.018	0.228
	[0.108]	[0.327]	[0.076]	[0.184]	[0.173]	[0.236]
dlnGDP	-0.601	-0.202	-0.259	-0.467	1.116	-1.667
	[0.727]	[1.989]	[0.503]	[1.143]	[0.917]	[1.226]
dlnPCGDP	0.350	1.459	0.049	1.341*	-0.971	0.564
	[0.531]	[2.069]	[0.374]	[0.767]	[0.719]	[1.105]
Constant	-0.149	-0.154	-0.198**	-0.535**	-0.268	0.360
	[0.128]	[0.346]	[0.090]	[0.223]	[0.211]	[0.253]
Observations	108	108	108	108	108	108
R-squared	0.010	0.015	0.004	0.030	0.012	0.032

Notes: Robust standard errors are given in square brackets. ** and * indicate significance at the 5% and 10% levels, respectively.
The sample includes 68 contracting and 40 non-contracting countries (see Tables A.2 and A.3).

8 Conclusions

In this study, we attempted to identify the impacts of CCD on cultural imports by using 2004–2010 trade data and the first-differenced DID method, and obtained the following two main findings. First, our empirical results suggest that CCD does not work as disguised protectionism. The estimation results find no evidence that the relative growth in the imports of cultural goods by CCD contracting countries is lower than that by CCD non-contracting countries. Rather, we find positive impacts of CCD on imports of cultural heritage when we use the sample of matched countries.

Second, we find evidence that CCD has partly contributed to the promotion of cultural diversity. Our estimation results show that CCD contracting countries tend to have increased their country margins of importing some type of cultural goods relatively more than non-contracting countries in comparison with the increase in the country margin of non-cultural imports.

Although our analysis provides a medium-term assessment in favor of CCD as the first empirical investigation, it has several limitations. First, as argued in Section 3, we limit our analysis to trade in goods and excluded trade in services and e-commerce transactions of cultural content, such as the iTunes store, from our analysis because of data availability issues, although they will become increasingly dominant in the future (Hellmanzik and Schmitz 2015). Thus, to assess the impact of CCD, future research can improve our analysis by including trade in cultural services and online transactions of cultural contents.

Second, we understand that a country of cultural production is not necessarily the same as a country of cultural creation in the sense that the cultural content and cultural product may have different origins, as discussed in Disdier et al. (2010). For example, music may be created in the United Kingdom, but the CD may be printed in United States; a book may be written by an U.S. writer but printed in Hong Kong. However, our data cannot identify the country of cultural creation because our trade data are based on customs, and therefore, report the flow from the country in which the CD or the book is printed (and not created) to the country in which it is consumed.

Finally, future research can extend our analysis by using longer panel data and provide long-term assessment of CCD.

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Appendix 1: Gravity equation

In the previous sections of the main text, we employed the first-difference DID specification to examine the impacts of the CCD on international trade in cultural goods. This approach is based on Aichele and Felbermayr (2012) and has advantages in addressing the endogeneity issue. However, this approach is not necessarily the most common in the trade literature. Many studies have employed a bilateral gravity equation to examine the effects of a policy change on international trade. In addition, previous studies examined international trade in cultural goods using gravity equations (e.g., Disdier et al. 2010, Hellmanzik and Schmitz 2015, and Schulze 1999).

The gravity equation has the advantage to increase the number of sample countries. We can utilize year-by-year information on the CCD-ratification status in panel data and include all countries that ratified CCD during the sample period (2004–2010) in a panel gravity framework.

Therefore, this section employs the gravity equation and examines the effect of CCD on bilateral trade in cultural goods. Although the first-differenced DID approach allows us to control for the endogeneity in the previous sections, this endogeneity can also be controlled for in a gravity estimation with country-pair fixed effects, FE_{ij}, in the panel setting (Baier and Bergstrand 2007). In particular, we conduct the fixed effect estimation of the following gravity equation:

$$\begin{aligned} \ln IMPORT_{ijt} = \beta_0 + \beta_1 CCD_{it} + \beta_2 CCD_{jt} \\ + FE_i + FE_j + FE_{ij} + YEAR_t \end{aligned} \tag{5}$$

where $IMPORT_{ijt}$ is country j's core cultural goods imports from country i in year t. CCD_{it} is a dummy variable that takes the value of one if exporting country i is a contracting country of CCD, whereas CCD_{jt} is a dummy variable that takes the value of one if importing country j is a contracting country of CCD. To address the cross-sectional biases given the multilateral trade resistance or the "omitted price" bias (Anderson and Van Wincoop 2003), we follow the approach of Redding and Venables (2004) and include exporter and importer fixed effects, FE_i and FE_j, respectively. We cannot include time-varying country fixed effects, FE_{it} and FE_{jt}, because they will eliminate the effects of CCD, CCD_{it}, and CCD_{jt}. Instead, we include year fixed effects, $YEAR_t$, to control for time-series "omitted price" bias, although they cannot remove the time-series "omitted price" bias at the country level, as suggested by Baldwin and Taglioni (2006).

We employ the fixed effect model to estimate equation (5) as in Baier and Bergstrand (2007). This approach can control for the endogenous bias caused by the tendency that countries self-select into CCD because we include country fixed effects and country-pair fixed effects in the panel gravity. Column (1) of Table A.1 shows the results of the gravity equation (5) of bilateral trade in cultural goods during 2004–2010. Both coefficients of CCD_{it} and CCD_{jt} on trade in cultural goods are significantly positive, indicating that CCD has positive impacts on both exports and imports in core cultural goods. In column (1) of Table A.1, the coefficient of CCD_{jt} is quantitatively similar to those in Table 4, which implies that CCD contracting countries import 2.2% more core cultural goods than non-contracting countries. Similarly, the coefficient of CCD_{it} implies that CCD contracting countries export 2.3% more core cultural goods than non-contracting countries.

Column (2) of Table A.1 shows the estimation results of the gravity equation that uses the number of core cultural products imported by country j from country i instead of the bilateral trade values of core cultural goods. The coefficient of CCD_{it} is negative but insignificant, whereas the coefficient of CCD_{jt} is positive but insignificant, as in Table 7. The result implies that the impacts of CCD on the number of imported cultural products are negligible, as shown in the first-differenced DID results.

To keep the number of sample countries constant and the estimation results comparable, we take the log of $IMPORT_{ijt} + 1$ and $PRODUCT_{ijt} + 1$ in the previous analysis, although Silva and Tenreyro (2006) revealed that this procedure leads to inconsistent parameter estimation. To address this issue, we also employ the Poisson pseudo-maximum-likelihood (PPML) estimator using the dependent variables in level, as proposed by Silva and Tenreyro (2006). The PPML method prevents us from

including country-pair fixed effects, FE_{ij}, into the estimation for computational limitations. Therefore, we follow previous studies such as Disdier et al. (2010) and Hellmanzik and Schmitz (2015) and conduct estimations without country-pair fixed effects but with standard bilateral gravity variables, such as the log of distance between exporting and importing countries ($\ln Distance$) and a dummy for common language ($Language$), as explanatory variables.

The estimation results using the PPML method are presented in columns (3) and (4) in Table A.1. The magnitude of the coefficients becomes slightly larger and the coefficient of CCD_j becomes significant. The upward bias may be caused by the fact that we cannot control for the bias attributable to self-selection in CCD in PPML estimation without country-pair fixed effects. However, the estimated signs of the coefficients are the same as those in columns (1) and (2).

To summarize, our analysis again finds that CCD has not supported disguised protectionism. Rather, it suggests that the CCD has positive impacts on the bilateral international trade in core cultural goods in the standard gravity framework. The magnitude of the coefficients in the gravity framework are similar to those in the first-differenced DID specification. The effects of CCD on imports and exports of core cultural goods are around 2%. In addition, the gravity analysis reveals that CCD has not decreased the number of traded cultural goods, as shown by the first-differenced DID approach.

Table A.1: Gravity equation of cultural goods (2004–2010)

	(1)	(2)	(3)	(4)
Method	Fixed effects	Fixed effects	PPML	PPML
Dep. Var.	IMPORT	PRODUCT	IMPORT	PRODUCT
ln Distance			-0.670***	-0.417***
			[0.052]	[0.022]
Language			0.861***	0.697***
			[0.149]	[0.042]
CCD_i	0.023**	-0.004	0.084	-0.008
	[0.009]	[0.003]	[0.054]	[0.007]
CCD_j	0.022**	0.003	0.044	0.012*
	[0.010]	[0.003]	[0.077]	[0.006]
Exporter FE	Yes	Yes	Yes	Yes
Importer FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	134880	134880	134880	134880
R-squared	0.005	0.003	0.814	0.646

Notes: Standard errors (country-pair clustered) are given in square brackets. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.
In our sample, the maximum number of countries that are members of both WTO and UNESCO is 141, although the number varies across years. The sample covers seven years (2004–2010). Therefore, the maximum number of observations is $141 \times 140 \times 7 = 138,180$.

Appendix 2

Table A.2: List of CCD contracting countries (68 countries)

ISO code	Country name	ISO code	Country name
ALB	Albania	JOR	Jordan
ARM	Armenia	KEN	Kenya
AUT	Austria	KHM	Cambodia
BEN	Benin	KWT	Kuwait
BFA	Burkina Faso	LCA	Saint Lucia
BGD	Bangladesh	LTU	Lithuania
BGR	Bulgaria	LVA	Latvia
BOL	Bolivia	MAC	Macau
BRA	Brazil	MDA	Moldova, Republic of
CAN	Canada	MDG	Madagascar
CHL	Chile	MEX	Mexico
CHN	China	MKD	Macedonia, the former Yugoslav Republic of
CIV	Cote d'ivoire	MLI	Mali
CMR	Cameroon	MLT	Malta
CUB	Cuba	MNG	Mongolia
CYP	Cyprus	MOZ	Mozambique
DEU	Germany	MUS	Mauritius
DJI	Djibouti	NER	Niger
DNK	Denmark	NOR	Norway, Svalbard and Jan Mayen
ECU	Ecuador	NZL	New Zealand
EGY	Egypt	OMN	Oman
ESP	Spain	PAN	Panama
EST	Estonia	PER	Peru
FIN	Finland	POL	Poland
FRA	France(+DOM TOM)	PRT	Portugal
GAB	Gabon	PRY	Paraguay
GBR	United kingdom	ROM	Romania
GRC	Greece	SEN	Senegal
GTM	Guatemala	SVK	Slovakia (Slovak Republic)
HRV	Croatia (local name: Hrvatska)	SVN	Slovenia
IND	India	SWE	Sweden
IRL	Ireland	TGO	Togo
ISL	Iceland	TUN	Tunisia
ITA	Italy	URY	Uruguay

Notes: Countries that have deposited their respective instruments of ratification, acceptance, approval, or accession after 2008 are excluded.

Table A.3: List of CCD non-contracting countries (40 countries)

ISO code	Country name	ISO code	Country name
AGO	Angola	MAR	Morocco
ARE	United Arab Emirates	MDV	Maldives
ATG	Antigua and Barbuda	MRT	Mauritania
BHR	Bahrain	MYS	Malaysia
BLZ	Belize	NPL	Nepal
CAF	Central African Republic	PAK	Pakistan
COL	Colombia	PHL	Philippines
COM	Comoros	PNG	Papua New Guinea
CRI	Costa Rica	RWA	Rwanda
DMA	Dominica	SLB	Solomon Islands
FJI	Fiji	SLE	Sierra Leone
GHA	Ghana	SLV	El Salvador
GMB	Gambia	SUR	Suriname
GNB	Guinea-Bissau	THA	Thailand
IDN	Indonesia	TUR	Turkey
ISR	Israel	TZA	Tanzania, United Republic of
JPN	Japan	UGA	Uganda
KGZ	Kyrgyzstan	USA	USA, Puerto Rico and U.S. Virgin Islands
KNA	Saint Kitts and Nevis	VEN	Venezuela
LKA	Sri Lanka	ZMB	Zambia

Table A.4: Descriptive statistics of cultural imports by FCS category

Variable	**N**	**Min**	**Mean**	**Max**	**S.D.**	**Sum**
All	216	0.001	0.600	16.049	1.894	129.615
HERITAGE	216	0.000	0.022	1.494	0.137	4.797
PRINT	216	0.001	0.181	3.543	0.512	39.044
MUSIC & PA	216	0.000	0.184	2.582	0.449	39.741
VISUAL ARTS	216	0.000	0.102	5.189	0.540	22.136
AUDIO & AM	216	0.000	0.111	4.542	0.437	23.896
NON	216	0.109	77.782	1,713.594	204.761	16800.879

Note: Cultural imports are in billions of U.S. dollars.

Table A.5: UNESCO Framework for Cultural Statistics

Code	FCS category	HS6	Description
1	Cultural heritage	970500	Collections and collectors pieces
1	Cultural heritage	970600	Antiques older than one hundred years
2	Printed matter	490110	Brochures, leaflets, and similar, in single sheets
2	Printed matter	490191	Dictionaries and encyclopedias
2	Printed matter	490199	Printed reading books, except dictionaries and others
2	Printed matter	490210	Newspapers, journals, and periodicals, > 3 issues/week
2	Printed matter	490290	Newspapers, journals, and periodicals, < 4 issues/week
2	Printed matter	490300	Children's picture, drawing, or coloring books
2	Printed matter	490400	Music, printed or in manuscript
2	Printed matter	490510	Globes, geographical, printed
2	Printed matter	490591	Maps and charts, printed, in book form
2	Printed matter	490599	Maps and charts, printed, other than book form
2	Printed matter	490900	Postcards, printed or illustrated, greeting cards
2	Printed matter	491000	Calendars, printed
2	Printed matter	491191	Pictures, designs, and photographs
2	Printed matter	970400	Used postage and revenue stamps, first day covers, and others
3	Music and the performing arts	852410	Recorded gramophone records
3	Music and the performing arts	852421	Recorded magnetic tapes, width < 4 mm
3	Music and the performing arts	852422	Recorded magnetic tapes, width 4-6.5 mm
3	Music and the performing arts	852423	Recorded magnetic tapes, width > 6.5 mm
3	Music and the performing arts	852490	Sound recordings other than photographic products nes
4	Visual arts	442010	Statuettes and other ornaments of wood
4	Visual arts	691310	Statuettes & ornamental articles of porcelain or china
4	Visual arts	691390	Ceramic statuettes, ornamental articles, not porcelain
4	Visual arts	830621	Statuettes, other ornaments plated with precious metal
4	Visual arts	830629	Statuettes and other ornaments, base metal, unplated
4	Visual arts	960110	Worked ivory, articles of ivory
4	Visual arts	960190	Animal carving material, articles, nes
4	Visual arts	970110	Paintings/drawings/pastels executed by hand
4	Visual arts	970190	Collages, similar decorative plaques
4	Visual arts	970200	Original engravings, prints, and lithographs
4	Visual arts	970300	Original sculptures and statuary, in any material
5	Audio and Audiovisual media	370590	Photographic plates or film, exposed or developed nes
5	Audio and Audiovisual media	370610	Cinematograph film, exposed and developed, width >35m
5	Audio and Audiovisual media	370690	Cinematograph film, exposed & developed, width <=35mm
5	Audio and Audiovisual media	950410	Video games used with a television receiver

Notes: FCS means UNESCO Framework for Cultural Statistics. The classification is based on UNESCO (2005, pp.91–92).