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Asymmetric effects of cultural institutes on trade and foreign direct investment

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KEYWORDS

bilateral trade, cultural institutes, foreign direct investment, gravity model

1 | INTRODUCTION

Although cultural institutes have been around for many years, and particularly active after the Second World War, the interest in these institutes has been rekindled after China launched its Confucius Institutes in 2004.¹ The rapid increase in the number of Confucius Institutes worldwide since 2004 has caused some concerns over the Chinese government's attempt to extend its soft power. For example, there have been 475 Confucius Institutes established in 127 countries as of 2014, and Xinhua (2006) noted that the Chinese government aims to reach 1,000 Confucius Institutes by the year 2020. Soft power is a concept proposed by Nye (2004) to describe a country's ability to obtain preferred international relations outcomes by attracting other countries to its culture, political ideals and policies, and then persuading them to change their attitudes and preferences; conversely, hard power refers to the use of coercion such as economic sanctions, trade restrictions or military force to influence the behaviour of other countries in international political relations. Consistent with popular conjecture, Xie and Page (2013) found that Confucius Institutes did not affect China's soft power based on the Pew Research survey. In contrast, Rose (2016) used the BBC survey as a proxy for soft power and determined that an increase in soft power helped promote trade. Lien, Oh, and Selmier (2012) concluded that the Confucius Institute does help promote exports and FDI from China to host countries of these institutes. These positive effects of the Confucius Institutes were further validated with updated data in Ghosh, Lien, and Yamarik (2017).

Lien and Lo (2017) found significant positive effects on both trade and FDI using a gravity model on data from the German network of Goethe Instituts and, to some extent, for the British Council. They concluded the paper by pointing out an important similarity—the cultural institute effect on FDI is much stronger than on trade for the two traditional European cultural institute

¹It is important to point out that not every cultural institute programme, or every institute within a cultural institute programme, offers language services. For example, Huber and Uebelmesser (2018) noted that the Goethe Institut has established some institutes that offer only non-language services related to culture, and that the number of language institutes/centres provided by Goethe Institut within a particular country was found to be positively correlated with the number of people from that partner country that migrated to Germany. Throughout this paper, we refer to institutes that have cultural centres as cultural institutes, whether they offer language services or not.



programmes. This is consistent with the results found by Lien et al. (2012) for China's Confucius Institute programme, but it should be noted that Lien and Lo (2017) and Lien et al. (2012) focused on different cultural institute programmes over different sampling periods.

This paper attempts to conduct a comparative analysis of the effects of different cultural institute programmes (Cervantes Institute, the Confucius Institute and the Goethe Institut) on trade and FDI within the same sample period.² The aim of our analysis is to identify if there are any stylised international patterns for the effects on trade and FDI related to the three cultural institute programmes. This comparison of cultural institute programmes can provide some useful implications for policymakers in other countries who consider building similar programmes. In addition, considering the soft power of a cultural institute programme can be measured by its effects of increasing international trade and FDI, the analytical results of our paper also provide insights to a recent concern—how does the Chinese government's approach to extend its soft power by rapidly building Confucius Institutes worldwide fare in comparison to other well-established cultural institute programmes?

We included the Cervantes Institute of Spain in the analysis because the Cervantes Institute and Goethe Institut are both from Europe and conduct very similar operations with a strong emphasis on cultural events. On the other hand, the Cervantes Institute represents a relatively newer cultural institute programme, similar to the Confucius Institute. While the Confucius Institutes are generally located on a university campus, the Cervantes Institutes and Goethe Instituts tend to be in independent locations. However, the Cervantes Institute programme might be starting to adopt the same approach as the Confucius Institute programme because Cervantes Institutes were recently established at Harvard University and Texas A&M University in San Antonio. Overall, the location strategy of the Cervantes Institute seems to be a hybrid of the strategies of the Goethe Institut and the Confucius Institute.

As is now common in the literature, gravity models are used in this study to examine the effects of cultural institutes on trade and FDI between the host and origin countries. Both the OLS (ordinary least squares) and PPML (Poisson pseudo-maximum likelihood) methods are used to estimate the models for a robustness check. It was determined that cultural institutes have positive effects on bilateral trade and FDI outflows, particularly when the host countries are developing countries. In addition, it was determined that the Goethe Institut produced the greatest impact, followed by the Cervantes Institute, and then the Confucius Institute. The rest of the paper is organised as follows: Section 2 offers a brief history of the three cultural institutes and their geographic footprints; Section 3 discusses the estimation methodology employed in this paper; Section 4 describes the data; Section 5 presents the empirical results; and Section 6 provides conclusions and recommendations based on the results.

2 | CULTURAL INSTITUTES

Although some cultural institutes were established before the Second World War, Furjesz (2013) argued that cultural institute projects were more aggressively pursued after the Second World War by the UK and France to balance the worldwide domination of the United States. Germany

²We note that our analysis aims to identify the similarities and differences in the economic effects across the different cultural institute programmes. In contrast, Demir and Im (2018) conducted cross section and panel analysis to estimate the economic effects of 1,266 cultural institutes from eight different cultural institute programmes. In their analysis, they implicitly assumed that the effect of each of the eight cultural institute programmes is homogenous.

followed suit with the establishment of the Goethe Institut (GI) to replace the pre-existing German Academy. Specifically, the GI is a cultural association operating worldwide and largely financed by the German national government. The mission, like other cultural institutes, is to promote the country's language and culture around the globe. The GI was founded in 1951 and has since grown to become one of the largest worldwide cultural institutes. In 1965, there were GIs in 55 countries, and by 2014, this number increased to 92. As of October 2018, there are 159 GIs in 98 countries.

The Cervantes Institute was created on 21 March 1991, and the headquarters of the Cervantes Institute was established at King's College of Alcal de Henares in January of 1992. In 2015, there were 54 centres in over 20 different countries. The institute is a government agency modelled after the British Council and the Goethe Institut, and it is the smallest of the three cultural institute programmes examined in this paper. However, its European heritage puts the Cervantes Institute in direct competition with the Goethe Institut. This has led the European Parliament to call for more cooperation among various cultural institutes across the European Union member countries (KEA Education Affairs, 2016).

Hanban, a subordinate branch of the Chinese Ministry of Education, established the Confucius Institute in 2004 to promote the appreciation of the Chinese language and the comprehension of Chinese cultural heritage. The number of Confucius Institutes increased rapidly thereafter, with 122 Confucius Institutes and Confucius Classrooms (i.e., the satellites) across 46 countries with 13,000 registered students as of 2006 (Hanban, 2007). By 2014, the numbers grew rapidly to 475 Confucius Institutes and 851 Confucius Classrooms in 127 countries with more than 1,110,000 registered students (Hanban, 2015). While the project was initially patterned after the British Council and Goethe Institut, most of the Confucius Institutes have a foreign partner college or university.

Another possible explanation for the rapid expansion of the Confucius Institute programme could be that it provides a means by which the Chinese government can “spy” on foreign countries. However, it is difficult to support this argument considering the process used to select directors in each of the three cultural institute programmes. In both the Cervantes Institutes and Goethe Institut programmes, government agencies appoint the directors for each institute. Directors for the Cervantes Institutes are appointed by the Board of Ministers for Cervantes Institutes in Spain, and the directors for Goethe Institut are appointed by the Goethe Institut Headquarters. In contrast, the Confucius Institute directors are generally chosen by the foreign partners without any involvement by the Confucius Institute Headquarters.

As mentioned earlier, the rapidly increasing number of Confucius Institutes worldwide since 2004 has caused some concerns over the Chinese government's attempt to extend its soft power. For comparison purposes, Figure 1 gives the global geographic footprints for the three cultural institute programmes. Over time, an institute programme tends to expand the number of institutes in the larger partner countries.³ As seen in Figure 1, there is a heavy concentration of all three cultural institute programmes in Europe. Since Germany and Spain share a common European heritage, and their cultural institute programmes are in direct competition with one another, it is not surprising to see such high concentration of institutes in Europe. Outside of Europe, Germany has

³By the end of 2014, the largest number of Goethe Instituts (Cervantes Institutes) in any one country is seven (9) institutes in France (Brazil). In contrast, there were a total of 106 Confucius Institutes established in the United States by 2014. However, the corresponding number shown in Figure 1 was 100. This is because the software used to create the geographic footprints in Figure 1 only allowed a maximum of 100. The 2nd largest number of Confucius Institutes in a partner country was 25 in the United Kingdom as of 2013.

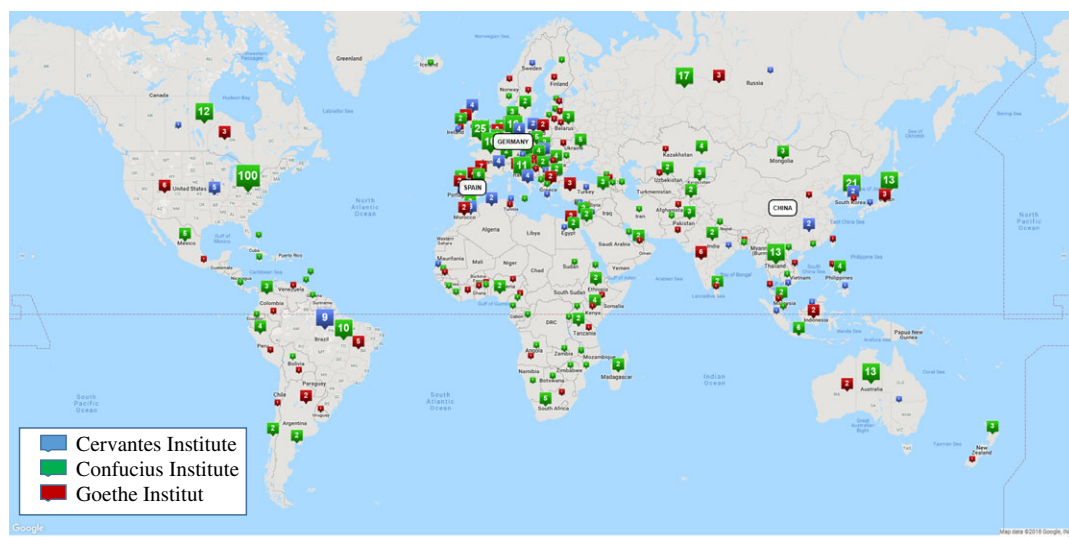


FIGURE 1 The global geographic footprints of Goethe Institut, Cervantes Institute and Confucius Institute [Colour figure can be viewed at wileyonlinelibrary.com]

cultural institutes in many more countries than Spain because the Goethe Institut is a more well-established and larger-scaled cultural institute programme than the Cervantes Institute. Also, it is clearly evident that the Confucius Institutes programme has chosen to take more of a saturation approach by rapidly expanding in countries throughout the world.

Naturally, it would be interesting to know the thought process behind the decisions regarding the optimal number of institutes and their locations. While there are many possible factors, including some that are subjective, the purpose of this paper is to determine the impact of the cultural institute programmes on foreign trade and FDI, based on the significance of these relationships found in previous studies. Using our sample data, German exports to Goethe Institut partner countries account for 86% of its total exports. In contrast, both Spanish and Chinese exports to their cultural institute partner countries account for a smaller portion of their total exports at 75% and 74%, respectively. Similarly, German imports from its cultural institute partner countries accounts for the highest portion of the country's total imports at 89%, followed by 68% of Spanish imports, and 63% of Chinese imports. In addition, German FDI outflows to Goethe Institut partner countries accounts for 89% of its total FDI outflows, which represents a larger portion than that of Spain (79%) and China (78%). The comparison suggests that, among the three cultural institute programmes, the Goethe Instituts were established in countries that already have strong ties in trade and FDI. Therefore, it can be suggested that the decision to establish a cultural institute might vary by programme. In particular, the location of Confucius Institutes seems to be based to some degree on political factors than just purely economic factors. Akhtaruzzaman, Berg, and Lien (2017) provided empirical evidence of an independent positive effect of Confucius Institutes on FDI outflows from China to African countries after controlling for foreign aid from China and natural resources in a particular African country. The study concluded that Confucius Institutes are an important instrument for increasing China's soft power and that the institute location decision goes beyond the motive of seeking natural resources.

3 | METHODOLOGY

Anderson (2011), Boisso and Ferrantino (1997), Fratianni (2009) and Oh and Selmier (2008) have argued that the influence of language and cultural familiarity on international trade and FDI can be analysed in a gravity model.⁴ Therefore, a modified version of the gravity model is used in this study to assess the economic impact of having a cultural institute programme for three countries (i.e., the Goethe Institut from Germany, the Cervantes Institute from Spain and Confucius Institute from China). While the gravity model for trade is rigorously supported by Anderson and van Wincoop (2003), this is not the case for the gravity model for FDI. Thus, the estimation results for FDI should be treated with care. In particular, to examine whether the cultural institute programme is successful at increasing the home country's exports and FDI to its cultural institute host countries, as well as imports and FDI from its cultural institute host countries, a regression model is formulated using the following equation:

$$\begin{aligned} \ln(1 + Y_{it}) = & a_0 + b_1 \ln(1 + CultInst_{it}) + b_2 \ln(GDP_{it}) + b_3 \ln(POP_{it}) + b_4 INF_{it} \\ & + b_5 OPEN_{it}^{Trade} + b_6 OPEN_{it}^{FDI} + b_7 WTO_{it} + b_8 CIWTO_{it} \\ & + b_9 RegionalTA_{it} + b_{10} BilateralTA_{it} + T_t + \varepsilon_i + \mu_{it}, \end{aligned} \quad (1)$$

where Y_{it} represents either the value of the cultural institute home country's exports to country i , FDI to country i , imports from country i or FDI from country i in year t ; $CultInst_{it}$ is the number of cultural institutes in country i ; GDP_{it} is the real gross domestic product (GDP); POP_{it} is the population; INF_{it} is the inflation rate; $OPEN_{it}^{Trade}$ is the trade liberalisation (openness) measured by total imports (or exports) divided by GDP_{it} ; $OPEN_{it}^{FDI}$ is the FDI liberalisation (openness) measured by total inward (or outward) FDI divided by GDP_{it} ; WTO_{it} is country i 's World Trade Organization (WTO) membership; $CIWTO_{it}$ is the cultural institute home country's WTO membership; $RegionalTA_{it}$ is the country i 's regional trade agreement status with the cultural institute home country (i.e., the EU for Germany and Spain, and the Asian-Pacific Economic Cooperation (APEC) for China); $BilateralTA_{it}$ is country i 's bilateral trade agreement status with the cultural institute home country; T_t is year fixed effect; ε_i is country fixed effect; and μ_{it} is an error term. Note that WTO_{it} , $CIWTO_{it}$, $RegionalTA_{it}$ and $BilateralTA_{it}$ are each set up as a binary dummy variable. WTO_{it} ($CIWTO_{it}$) takes a value of one if the cultural institute host country (cultural institute home country) has WTO membership, and $RegionalTA_{it}$ ($BilateralTA_{it}$) takes value of one if the host country has a regional trade agreement (bilateral trade agreement) with the cultural institute home country.

OLS estimation was used to obtain the coefficients. However, Anderson and van Wincoop (2003) cautioned that OLS estimators could be biased if the problem of endogeneity occurs with some of the explanatory variables in the gravity model. Therefore, the 1-year lagged $CultInst$ (i.e., $CultInst_{it-1}$) for the current year cultural institute was used as the independent variable in Equation (1) to reduce the likelihood of a possible endogeneity problem in the OLS estimation. A common alternative remedy for the endogeneity problem is to make use of instrumental variables, such as Hausman–Taylor (HT) instrumental variable estimators (Hausman & Taylor, 1981). However, there are general concerns that credible instrumental variables do not necessarily exist. For example, weak instrument problems are inherently small sample problems in that there is little

⁴For details on the theoretical evolution and associated econometric techniques being used for the gravity model, see Anderson (2011) and Bergstrand and Egger (2011). In addition, Head and Mayer (2013) provide an excellent guide to empirical implementation of the gravity model.

information available in the data to identify the parameter of interest.⁵ Another remedy to reduce potential measurement errors and endogeneity problems inherent in a gravity model is to use generalised method of moments (GMM) estimators developed by Arellano and Bover (1995). However, GMM estimation is only valid under certain restrictive assumptions. Consequently, OLS was chosen as the baseline estimator in this analysis.

Another common concern of using an OLS estimator is that it may be inconsistent in the presence of heteroscedasticity. Heteroscedasticity is likely to occur when a non-linear form of the gravity model with a multiplicative error term is transformed into a linear form by using logarithms. To deal with the heteroscedasticity endemic in gravity models, Santos Silva and Tenreyro (2006) suggest using Poisson pseudo-maximum likelihood (PPML) estimators. They show that the PPML estimator provides consistent estimates of the original non-linear gravity model as long as the model contains the correct set of explanatory variables. In addition to OLS estimation, PPML estimation was performed when the dependent variable in Equation (1) is specified as data in levels (rather than in logarithms as in OLS) to ensure that results obtained using OLS are robust. Throughout this paper, the results are based on both OLS and PPML estimators, with specific attention given to the b_1 coefficient in Equation (1). When this coefficient is estimated to be significantly positive, it provides evidence that once a cultural institute programme is created in a country, there is a positive effect on foreign trade and the level of FDI from each additional cultural institute established in that country.

The overall analysis includes three sets of regressions. The first set estimates the baseline model as illustrated in Equation (1). The second set of regressions aims to control for the impact of transaction costs in the analysis. Rose (2005) demonstrated the importance of including all variables relevant to the characteristics of the countries in the examination when estimating and comparing the effects from different international institutions on trade using a gravity model. In particular, Rose included a set of country characteristic variables (e.g., sharing a common language and/or a common border) to account for the transaction costs associated with bilateral trade. Therefore, based on the Rose (2005) findings, three time-invariant variables (cultural distance, common border and linguistic distance) were added to Equation (1) to control for the impact of transaction costs. The final set is a robustness check on whether the existence of a bilateral trade agreement between the cultural institute home and host countries affects the cultural institute's impact on foreign trade and the level of FDI. This is done by adding an interaction term between the existence of a bilateral trade agreement and the number of cultural institutes to Equation (1).⁶

4 | DATA DESCRIPTIONS

Annual data for the time period from 1980 to 2014 are used for the analysis of the impacts of the Goethe Institut, Cervantes Institute and Confucius Institute on trade (including both imports and

⁵See for example, Baltagi (2013) and Stock, Wright, and Yogo (2002) for thorough reviews on this topic.

⁶In a separate regression analysis, we consider the transmission mechanism of the cultural institute's impact through cultural distance by adding an interaction term between the cultural distance and the number of cultural institutes to Equation (1). However, we find that the cultural institute effects on trade and FDI outflows reported thus far remain robust. Similarly, we conduct regression analysis to consider the transmission mechanism of the cultural institute's impact through linguistic distance by adding an interaction term between the linguistic distance and the number of cultural institutes to Equation (1). We find little evidence of a transmission effect, and the cultural institute effects on trade and FDI outflows remain virtually the same. These results are available upon request from the authors.

exports). Based on availability, the FDI outflow data from 2001 to 2012 is used for Germany and Spain, and from 2003 to 2012 for China to analyse the impact of a cultural institute programme on the level of FDI outflows.⁷ The bilateral trade data between cultural institute home countries and partner countries were obtained from the International Monetary Fund's Direction of Trade Statistics, and the FDI data are from the United Nations Conference on Trade and Development (UNCTAD). The data on the number of Goethe Instituts, Cervantes Institutes and Confucius Institutes were obtained from their official annual reports. WTO membership information was obtained from the WTO official website, and the information on regional and bilateral trade agreements between each of the sample countries and three cultural institute programmes was gathered from Wikipedia (https://en.wikipedia.org/wiki/European_Union) and the Asia-Pacific Economic Cooperation website (<http://www.apec.org/about-us/about-apec/member-economies.aspx>).

All other data listed in Equation (1), including real GDP, national population, inflation rate and the level of openness (measured by trade and FDI liberalisation), were collected from the World Bank's World Development Indicator (WDI) database. In addition, three time-invariant control variables (common border, cultural distance and linguistic distance) are used in the third set of the OLS analysis.⁸ The common border variable is a binary dummy variable that is equal to 1 if a country shares a common border with the cultural institute home country, and 0 if not. The bilateral cultural distance is measured using the Kogut and Singh (1988) index that is based on Hofstede's (1980, 2001) well-established cultural framework.⁹ Finally, the linguistic distance between German and partner countries' national languages is measured using a continuous variable based on linguistic tree diagrams.¹⁰

To avoid sample selection bias, the sample countries include any partner country that has its trade and FDI data available for the cultural institute home country, regardless of whether it is a cultural institute host country or not. The longest data period available is used for any sample country in the analysis. Overall, there are 96 sample countries included in the analysis of the effects for the Goethe Institut, Cervantes Institute and Confucius Institute programmes on exports to the cultural institute host countries, and 94 sample countries for imports from the cultural institute host countries. As for FDI, the analysis was restricted to FDI outflows from cultural institute home countries because the number of observations for FDI inflows to both China and Spain are insufficient for a reliable analytical conclusion. For the FDI outflows analysis, 94, 60 and 86 sample countries are included in the analysis of the effects on FDI outflows to the cultural institute host countries from the Goethe Institut, Cervantes Institute and Confucius Institute, respectively.

⁷Analysis was not done on FDI inflows due to data limitations. For example, there are only 273 FDI inflow observations available for China, which does not ensure a reliable analysis.

⁸Common border and geographic distance cannot both be included in the analysis because they are correlated at 64%.

⁹The Kogut and Singh (1988) index provides a single comparative measure based on the differences between two countries for four original cultural dimensions: power distance, uncertainty avoidance, individualism and masculinity. The exact formula for the index is detailed on page 422, and the data for these four cultural dimensions were collected from *The Hofstede Centre* (<https://geert-hofstede.com/countries.html>).

¹⁰The exact formula of this measure is detailed in equation (7) in Desmet, Ortuno-Ortin, and Weber (2009). In particular, we set the parameter that determines how fast the distance declines as the number of shared branches increases at 0.05. We note that the estimation results reported here are robust to this parameter value being set between 0.04 and 0.10 as suggested by Desmet et al. (2009).



5 | EMPIRICAL EVIDENCE

Table 1 includes the pooled OLS estimation results of Equation (1) for the effects from the Goethe Institut, Cervantes Institute and Confucius Institute on German, Spanish and Chinese exports to partner countries, respectively. Panel A provides the results from the baseline model estimation, Panel B provides the estimation with time-invariant variables, and Panel C provides the estimation with time-invariant variables and a transmission mechanism for bilateral trade agreements. The coefficients are estimated using the full country sample first, and then, they are estimated for the advanced economy and non-advanced economy subsamples based on the International Monetary Fund's definition of advanced economies.

The baseline model regression results for exports (1), (2) and (3) for the full country sample indicate that there are positive effects from the establishment of a Goethe Institut, a Cervantes Institute and a Confucius Institute on German (1.25), Spanish (1.03) and Chinese (0.50) exports to partner countries, respectively. However, it should be noted that these positive effects are mainly from non-advanced economy partners. More specifically, subsample results for the Goethe Institut in (4) and (7) show that there are large positive cultural institute effects with non-advanced economy partners (1.64), but not with advanced economy partners (-0.96). For the Confucius Institute, results in (6) and (9) indicate that the positive cultural institute effect is exclusive with non-advanced economy partners (0.51) since the estimated coefficient b_1 is not significant in the advanced economies subsample. This similar asymmetric pattern is also present for the Cervantes Institute as results in (5) and (8) indicate that the positive cultural institute effect for Spanish on non-advanced economy partners (0.97) is about 33% larger than that for advanced economy partners (0.73).

These same patterns of the results for all three cultural institute programmes that appear in Panel A also appear in Panel B. As noted in the gravity model literature, the impact of transaction costs needs to be controlled, so common border, cultural distance and linguistic distance are added as explanatory variables to control for the impact in the next set of regression analyses. The associated results in (10), (11) and (12) of Panel B for the full country sample indicate that there are significant positive effects from all three cultural institute programmes. It is interesting to note that the size of the effect on German exports (1.27) is the largest, followed by that on Spanish exports (0.89) and Chinese exports (0.43). In addition, the positive effects for all three cultural institute programmes are mainly from non-advanced economy partners. As shown in (16), (17) and (18), the estimated size of the effects is 1.43, 0.79 and 0.54 for German, Spanish and Chinese exports, respectively. The impact of transaction costs associated with the common border is as expected. All full sample and subsample results show that sharing a common border with a partner country bears a positive effect on German, Spanish and Chinese exports. However, the results for cultural difference are mixed, as demonstrated by a lack of significance for some of the coefficients, and varying signs by type of economy and country. Similarly, the impact of linguistic distance varies by type of economy, with a positive impact for Germany and Spain for the advanced economies subsample (and the full sample), but a negative impact for the non-advanced economies subsample.

The combined results from Panels A and B reveal a stylised asymmetric pattern regarding the impact on exports from the establishment of all three cultural institute programmes. That is, there are much stronger positive effects with non-advanced economy partners than with advanced economy partners. Next, an additional set of analyses is conducted as a robustness check. For this particular robustness check, we consider the possibility that the existence of a trade agreement between the cultural institute home and host economies might affect the cultural institute's impact. To deal with this concern, the interaction term "Number of cultural institutes \times the trade agreement

TABLE 1 Regression results: Pooled OLS estimates on the effect of Goethe Institut, Cervantes Institute and Confucius Institute on their exports to partner countries

	Panel A: Baseline model estimation								
	Full country sample			Advanced economy sample			Non-advanced economy sample		
	(1) Goethe Institut	(2) Cervantes Institut	(3) Confucius Institut	(4) Goethe Institut	(5) Cervantes Institut	(6) Confucius Institut	(7) Goethe Institut	(8) Cervantes Institut	(9) Confucius Institut
Number of cultural institutes: \hat{b}_1	1.246*** (0.107)	1.032*** (0.058)	0.495*** (0.058)	-0.960*** (0.070)	0.730*** (0.051)	-0.040 (0.043)	1.642*** (0.097)	0.974*** (0.063)	0.513*** (0.077)
Importer's real GDP: \hat{b}_2	1.246*** (0.107)	0.270*** (0.046)	0.238*** (0.042)	1.320*** (0.052)	0.575*** (0.090)	0.534*** (0.074)	0.125*** (0.040)	0.193*** (0.041)	0.108*** (0.031)
Importer's population: \hat{b}_3	0.185*** (0.017)	0.233*** (0.025)	0.397*** (0.032)	-0.235*** (0.056)	0.265*** (0.090)	0.659*** (0.072)	0.203*** (0.019)	0.221*** (0.023)	0.373*** (0.033)
Importer's inflation rate: \hat{b}_4	0.0004*** (0.0001)	-0.0002*** (0.0001)	-0.0005*** (0.0001)	0.009* (0.005)	0.006 (0.004)	-0.016** (0.008)	-0.0002*** (0.0001)	-0.00005 (0.0001)	-0.0002*** (0.0001)
Importer's trade openness: \hat{b}_5	0.009*** (0.001)	0.002** (0.001)	0.016*** (0.001)	0.008*** (0.001)	0.008*** (0.001)	0.020*** (0.001)	0.010*** (0.001)	-0.00002 (0.002)	0.017*** (0.002)
Importer's FDI openness: \hat{b}_6	-0.004*** (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.005** (0.002)	-0.003* (0.002)	0.004 (0.003)	-0.003*** (0.001)	0.001 (0.001)	-0.003*** (0.001)
Importer's WTO membership: \hat{b}_7	-0.520*** (0.104)	0.318*** (0.106)	0.292*** (0.096)	0.277 (0.159)	0.666*** (0.199)	1.633*** (0.326)	-0.878*** (0.113)	0.147 (0.114)	-0.133 (0.108)
German/Spain/China WTO membership: \hat{b}_8	0.524** (0.247)	0.860*** (0.270)	2.504*** (0.206)	—	—	2.652*** (0.191)	0.981*** (0.291)	1.140*** (0.346)	4.515*** (0.307)
Importer's regional free trade agreements with Germany/Spain/China: \hat{b}_9	2.084*** (0.066)	2.041*** (0.079)	1.325*** (0.094)	1.590*** (0.045)	1.607*** (0.052)	0.746*** (0.060)	1.922*** (0.106)	1.455*** (0.101)	1.233*** (0.089)

(Continues)

TABLE 1 (Continued)

		Full country sample			Advanced economy sample			Non-advanced economy sample		
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Goethe Institute	Cervantes Institute	Confucius Institute	Goethe Institute	Cervantes Institute	Confucius Institute	Goethe Institute	Cervantes Institute	Confucius Institute
Importer's bilateral free trade agreement with Germany/Spain/China: \hat{b}_{10}		1.056*** (0.098)	1.254*** (0.078)	-0.633*** (0.095)	0.627*** (0.069)	1.278*** (0.093)	-0.511*** (0.148)	0.628*** (0.098)	1.324*** (0.097)	-0.152 (0.099)
R^2		0.645	0.601	0.739	0.602	0.874	0.938	0.561	0.432	0.719
Number of countries		96	96	96	32	32	33	75	75	74
Number of observations		2,892	2,890	2,813	807	807	842	2,085	2,083	1,971
Panel B: Estimation with time-invariant variables										
		Full country sample			Advanced economy sample			Non-advanced economy sample		
		(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
		Goethe Institute	Cervantes Institute	Confucius Institute	Goethe Institute	Cervantes Institute	Confucius Institute	Goethe Institute	Cervantes Institute	Confucius Institute
Number of cultural institutes: \hat{b}_1		1.266*** (0.091)	0.893*** (0.055)	0.432*** (0.053)	-0.614*** (0.051)	0.494*** (0.050)	-0.023 (0.043)	1.431*** (0.088)	0.791*** (0.062)	0.538*** (0.071)
Common border		2.156*** (0.107)	1.777*** (0.090)	0.413*** (0.097)	0.921*** (0.047)	1.324*** (0.102)	1.667*** (0.248)	2.561*** (0.129)	2.557*** (0.118)	0.792*** (0.108)
Cultural distance		-0.114*** (0.023)	-0.021 (0.031)	0.216*** (0.030)	0.092*** (0.020)	-0.085*** (0.023)	0.215*** (0.028)	0.037 (0.031)	-0.243*** (0.042)	0.012 (0.028)
Linguistic distance		1.052*** (0.074)	0.399*** (0.082)	-1.969*** (0.269)	-0.443*** (0.089)	-0.506*** (0.087)	—	1.467*** (0.089)	0.642*** (0.095)	-3.291*** (0.434)
Include other control variables?		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

(Continues)

TABLE 1 (Continued)

	Panel B: Estimation with time-invariant variables											
	Full country sample			Advanced economy sample			Non-advanced economy sample					
	(10) Goethe Institut	(11) Cervantes Institut	(12) Confucius Institut	(13) Goethe Institut	(14) Cervantes Institut	(15) Confucius Institut	(16) Goethe Institut	(17) Cervantes Institut	(18) Confucius Institut			
R^2	0.616	0.616	0.75	0.90	0.918	0.945	0.637	0.456	0.727			
Number of observations	2,890	2,890	2,813	807	807	842	2,085	2,083	1,971			
	Panel C: Estimation with time-invariant variables and transmission mechanism of bilateral trade agreement											
	Full country sample			Advanced economy sample			Non-advanced economy sample					
	(19) Goethe Institut	(20) Cervantes Institut	(21) Confucius Institut	(22) Goethe Institut	(23) Cervantes Institut	(24) Confucius Institut	(25) Goethe Institut	(26) Cervantes Institut	(27) Confucius Institut			
Number of cultural institutes: \hat{b}_1	1.278*** (0.092)	0.868*** (0.066)	0.477*** (0.053)	-0.638*** (0.053)	0.371*** (0.061)	-0.021 (0.043)	1.429*** (0.089)	0.824*** (0.074)	0.624*** (0.080)			
Number of cultural institutes \times bilateral trade agreement	0.226** (0.097)	0.575*** (0.091)	-0.479*** (0.057)	0.714*** (0.072)	1.890*** (0.150)	0.026 (0.108)	0.216** (0.108)	0.385*** (0.093)	-0.401*** (0.068)			
Common border	2.194*** (0.109)	1.791*** (0.089)	0.381*** (0.095)	0.937*** (0.046)	1.390*** (0.098)	1.688*** (0.240)	2.561*** (0.129)	2.582*** (0.116)	0.754*** (0.105)			
Cultural distance	-0.122*** (0.023)	-0.033 (0.031)	0.215*** (0.030)	0.098*** (0.020)	-0.103*** (0.026)	0.216*** (0.028)	0.035 (0.031)	-0.277*** (0.041)	0.010 (0.028)			
Linguistic distance	1.091*** (0.076)	0.462*** (0.086)	-1.987*** (0.264)	-0.532*** (0.092)	-0.689*** (0.104)	—	1.465*** (0.090)	0.714*** (0.096)	-3.111*** (0.438)			

(Continues)

TABLE 1 (Continued)

Panel C: Estimation with time-invariant variables and transmission mechanism of bilateral trade agreement												
	Full country sample			Advanced economy sample			Non-advanced economy sample					
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)			
	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute
Include time-invariant variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Include other control variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.604	0.604	0.753	0.899	0.905	0.945	0.637	0.448	0.728			
Number of observations	2,890	2,890	2,813	807	807	842	2,085	2,083	1,971			

Notes: Estimation results for the effect from the CI on German, Spanish and Chinese exports to their partner countries are based on the regression model of Equation (1). Variable definitions are detailed in the paragraph immediately followed Equation (1). Year dummies are included in regressions but not shown in the table to save space. Numbers in parentheses are standard errors. *, ** and ***Significance at 10% level, 5% level and 1% level, respectively.

(dummy) variable” was added to the regression analysis. The regressions in Panel C show that the results are robust with what has been reported thus far. There are positive cultural institute effects on German exports (1.28), Spanish exports (0.87) and Chinese exports (0.48) as indicated in columns (19), (20) and (21), respectively. The subsample results in columns (25), (26) and (27) further indicate that the positive effects are mainly from non-advanced economy partners for all three cultural institute programmes.

The coefficients for the other explanatory variables largely exhibit the expected signs (see the representative results in Panel A). The importer's real GDP has significant positive effects on exports for all of the full samples and subsamples. The importing country's population size has significant positive effects on exports for all of the subsamples, except for Germany's advanced economy subsample that shows a significant negative effect. The importer's inflation rate significantly reduces exports to non-advanced economy partners for both China and Germany, and advanced economy partners for China. The importing country's trade openness increases exports for all of the economy subsamples, except for Spain's non-advanced economy subsample. FDI openness reduces exports from both Germany and China to their non-advanced economy partners, as well as from both Germany and Spain to their advanced economy partners. WTO membership for the importing country results in an increase in exports from Spain and China for their non-advanced economy partners, and WTO membership for Germany, Spain and China results in an increase in their exports to all partner economies. Having a regional free trade agreement results in an increase in exports to the partner economies in all cases. And finally, the effects of having a bilateral free trade agreement on exports are mixed—when there is free trade agreement, both German and Spanish exports to both non-advanced and advanced economy partners increase, but Chinese exports to advanced economy partners decreases.

To check whether these results obtained using OLS are robust, PPML estimation was performed to assess the effects of the Goethe Institut, Cervantes Institute and Confucius Institute on their exports to partner countries. Table 2 reports the associated PPML estimation results that reveal a similar pattern as the pooled OLS results in Table 1, although the size of the estimated coefficient b_1 is smaller in most cases. A comparison of the size of the estimated coefficient b_1 between the advanced and non-advanced economy subsamples indicates that the asymmetric pattern of stronger effects for non-advanced economy partners than advanced economy partners continues to exist for all three cultural institute programmes. The analysis in Panel B is used to demonstrate the similarity by taking the potential impact of transaction costs into account. Specifically, the size of the estimated coefficient b_1 for the non-advanced economy subsample is 0.25, 0.57 and 0.42 for the Goethe Institut, Cervantes Institute and Confucius Institute, respectively, while for the advanced economy subsample it is -0.45 , 0.46 and 0.28.

The next step in the analysis involves determining the effect of having a cultural institute in a foreign country on the level of FDI by Germany, Spain and China in those partner economies. The discussion is restricted to the regression results in Panels B and C in Table 3 because they are considered more robust, given that the analysis takes into account of the potential impact of transaction costs, and bilateral trade agreement. The results in Panel B show a clear significant positive relationship for all three countries between their establishment of a cultural institute and FDI outflows for the full country sample and the non-advanced economy subsample. However, the results for the advanced economy subsample are mixed, with a negative sign for Germany, a coefficient for Spain that is not significant and a positive sign for China. The results for the full country sample in (64), (65) and (66) are 3.49 for Germany, 1.52 for Spain and 1.53 for China, respectively. The positive effects for the Goethe Institut are considerably larger than that for either the Cervantes

TABLE 2 Regression results: PPMLE estimates on the effect of Goethe Institut, Cervantes Institute and Confucius Institute on their exports to partner countries

		Full country sample			Advanced economy sample			Non-advanced economy sample		
		(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
		Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute
Number of cultural institutes: \hat{b}_1		-0.468*** (0.055)	0.821*** (0.046)	0.294*** (0.023)	-0.561*** (0.059)	0.889*** (0.081)	0.272*** (0.023)	0.057 (0.072)	0.057 (0.072)	0.637*** (0.060)
Importer's real GDP: \hat{b}_2		1.008*** (0.025)	0.552*** (0.027)	0.611*** (0.026)	1.509*** (0.089)	-0.209 (0.190)	-0.144 (0.132)	1.010*** (0.050)	1.010*** (0.050)	0.600*** (0.037)
Importer's population: \hat{b}_3		-0.044** (0.022)	0.011 (0.017)	0.310*** (0.022)	-0.464*** (0.091)	0.810*** (0.171)	1.148*** (0.136)	-0.088*** (0.027)	-0.088*** (0.027)	-0.070*** (0.019)
Importer's inflation rate: \hat{b}_4		-0.0003*** (0.0001)	-0.001*** (0.0003)	-0.002 (0.002)	-0.046*** (0.008)	-0.052*** (0.014)	-0.067*** (0.014)	-0.0004*** (0.0001)	-0.0004*** (0.0001)	-0.001*** (0.0002)
Importer's trade openness: \hat{b}_5		0.011*** (0.001)	0.002 (0.001)	0.021*** (0.001)	0.010*** (0.001)	0.004** (0.002)	0.020*** (0.001)	0.015*** (0.001)	0.015*** (0.001)	0.002 (0.001)
Importer's FDI openness: \hat{b}_6		-0.001 (0.002)	-0.002 (0.002)	0.004** (0.002)	-0.001 (0.002)	0.004 (0.002)	0.011*** (0.003)	-0.003** (0.001)	-0.003** (0.001)	-0.004* (0.002)
Importer's WTO membership: \hat{b}_7		-0.165 (0.135)	0.032 (0.092)	0.586*** (0.108)	0.160*** (0.053)	0.231** (0.118)	1.156*** (0.139)	-0.221* (0.117)	-0.221* (0.117)	0.175** (0.087)
German/Spain/China WTO membership: \hat{b}_8		0.687*** (0.140)	0.289*** (0.096)	1.292*** (0.113)	1.840*** (0.063)	1.795*** (0.065)	0.971*** (0.100)	0.878*** (0.116)	0.878*** (0.116)	0.423*** (0.094)
Importer's regional free trade agreements with Germany/Spain/China: \hat{b}_9		1.604*** (0.048)	1.788*** (0.050)	0.443*** (0.062)	1.066*** (0.112)	1.613*** (0.187)	0.510*** (0.071)	1.718*** (0.070)	1.718*** (0.070)	1.067*** (0.076)
Importer's bilateral free trade agreement with Germany/Spain/China: \hat{b}_{10}		0.832*** (0.083)	1.324*** (0.067)	-0.301** (0.119)	-0.561*** (0.059)	0.889*** (0.081)	-0.826*** (0.154)	0.360*** (0.086)	0.360*** (0.086)	1.252*** (0.061)

(Continues)

TABLE 2 (Continued)

Panel A: Baseline model estimation												
Full country sample			Advanced economy sample			Non-advanced economy sample						
(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)				
Goethe Institut	Cervantes Institut	Confucius Institut	Goethe Institut	Cervantes Institut	Confucius Institut	Goethe Institut	Cervantes Institut	Confucius Institut				
R^2	0.819	0.784	0.909	0.811	0.752	0.941	0.828	0.751				
Number of countries	96	96	96	32	32	33	75	74				
Number of observations	2,892	2,890	2,813	807	807	842	2,085	1,971				
Panel B: Estimation with time-invariant variables												
Full country sample			Advanced economy sample			Non-advanced economy sample						
(37)	(38)	(39)	(40)	(41)	(42)	(43)	(44)	(45)				
Goethe Institut	Cervantes Institut	Confucius Institut	Goethe Institut	Cervantes Institut	Confucius Institut	Goethe Institut	Cervantes Institut	Confucius Institut				
Number of cultural institutes: \hat{b}_1	-0.361*** (0.045)	0.630*** (0.045)	0.306*** (0.024)	-0.446*** (0.049)	0.475*** (0.066)	0.280*** (0.025)	0.245*** (0.083)	0.572*** (0.064)				
Common border	0.725*** (0.039)	0.865*** (0.083)	0.372*** (0.107)	0.612*** (0.045)	0.795*** (0.072)	1.202*** (0.192)	1.156*** (0.086)	1.182*** (0.118)				
Cultural distance	-0.093*** (0.020)	-0.111*** (0.019)	0.064 (0.044)	-0.083*** (0.020)	-0.072*** (0.026)	0.299*** (0.058)	0.026 (0.039)	-0.208*** (0.026)				
Linguistic distance	-0.129** (0.062)	-0.283*** (0.046)	-1.358*** (0.160)	-0.771*** (0.072)	-1.209*** (0.139)	—	0.533*** (0.065)	0.044 (0.056)				
Include other control variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
R^2	0.875	0.870	0.937	0.882	0.869	0.943	0.832	0.763				
Number of observations	2,890	2,890	2,813	807	807	842	2,085	1,971				

(Continues)

TABLE 2 (Continued)

	Full country sample						Advanced economy sample						Non-advanced economy sample					
	(46)		(47)		(48)		(49)		(50)		(51)		(52)		(53)		(54)	
	Goethe Institut	Cervantes Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Confucius Institute
Number of cultural institutes: b_1	-0.391*** (0.047)	0.411*** (0.048)	0.305*** (0.024)	-0.469*** (0.051)	0.465*** (0.070)	0.279*** (0.025)	0.221*** (0.084)	0.155*** (0.057)	0.493*** (0.044)									
Number of cultural institutes × bilateral trade agreement	0.518*** (0.073)	1.219*** (0.063)	0.048 (0.044)	0.854*** (0.103)	1.829*** (0.208)	0.295* (0.172)	0.278*** (0.057)	1.215*** (0.084)	-0.034 (0.060)									
Common border	0.765*** (0.041)	0.870*** (0.084)	0.369*** (0.112)	0.658*** (0.046)	0.771*** (0.072)	1.180*** (0.162)	1.145*** (0.086)	1.090*** (0.117)	0.546*** (0.102)									
Cultural distance	-0.109*** (0.021)	-0.137*** (0.022)	0.047 (0.044)	-0.114*** (0.022)	-0.105*** (0.027)	0.298*** (0.058)	0.020 (0.039)	-0.264*** (0.024)	-0.179*** (0.026)									
Linguistic distance	-0.151** (0.064)	-0.396*** (0.059)	-1.109*** (0.169)	-0.791*** (0.073)	-1.271*** (0.154)	—	0.511*** (0.065)	-0.032 (0.071)	-0.947 (0.605)									
Include time-invariant variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes									
Include other control variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes									
R^2	0.865	0.861	0.937	0.866	0.863	0.943	0.832	0.822	0.792									
Number of observations	2,890	2,890	2,813	807	807	842	2,085	2,083	1,971									

Notes: Estimation results for the effect from the CI on German, Spanish and Chinese exports to their partner countries are based on the regression model of Equation (1). We use the level of exports to replace the dependent variable of $\ln(1 + Y_{it})$ in Equation (1). Variable definitions are detailed in the paragraph immediately followed Equation (1). Year dummies are included in regressions but not shown in the table to save space. Numbers in parentheses are standard errors. *, **, and ***Significance at 10% level, 5% level and 1% level, respectively.

Institute or Confucius Institute, but the estimation results for the time-invariant variables continue to follow the same expected sign/pattern as previously seen with exports in Table 1.

Overall, the results in Panel B in Table 3 provide evidence for the relationship that an increased number of cultural institutes leads to a greater level of FDI in partner countries. These positive effects were experienced universally by the Goethe Institut, Cervantes Institute and Confucius Institute. Noticeably, for the Goethe Institut and Cervantes Institute, the effects are asymmetric in that the effects are much stronger with non-advanced economy partners than advanced economy partners. This type of asymmetric pattern is similar to what was identified in Table 1 among all three cultural institute programmes for the positive effects on exports. In addition, it should be noted that the Goethe Institut has a larger impact on FDI to partner countries relative to the Cervantes Institute and Confucius Institute. This finding is similar to the results in Table 1 where the Goethe Institut has the largest impact on exports as well. The positive effects on exports of the Goethe Institut to non-advanced economy partners are nearly two to three times as large as that of the Cervantes Institute and Confucius Institute. Similarly, the impact of the Goethe Institut on FDI outflows for non-advanced economy partners is three to four times larger than that of the Cervantes Institute and the Confucius Institute.

This asymmetric pattern of larger positive effects of having a cultural institute on FDI with non-advanced economies than advanced economies continues to be present in Panel C. The associated estimate of the interaction term is only significant for the advanced economy sample for China (78) and the non-advanced economy sample for Spain (80). The interaction term is positive in both cases indicating a bilateral trade agreement has a positive impact on the level of FDI. The asymmetric pattern of larger effects on FDI outflows with non-advanced economies relative to advanced economies (for both the Goethe Institut and the Cervantes Institute) is once again found to be robust. It should be noted that this asymmetric pattern continues to exist when PPML estimation is performed to assess the effects of the Goethe Institut, Cervantes Institute and Confucius Institute on their FDI to partner countries. For brevity, we report the PPML estimation results in Table 4 without a detailed discussion.

The last stage of the analysis is to examine the effect of cultural institute programmes on imports from partner countries (see Table 5). The results in Panel B for the full country sample indicate that the establishment of a cultural institute has positive effects on German (0.97), Spanish (0.48) and Chinese (0.34) imports from their partner economies. Once again, the effect from the Goethe Institut is twice as large as the effects for the Cervantes Institute and the Confucius Institute. Also, most of the positive effects on German (1.22) and Chinese (0.31) imports come from non-advanced economies, which is similar to the pattern displayed for exports in Table 1. As for the relationships between imports and the time-invariant variables, it closely resembles those established for exports in Panel B of Table 1, which is somewhat expected. For example, it is reasonable to assume that sharing a common border with a partner country would increase trade flow in both directions based on the close proximity. And, as evidenced by the results, a common border does increase German (1.99), Spanish (1.26) and Chinese (0.42) imports from partner countries.

Panel C includes the interaction term “Number of Cultural Institutes \times Bilateral Trade Agreement” to consider how the potential impact of having a cultural institute on imports might be affected by an existing bilateral trade relationship. The results in (130), (131) and (132) for the advanced economy sample indicate a significant positive relationship, suggesting that an existing trade relationship tends to further increase the positive effects of having a cultural institute in partner countries. For example, a bilateral trade agreement adds to the positive effect of a cultural institute on imports from advanced partner economies for Spain (0.49 + 0.42) and China (0.16 + 0.62). The results continue to show the same pattern as that for exports in Table 1 and

TABLE 3 Regression results: Pooled OLS estimates on the effect of Goethe Institut, Cervantes Institute and Confucius Institute on their FDI to partner countries

	Full country sample			Advanced economy sample			Non-advanced economy sample		
	(55) Goethe Institut	(56) Cervantes Institute	(57) Confucius Institute	(58) Goethe Institut	(59) Cervantes Institute	(60) Confucius Institute	(61) Goethe Institut	(62) Cervantes Institute	(63) Confucius Institute
Number of cultural institutes: \hat{b}_1	3.401*** (0.379)	1.446*** (0.409)	1.315*** (0.197)	-1.204*** (0.430)	2.495*** (0.753)	0.630* (0.374)	4.472*** (0.369)	0.845* (0.498)	0.678* (0.282)
Importer's real GDP: \hat{b}_2	0.531*** (0.137)	1.649*** (0.170)	0.166*** (0.059)	4.018*** (0.407)	5.464*** (0.735)	2.458*** (0.563)	0.316*** (0.095)	0.910*** (0.231)	0.135*** (0.041)
Importer's population: \hat{b}_3	0.226*** (0.053)	-0.014 (0.096)	0.472*** (0.087)	-1.764*** (0.457)	-3.175*** (0.829)	-0.178 (0.592)	0.154*** (0.049)	-0.036 (0.106)	0.260*** (0.061)
Importer's inflation rate: \hat{b}_4	(0.010)	-0.033*** (0.033)	0.074** (0.017)	0.058*** (0.071)	0.095 (0.156)	0.313** (0.115)	0.165 (0.010)	-0.019* (0.031)	-0.011 (0.014)
Importer's trade openness: \hat{b}_5	0.023*** (0.004)	-0.002 (0.009)	0.030*** (0.007)	0.032*** (0.005)	0.043*** (0.009)	0.066*** (0.006)	-0.018* (0.009)	-0.108*** (0.015)	-0.034*** (0.007)
Importer's FDI openness: \hat{b}_6	0.021*** (0.005)	0.018** (0.007)	-0.004 (0.004)	0.023** (0.010)	0.025* (0.013)	0.011 (0.009)	0.025*** (0.005)	0.022*** (0.007)	0.003 (0.002)
Importer's WTO membership: \hat{b}_7	0.098 (0.586)	4.153*** (0.645)	-0.470 (0.483)	—	—	—	-0.547 (0.564)	4.201*** (0.688)	-0.595 (0.452)
German/Spain/China WTO membership: \hat{b}_8	—	—	—	—	—	—	—	—	—
Importer's regional free trade agreements with Germany/Spain/China: \hat{b}_9	4.466*** (0.290)	3.582*** (0.493)	3.045*** (0.476)	3.547*** (0.341)	4.602*** (0.793)	3.722*** (0.568)	4.469*** (0.474)	4.443*** (0.979)	0.249 (0.505)
Importer's bilateral free trade agreement with Germany/Spain/China: \hat{b}_{10}	0.801* (0.453)	2.458*** (0.626)	-0.432 (0.618)	0.538 (0.558)	2.778** (1.312)	-1.293 (1.048)	-0.277 (0.493)	2.438*** (0.812)	2.891*** (0.576)

(Continues)

TABLE 3 (Continued)

Panel A: Baseline model estimation												
Full country sample			Advanced economy sample			Non-advanced economy sample						
(55)	(56)	(57)	(58)	(59)	(60)	(61)	(62)	(63)				
Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute				
R^2	0.539	0.404	0.474	0.568	0.683	0.456	0.420	0.485				
Number of countries	94	60	86	28	29	68	36	60				
Number of observations	1,107	715	848	305	273	776	410	575				
Panel B: Estimation with time-invariant variables												
Full country sample			Advanced economy sample			Non-advanced economy sample						
(64)	(65)	(66)	(67)	(68)	(69)	(70)	(71)	(72)				
Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute				
Number of cultural institutes: $\hat{\beta}_1$	3.494*** (0.362)	1.519*** (0.402)	1.527*** (0.191)	-1.314*** (0.452)	0.081 (0.929)	1.006*** (0.353)	4.349*** (0.387)	1.350*** (0.472)	0.937*** (0.269)			
Common border	3.458*** (0.458)	1.165 (0.728)	1.414*** (0.489)	0.105 (0.422)	3.401*** (0.911)	8.555*** (1.180)	3.672*** (0.666)	-	1.167** (0.527)			
Cultural distance	-0.338*** (0.119)	-0.758*** (0.194)	-0.297*** (0.093)	-0.407*** (0.155)	-0.126 (0.255)	0.048 (0.261)	0.272* (0.166)	-0.732*** (0.273)	-0.497*** (0.105)			
Linguistic distance	0.270 (0.123)	-4.421*** (0.602)	-9.202*** (1.210)	-1.801*** (0.578)	-5.295*** (1.502)	-	1.534*** (0.466)	-3.015*** (0.726)	-5.813*** (1.762)			
Include other control variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
R^2	0.569	0.471	0.533	0.632	0.720	0.473	0.458	0.514				
Number of observations	1,107	715	848	331	305	776	410	575				

(Continues)

TABLE 3 (Continued)

	Full country sample			Advanced economy sample			Non-advanced economy sample		
	(73)	(74)	(75)	(76)	(77)	(78)	(79)	(80)	(81)
	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute
Number of cultural institutes: \hat{b}_1	3.584*** (0.366)	0.492 (0.494)	1.538*** (0.193)	-1.418*** (0.484)	0.700 (0.884)	0.990*** (0.351)	4.343*** (0.388)	0.989* (0.587)	0.733*** (0.332)
Number of cultural institutes \times bilateral trade agreement	-0.574 (0.463)	4.241*** (0.966)	-0.217 (0.295)	0.869 (0.775)	—	2.220*** (0.849)	-0.420 (0.525)	1.832* (0.995)	0.870 (0.380)
Common border	3.504*** (0.462)	1.375* (0.709)	1.435*** (0.491)	0.190 (0.411)	3.612*** (0.929)	8.310*** (1.052)	3.681*** (0.668)	—	1.584*** (0.548)
Cultural distance	-0.362*** (0.120)	-0.755*** (0.190)	-0.305*** (0.093)	-0.396** (0.155)	-0.160 (0.252)	0.054 (0.260)	0.284* (0.166)	-0.917*** (0.264)	-0.503*** (0.105)
Linguistic distance	0.491 (0.401)	-5.239*** (0.732)	-8.980*** (1.140)	-1.963*** (0.628)	-5.022*** (1.527)	—	1.522*** (0.475)	-2.961*** (0.836)	-7.716*** (1.912)
Include time-invariant variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Include year dummies?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Include other control variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.570	0.470	0.533	0.631	0.611	0.721	0.473	0.446	0.507
Number of observations	1,107	715	848	331	305	273	776	410	575

Notes: Estimation results for the effect from the CI on German, Spanish and Chinese FDI to their partner countries are based on the regression model of Equation (1). Variable definitions are detailed in the paragraph immediately followed Equation (1). Year dummies are included in regressions but not shown in the table to save space. Numbers in parentheses are standard errors.

*, ** and ***Significance at 10% level, 5% level and 1% level, respectively.

TABLE 4 Regression results: PPMLE estimates on the effect of Goethe Institut, Cervantes Institute and Confucius Institute on their FDI to partner countries

Panel A: Baseline model estimation									
	Full country sample			Advanced economy sample			Non-advanced economy sample		
	(82)	(83)	(84)	(85)	(86)	(87)	(88)	(89)	(90)
	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute
Number of cultural institutes: \hat{b}_1	-0.521*** (0.163)	0.628*** (0.227)	0.826*** (0.106)	-0.624*** (0.208)	0.840** (0.401)	1.110*** (0.200)	0.505*** (0.123)	0.467* (0.243)	0.690*** (0.148)
Importer's real GDP: \hat{b}_2	1.344*** (0.113)	0.723*** (0.097)	0.157 (0.101)	3.187*** (0.531)	1.729*** (0.488)	0.577* (0.338)	1.077*** (0.090)	0.760*** (0.103)	0.392*** (0.102)
Importer's population: \hat{b}_3	-0.204*** (0.071)	-0.114*** (0.043)	0.184 (0.150)	-1.847*** (0.470)	-1.070* (0.612)	-0.609* (0.330)	-0.050 (0.067)	-0.222*** (0.036)	0.0556 (0.071)
Importer's inflation rate: \hat{b}_4	(0.008)	0.019** (0.012)	0.031** (0.011)	0.018* (0.037)	0.012 (0.124)	0.054 (0.058)	-0.041 (0.009)	0.011 (0.013)	-0.001 (0.005)
Importer's trade openness: \hat{b}_5	0.016*** (0.002)	0.008*** (0.003)	0.032*** (0.002)	0.020*** (0.003)	0.011*** (0.003)	0.031*** (0.003)	0.020*** (0.004)	-0.034** (0.016)	-0.0004 (0.006)
Importer's FDI openness: \hat{b}_6	0.009*** (0.002)	0.007*** (0.002)	0.002 (0.002)	0.003 (0.004)	0.020*** (0.005)	0.002 (0.002)	0.009*** (0.002)	0.010*** (0.003)	-0.033 (0.037)
Importer's WTO membership: \hat{b}_7	-0.924*** (0.300)	2.219*** (0.376)	-0.344 (0.281)	—	—	—	-0.956*** (0.276)	2.418*** (0.356)	-0.002 (0.373)
German/Spain/China WTO membership: \hat{b}_8	—	—	—	—	—	—	—	—	—
Importer's regional free trade agreements with Germany/Spain/China: \hat{b}_9	1.906*** (0.222)	1.031*** (0.266)	0.923** (0.391)	2.303*** (0.345)	1.345*** (0.477)	1.523*** (0.592)	1.857*** (0.157)	1.737*** (0.251)	-1.275*** (0.367)
Importer's bilateral free trade agreement with Germany/Spain/China: \hat{b}_{10}	0.804*** (0.230)	1.203*** (0.273)	-1.871*** (0.338)	0.597 (0.447)	1.335** (0.663)	-2.686*** (0.423)	0.115 (0.149)	1.069*** (0.245)	1.520*** (0.290)

(Continues)

TABLE 4 (Continued)

Panel A: Baseline model estimation												
Full country sample			Advanced economy sample			Non-advanced economy sample						
(82)	(83)	(84)	(85)	(86)	(87)	(88)	(89)	(90)	(82)	(83)	(84)	
Goethe Institut	Cervantes Institut	Confucius Institut	Goethe Institut	Cervantes Institut	Confucius Institut	Goethe Institut	Cervantes Institut	Confucius Institut	Goethe Institut	Cervantes Institut	Confucius Institut	
R^2	0.460	0.246	0.843	0.435	0.272	0.868	0.544	0.320	0.137			
Number of countries	94	60	86	31	28	29	68	36	60			
Number of observations	1,107	715	848	331	305	273	776	410	575			
Panel B: Estimation with time-invariant variables												
Full country sample			Advanced economy sample			Non-advanced economy sample						
(91)	(92)	(93)	(94)	(95)	(96)	(97)	(98)	(99)	(91)	(92)	(93)	
Goethe Institut	Cervantes Institut	Confucius Institut	Goethe Institut	Cervantes Institut	Confucius Institut	Goethe Institut	Cervantes Institut	Confucius Institut	Goethe Institut	Cervantes Institut	Confucius Institut	
Number of cultural institutes: \hat{b}_1	-0.516*** (0.182)	0.780*** (0.234)	0.922*** (0.111)	-0.525*** (0.194)	0.428 (0.496)	1.404*** (0.259)	0.571*** (0.139)	0.468** (0.238)	0.876 (0.206)			
Common border	0.225 (0.166)	-0.086 (0.257)	0.663** (0.296)	-0.093 (0.170)	0.629** (0.294)	4.170*** (0.893)	0.380* (0.203)	—	-0.275 (0.385)			
Cultural distance	-0.044 (0.098)	0.158 (0.130)	-0.142 (0.125)	-0.017 (0.098)	0.529*** (0.161)	-0.153 (0.260)	0.074 (0.072)	-0.251 (0.163)	-0.449*** (0.121)			
Linguistic distance	-0.998*** (0.218)	-1.793*** (0.397)	-1.870*** (0.664)	-1.678*** (0.468)	-4.307*** (1.356)	—	0.030 (0.156)	-1.062*** (0.310)	0.450 (1.096)			
Include other control variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
R^2	0.471	0.312	0.874	0.439	0.404	0.884	0.541	0.424	0.155			
Number of observations	1,107	715	848	331	305	273	776	410	575			

(Continues)

TABLE 4 (Continued)

Panel C: Estimation with time-invariant variables and transmission mechanism of bilateral trade agreement												
Full country sample				Advanced economy sample				Non-advanced economy sample				
(100)	(101)	(102)	(103)	(104)	(105)	(106)	(107)	(108)	(109)	(110)	(111)	(112)
Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut
Number of cultural institutes: \hat{b}_1	-0.550*** (0.182)	0.413 (0.314)	0.942*** (0.120)	-0.561*** (0.198)	0.574 (0.437)	1.383*** (0.246)	0.565*** (0.139)	0.174 (0.291)	0.819*** (0.269)			
Number of cultural institutes \times bilateral trade agreement	0.306 (0.199)	1.259** (0.565)	-0.120 (0.179)	0.184 (0.684)	—	0.472 (0.580)	0.111 (0.136)	0.701 (0.607)	0.299 (0.297)			
Common border	0.268 (0.169)	-0.107 (0.254)	0.638** (0.294)	-0.059 (0.178)	0.568** (0.289)	3.947*** (0.591)	0.377* (0.202)	—	0.154 (0.445)			
Cultural distance	-0.061 (0.097)	0.088 (0.128)	-0.141 (0.132)	-0.030 (0.096)	0.450*** (0.151)	-0.179 (0.278)	0.071 (0.072)	-0.405*** (0.119)	-0.433*** (0.128)			
Linguistic distance	-1.017*** (0.217)	-1.969*** (0.592)	-1.928*** (0.498)	-1.672*** (0.433)	-3.554*** (1.154)	—	0.027 (0.158)	-1.042* (0.585)	-1.005 (1.450)			
Include time-invariant variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Include year dummies?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Include other control variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.468	0.275	0.874	0.435	0.364	0.884	0.541	0.367	0.133			
Number of observations	1,107	715	848	331	305	273	776	410	575			

Notes: Estimation results for the effect from the CI on German, Spanish and Chinese FDI to their partner countries are based on the regression model of Equation (1). We use the level of FDI to replace the dependent variable of $\ln(1 + Y_{it})$ in Equation (1). Variable definitions are detailed in the paragraph immediately followed Equation (1). Year dummies are included in regressions but not shown in the table to save space. Numbers in parentheses are standard errors.

*, ** and ***: Significance at 10% level, 5% level and 1% level, respectively.

TABLE 5 Regression results: Pooled OLS estimates on the effect of Goethe Institut, Cervantes Institute and Confucius Institute on their imports from partner countries

	Panel A: Baseline model estimation											
	Full country sample				Advanced economy sample				Non-advanced economy sample			
	(109) Goethe Institut	(110) Cervantes Institut	(111) Confucius Institut	(112) Goethe Institut	(113) Cervantes Institut	(114) Confucius Institut	(115) Goethe Institut	(116) Cervantes Institut	(117) Confucius Institut			
Number of cultural institutes: \hat{b}_1	0.828*** (0.096)	0.551*** (0.063)	0.560*** (0.093)	-1.068*** (0.067)	0.562*** (0.056)	0.161* (0.089)	1.295*** (0.099)	0.370*** (0.083)	0.414*** (0.131)			
Exporter's real GDP: \hat{b}_2	0.274*** (0.044)	0.235*** (0.039)	0.294*** (0.058)	1.363*** (0.068)	0.823*** (0.082)	0.935*** (0.126)	0.171*** (0.034)	0.162*** (0.033)	0.124*** (0.042)			
Exporter's population: \hat{b}_3	0.291*** (0.032)	0.462*** (0.032)	0.492*** (0.051)	-0.271*** (0.078)	-0.049 (0.085)	0.153 (0.124)	0.321*** (0.039)	0.497*** (0.035)	0.540*** (0.062)			
Exporter's inflation rate: \hat{b}_4	-0.0002*** (0.0001)	-0.00003 (0.0001)	0.0004*** (0.0001)	-0.024** (0.009)	-0.023** (0.012)	-0.095*** (0.013)	-0.00005 (0.0001)	0.0002* (0.0001)	0.001*** (0.0002)			
Exporter's trade openness: \hat{b}_5	0.014*** (0.001)	0.007*** (0.001)	0.018*** (0.001)	0.006*** (0.001)	0.003*** (0.001)	0.011*** (0.001)	0.020*** (0.001)	0.012*** (0.001)	0.027*** (0.003)			
Exporter's FDI openness: \hat{b}_6	0.005 (0.004)	0.002 (0.004)	0.011*** (0.003)	0.003 (0.002)	0.004* (0.002)	-0.007* (0.004)	-0.003 (0.003)	-0.005 (0.003)	0.009** (0.004)			
Exporter's WTO membership: \hat{b}_7	-0.103 (0.151)	-0.249* (0.143)	0.029 (0.209)	0.883*** (0.333)	0.512** (0.226)	0.002 (0.302)	-0.466*** (0.148)	-0.463*** (0.142)	-0.689*** (0.226)			
German/Spain/China WTO membership: \hat{b}_8	-0.570* (0.314)	0.937*** (0.343)	1.695*** (0.444)	—	—	1.697*** (0.256)	0.872** (0.410)	1.031** (0.445)	3.164*** (0.610)			
Exporter's regional free trade agreements with Germany/Spain/China: \hat{b}_9	2.187*** (0.073)	2.004*** (0.069)	2.017*** (0.118)	1.837*** (0.056)	1.533*** (0.054)	0.804*** (0.083)	2.012*** (0.138)	1.080*** (0.111)	2.296*** (0.152)			
Exporter's bilateral free trade agreement with Germany/Spain/China: \hat{b}_{10}	0.883*** (0.141)	0.956*** (0.106)	-0.252 (0.108)	1.143*** (0.091)	0.996*** (0.088)	0.427*** (0.159)	0.033 (0.153)	0.639*** (0.144)	-0.002 (0.185)			

(Continues)

TABLE 5 (Continued)

Panel A: Baseline model estimation												
Full country sample			Advanced economy sample			Non-advanced economy sample						
(109)	(110)	(111)	(112)	(113)	(114)	(115)	(116)	(117)				
Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute				
R^2	0.609	0.629	0.549	0.817	0.856	0.853	0.521	0.519	0.537			
Number of countries	94	94	94	32	32	33	74	74	73			
Number of observations	2,584	2,575	2,485	798	800	835	1,786	1,775	1,650			
Panel B: Estimation with time-invariant variables												
Full country sample			Advanced economy sample			Non-advanced economy sample						
(118)	(119)	(120)	(121)	(122)	(123)	(124)	(125)	(126)				
Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute				
Number of cultural institutes: \hat{b}_1	0.965*** (0.085)	0.481*** (0.062)	0.340*** (0.092)	-0.756*** (0.054)	0.509*** (0.059)	0.158* (0.089)	1.217*** (0.094)	0.264*** (0.085)	0.307*** (0.129)			
Common border	1.991*** (0.096)	1.258*** (0.077)	0.421** (0.176)	0.776*** (0.059)	0.882*** (0.097)	0.346 (0.273)	2.579*** (0.125)	1.461*** (0.134)	1.179*** (0.196)			
Cultural distance	-0.014 (0.023)	0.112*** (0.029)	0.565*** (0.043)	0.161*** (0.022)	-0.054** (0.026)	-0.046 (0.038)	0.133*** (0.030)	-0.143*** (0.047)	0.355*** (0.051)			
Linguistic distance	0.607*** (0.089)	0.165** (0.079)	-2.314*** (0.396)	-0.137* (0.080)	0.182*** (0.089)	—	0.973*** (0.106)	0.351*** (0.096)	-3.253*** (0.380)			
Include year dummies?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
Include other control variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
R^2	0.659	0.637	0.608	0.853	0.875	0.853	0.565	0.527	0.571			
Number of observations	2,584	2,575	2,485	798	800	835	1,786	1,775	1,650			

(Continues)

TABLE 5 (Continued)

	Full country sample						Advanced economy sample			Non-advanced economy sample		
	(127)	(128)	(129)	(130)	(131)	(132)	(133)	(134)	(135)	(136)	(137)	
	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute
Number of cultural institutes: \hat{b}_1	0.982*** (0.086)	0.497*** (0.069)	0.340*** (0.094)	-0.756*** (0.059)	0.490*** (0.066)	0.161* (0.089)	1.200*** (0.094)	0.260*** (0.095)	0.314** (0.149)			
Number of cultural institutes × bilateral trade agreement	0.154 (0.132)	0.258* (0.141)	-0.021 (0.085)	0.856*** (0.133)	0.418*** (0.141)	0.619*** (0.145)	-0.010 (0.141)	0.226 (0.174)	-0.069 (0.117)			
Common border	2.032*** (0.098)	1.261*** (0.075)	0.436** (0.174)	0.814*** (0.059)	0.939*** (0.095)	0.312 (0.262)	2.588*** (0.125)	1.473*** (0.136)	1.151*** (0.196)			
Cultural distance	-0.022 (0.023)	0.098*** (0.029)	0.564*** (0.043)	0.174*** (0.023)	-0.069*** (0.026)	-0.046 (0.038)	0.138*** (0.030)	-0.157*** (0.047)	0.355*** (0.051)			
Linguistic distance	0.659*** (0.091)	0.247*** (0.081)	-2.273*** (0.398)	-0.195** (0.081)	0.218** (0.107)	—	0.947*** (0.107)	0.390*** (0.095)	-3.280*** (0.381)			
Include time-invariant variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Include year dummies?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Include other control variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.655	0.627	0.608	0.837	0.862	0.854	0.565	0.525	0.571			
Number of observations	2,584	2,575	2,485	798	800	835	1,786	1,775	1,650			

Notes: Estimation results for the effect from the CI on German, Spanish and Chinese imports from their partner countries are based on the regression model of Equation (1). Variable definitions are detailed in the paragraph immediately followed Equation (1). Year dummies are included in regressions but not shown in the table to save space. Numbers in parentheses are standard errors. *, ** and ***Significance at 10% level, 5% level and 1% level, respectively.

TABLE 6 Regression results: PPMLE estimates on the effect of Goethe Institut, Cervantes Institute and Confucius Institute on their imports from partner countries

	Panel A: Baseline model estimation											
	Full country sample				Advanced economy sample				Non-advanced economy sample			
	(136) Goethe Institut	(137) Cervantes Institut	(138) Confucius Institut	(139) Goethe Institut	(140) Cervantes Institut	(141) Confucius Institut	(142) Goethe Institut	(143) Cervantes Institut	(144) Confucius Institut			
Number of cultural institutes: \hat{b}_1	-0.553*** (0.055)	0.412*** (0.043)	0.318*** (0.058)	-0.604*** (0.057)	0.447*** (0.062)	0.334*** (0.051)	0.102 (0.079)	0.294*** (0.073)	0.304*** (0.087)			
Exporter's real GDP: \hat{b}_2	0.977*** (0.025)	0.579*** (0.023)	0.561*** (0.057)	1.425*** (0.129)	0.623*** (0.134)	-0.857*** (0.294)	1.068*** (0.042)	0.724*** (0.047)	0.486** (0.226)			
Exporter's population: \hat{b}_3	0.036 (0.029)	0.243*** (0.027)	0.155*** (0.041)	-0.384*** (0.128)	0.210* (0.123)	1.570*** (0.326)	-0.043 (0.039)	0.080** (0.040)	0.278* (0.143)			
Exporter's inflation rate: \hat{b}_4	-0.0001* (0.0001)	-0.0001* (0.00005)	-0.0007** (0.0003)	-0.068*** (0.010)	-0.069*** (0.010)	-0.153*** (0.031)	-0.0003*** (0.0001)	-0.0001** (0.0001)	-0.0001 (0.0001)			
Exporter's trade openness: \hat{b}_5	0.011*** (0.001)	0.008*** (0.001)	0.011*** (0.001)	0.010*** (0.001)	0.007*** (0.001)	0.006*** (0.001)	0.015*** (0.001)	0.010*** (0.001)	0.023*** (0.002)			
Exporter's FDI openness: \hat{b}_6	0.007*** (0.003)	0.005*** (0.002)	-0.019*** (0.004)	0.008** (0.003)	0.007*** (0.002)	-0.012*** (0.004)	-0.0001 (0.002)	-0.002 (0.003)	0.004 (0.003)			
Exporter's WTO membership: \hat{b}_7	-0.315* (0.162)	-0.598*** (0.107)	0.166 (0.115)	-0.036 (0.058)	0.242*** (0.085)	0.611*** (0.133)	-0.349*** (0.126)	-0.334*** (0.099)	-0.237* (0.138)			
German/Spain/China WTO membership: \hat{b}_8	0.704*** (0.166)	1.125*** (0.109)	1.295*** (0.124)	—	—	1.021*** (0.113)	0.769*** (0.124)	1.124*** (0.107)	1.856*** (0.161)			
Exporter's regional free trade agreements with Germany/Spain/China: \hat{b}_9	1.755*** (0.063)	1.658*** (0.057)	0.315** (0.142)	2.002*** (0.083)	1.996*** (0.073)	0.430*** (0.147)	1.963*** (0.084)	0.562*** (0.072)	-0.040 (0.140)			

(Continues)

TABLE 6 (Continued)

Panel A: Baseline model estimation												
	Full country sample			Advanced economy sample			Non-advanced economy sample					
	(136) Goethe Institut	(137) Cervantes Institut	(138) Confucius Institut	(139) Goethe Institut	(140) Cervantes Institut	(141) Confucius Institut	(142) Goethe Institut	(143) Cervantes Institut	(144) Confucius Institut			
Exporter's bilateral free trade agreement with Germany/Spain/China: \hat{b}_{10}	0.907*** (0.089)	0.916*** (0.064)	0.455*** (0.130)	1.361*** (0.096)	1.566*** (0.104)	0.657*** (0.229)	0.002 (0.115)	0.507*** (0.079)	0.740*** (0.207)			
R ²	0.701	0.828	0.465	0.690	0.846	0.604	0.821	0.731	0.526			
Number of countries	94	94	94	32	32	33	74	74	73			
Number of observations	2,584	2,575	2,485	798	800	835	1,786	1,775	1,650			
Panel B: Estimation with time-invariant variables												
	Full country sample			Advanced economy sample			Non-advanced economy sample					
	(145) Goethe Institut	(146) Cervantes Institut	(147) Confucius Institut	(148) Goethe Institut	(149) Cervantes Institut	(150) Confucius Institut	(151) Goethe Institut	(152) Cervantes Institut	(153) Confucius Institut			
Number of cultural institutes: \hat{b}_1	-0.401*** (0.048)	0.306*** (0.040)	0.328*** (0.057)	-0.479*** (0.057)	0.283*** (0.054)	0.345*** (0.049)	0.474*** (0.089)	0.257*** (0.071)	0.383*** (0.080)			
Common border	0.876*** (0.047)	0.408*** (0.067)	-0.293* (0.172)	0.713*** (0.053)	0.289*** (0.067)	-1.252*** (0.319)	1.234*** (0.139)	0.461** (0.217)	-0.563*** (0.189)			
Cultural distance	0.023 (0.027)	-0.147*** (0.019)	-0.110 (0.070)	0.042 (0.030)	-0.182*** (0.021)	-0.489*** (0.089)	0.114** (0.053)	-0.094*** (0.034)	0.091 (0.095)			
Linguistic distance	0.073 (0.069)	0.123* (0.064)	-1.078*** (0.252)	-0.346*** (0.082)	-0.137 (0.113)	—	0.753*** (0.079)	0.273*** (0.077)	-2.976*** (0.591)			
Include year dummies?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			
Include other control variables?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			

(Continues)

TABLE 6 (Continued)

Panel B: Estimation with time-invariant variables												
Full country sample			Advanced economy sample			Non-advanced economy sample						
(145)	(146)	(147)	(148)	(149)	(150)	(151)	(152)	(153)				
Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute				
0.798	0.872	0.474	0.789	0.894	0.643	0.808	0.738	0.568				
2,584	2,575	2,485	798	800	835	1,786	1,775	1,650				
Panel C: Estimation with time-invariant variables and transmission mechanism of bilateral trade agreement												
Full country sample			Advanced economy sample			Non-advanced economy sample						
(154)	(155)	(156)	(157)	(158)	(159)	(160)	(161)	(162)				
Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute	Goethe Institut	Cervantes Institute	Confucius Institute				
-0.428*** (0.051)	0.210*** (0.043)	0.318*** (0.060)	-0.551*** (0.062)	0.288*** (0.056)	0.344*** (0.049)	0.475*** (0.091)	0.064 (0.060)	0.357*** (0.131)				
0.481*** (0.092)	0.792*** (0.069)	0.171** (0.078)	1.696*** (0.185)	0.951*** (0.194)	0.190 (0.298)	-0.068 (0.070)	0.872*** (0.088)	0.174 (0.126)				
0.921*** (0.048)	0.408*** (0.068)	-0.307 (0.187)	0.797*** (0.052)	0.261*** (0.067)	-1.238*** (0.287)	1.237*** (0.139)	0.372* (0.207)	-0.487** (0.206)				
0.004 (0.028)	-0.161*** (0.019)	-0.130* (0.074)	-0.005 (0.030)	-0.211*** (0.021)	-0.487*** (0.089)	0.116** (0.053)	-0.054* (0.033)	0.072 (0.095)				
0.048 (0.073)	0.075 (0.071)	-0.799*** (0.260)	-0.459*** (0.089)	-0.203* (0.123)	—	0.754*** (0.080)	0.139* (0.082)	-2.974*** (0.534)				
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes				

(Continues)

TABLE 6 (Continued)

Panel C: Estimation with time-invariant variables and transmission mechanism of bilateral trade agreement												
	Full country sample			Advanced economy sample			Non-advanced economy sample					
	(154) Goethe Institut	(155) Cervantes Institute	(156) Confucius Institute	(157) Goethe Institut	(158) Cervantes Institute	(159) Confucius Institute	(160) Goethe Institut	(161) Cervantes Institute	(162) Confucius Institute			
R^2	0.788	0.866	0.472	0.780	0.888	0.643	0.808	0.754	0.531			
Number of observations	2,584	2,575	2,485	798	800	835	1,786	1,775	1,650			

Notes: Estimation results for the effect from the CI on German, Spanish and Chinese imports from their partner countries are based on the regression model of Equation (1). We use the level of imports to replace the dependent variable of $\ln(1 + Y_{it}^i)$ in Equation (1). Variable definitions are detailed in the paragraph immediately followed Equation (1). Year dummies are included in regressions but not shown in the table to save space. Numbers in parentheses are standard errors.

*, ** and ***Significance at 10% level, 5% level and 1% level, respectively.

FDI outflows in Table 3, which is that the Goethe Institut experiences the strongest positive effects among the three countries of having a cultural institute programme. The asymmetric pattern that non-advanced economies make the largest contribution to the positive effects of having a cultural institute programme still exists for the Goethe Institut, but not for the Cervantes Institute or the Confucius Institute. It is confirmed that the pooled OLS results presented in Table 5 on the effects of the Goethe Institut, Cervantes Institute and Confucius Institute on their imports from partner countries are robust because the PPML estimations (reported in Table 6) produce the same conclusion in regard to the noted asymmetric pattern.

In addition to the pattern of stronger cultural institute effects on both trade and FDI for non-advanced economies relative to advanced economies, another stylised asymmetric pattern shared by all three cultural institute programmes is a significantly larger effect on FDI than on trade. The OLS estimation results for the non-advanced economy sample with time-invariant variables (Panel B) are used to demonstrate this additional asymmetric pattern. When compared, the size of the estimated coefficient b_1 in the table columns (16), (70) and (124) indicates that the estimated cultural institute effect of a Goethe Institut on FDI is the largest at 4.35, followed by exports at 1.43, and imports at 1.22. Similarly, a Cervantes Institute has the largest effect on FDI at 1.35 in table column (71), followed by exports at 0.79 in column (17), and imports at 0.26 in column (125). Finally, a Confucius Institute also has its largest effect on FDI at 0.94 in column (72), followed by exports at 0.54 in column (18), and the smallest effect on imports at 0.31 in column (126).

6 | CONCLUSIONS

In this paper, the question of whether there are stylised international patterns on the economic effects of cultural institute programmes was examined using data from three of the larger cultural institute programmes—the Goethe Institut, the Cervantes Institute and the Confucius Institute. These three cultural institute programmes were chosen because of some shared similarities: (i) Germany and Spain have strong European cultural heritages and they compete in promoting their cultures to their former colonies through the Goethe Institut and the Cervantes Institute; and (ii) the Cervantes Institute and Confucius Institute programmes are relatively new and have only been in operation for a little more than 10 years. To compare the economic impact among cultural institutes, gravity models were used to assess the effects of Goethe Institut, Cervantes Institute and Confucius Institute on bilateral trade and FDI outflows within the same sample period. The gravity model parameters were estimated using both OLS and PPML methods, and the results suggest robust and positive effects of the cultural institutes on bilateral trade and FDI outflows.

Importantly, two stylised asymmetric patterns are shared by all three cultural institute programmes. First, the effects are stronger when the host countries are developing economies. Second, the effects are much larger on FDI than on trade. Specifically, the positive effects on FDI outflows of the Goethe Institut are approximately three times as large as the effects on exports, while the effects of the Cervantes Institute and the Confucius Institute on FDI outflows are about 1.7 times as large as that on exports. This finding of larger effects on FDI than on trade is consistent with the findings in Lien and Lo (2017) and Lien et al. (2012) with regard to the effects of the Confucius Institute and the Goethe Institut, respectively. The finding suggests that cultural institutes are far more beneficial for FDI than trade, and the Goethe Institut produces the greatest impacts, followed by the Cervantes Institute, and then the Confucius Institute.



We believe that previous research has provided plausible explanations for the two asymmetric empirical patterns identified in this paper. The basis for the asymmetric pattern of stronger trade and FDI effects for non-advanced economy partners than advanced economy partners is the incentive to achieve higher income levels through learning the more developed nation's language. For example, Choi (2002) theoretically derived that the language of the higher-wage nation would eventually become the universal language because the opportunity cost of citizens in the lower income nation would push them to learn the higher income nation's language. Ginsburgh, Ortuño-Ortín, and Weber (2007) provided further support for this argument by showing that, in recent decades, the English language has become more popular in European countries than expected, while Spanish has become significantly less popular. In addition, the asymmetric pattern of larger effects on FDI than trade is expected because cultural institute programmes promote trust by providing an opportunity to learn a foreign language, which serves not only as a necessary tool for business transactions, but also as a vehicle for cultural familiarity. In the meantime, trust is believed to play a more important role in FDI decisions that are considered to be more complex, longer-term decisions that require deeper communication and understanding between negotiating business partners than international trade (see Selmier & Oh, 2013).

Another notable finding of our empirical results is that the Goethe (Confucius) Institute programme has been the most (least) successful at increasing trade and FDI. When evaluating FDI, the effects of the Confucius Institute and Cervantes Institute are more similar to one another, while the effect of the Goethe Institut is noticeably larger. In contrast, the effects of the Goethe Institut and Cervantes Institute tend to be closer to each other for trade, while the effect of the Confucius Institute is noticeably less. We believe that the discussion in Selmier and Oh (2013) on the variety of English's underlying cultures contrasted with French's concentrated cultures provides an insightful comparison relevant to this particular finding. In the study, they noted that there is significant variance in culture across each major language and they examined the relative power of four modern major trade languages (English, French, Spanish and Arabic) in trade and FDI. Specifically, they argued that, among these languages, French (English) speaking countries are considered to have the least (most) amount of variance in culture. That is, English language usage may assume a less culturally grounded position in international economic transactions than would French language usage. Since a particular cultural orientation is not imposed when English is adopted as a business language, people are more inclined to learn English than French, leading to larger trade and FDI effects of English language use. The study concluded that English is the most powerful trading language because it lowers transaction costs most by way of increasing international trade and FDI.

In addition, Figure 1 in Selmier and Oh (2013) shows relative distances between the four major trading languages, as well as four other key languages in international trade and FDI. Among the eight languages (including Chinese and Spanish), it is clear that Chinese is the most distant language by far. Therefore, to facilitate economic transactions between China and non-Chinese speaking countries, learning Chinese or adopting a third language (i.e., use a lingua franca) is necessary. Adding the fact that the Chinese language has a remarkably high level of cultural concentration compared to German or Spanish, one can expect that people are least inclined to learn Chinese for the purpose of conducting business transactions. Consequently, it follows that the motivation for learning Chinese is more culturally driven, and less business driven, than for learning German or Spanish. The idea that the cultural disparity underpinnings of the language spoken might reduce the economic effects of language learning promoted by a cultural institute programme can explain why the Chinese government's approach to extend its soft power by rapidly establishing Confucius Institutes around the world have not been nearly as successful as the efforts by the German Goethe Institute in increasing international trade and FDI. Even when compared to the effects of the much

smaller-scaled Cervantes Institute programme, the effects of the Confucius Institute programme are still less substantial.

The recent rapid increasing number of China's Confucius Institute, established in 2004, has renewed international interest in establishing cultural institute programmes among policymakers in several countries. These countries include Finland (initiated in 2005), Hungary (initiated in 2008), the Philippines (initiated in 2009), Russia (initiated in 2007), South Korea (initiated in 2005), Taiwan (initiated in 2010) and Turkey (initiated in 2007). The findings of this study provide good economic reasoning for policymakers considering starting or expanding cultural institute programmes. That is, once a cultural institute programme is created in a country, one can expect a positive effect on foreign trade and the level of FDI from each additional cultural institute established in that country. Most importantly, given that cultural institutes are under the direct control of the policymakers, and that a substantial positive effect on FDI from a cultural institute has been documented, cultural institutes can serve as a particularly effective policy tool in promoting FDI with a much stronger effect from cultural institute host countries with developing economies.

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