

**Effects of Cultural Institutes on Bilateral Trade and FDI Flows:
Cultural Diplomacy or Economic Altruism?**

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Abstract

The number of cultural institutes from major developed and developing countries increased significantly in the last twenty years. In this paper, using cross sectional and panel data analysis on bilateral trade in goods and services, and FDI inflows and outflows, we examine the economic effects of 1,266 cultural institutes from China, France, Germany, Japan, Portugal, Spain, Turkey and U.K. for the period of 1990-2015. The empirical results suggest that cultural institutes have significantly positive trade and FDI enhancing effects, which are persistent over time. However, these effects are most robust only with goods exports and FDI outflows. Furthermore, the economic effects of cultural institutes are not homogenous across destinations and are the strongest for developed rather than developing host countries. There is also significant heterogeneity among cultural institutes with significant differences in their economic effects on different types of bilateral trade and FDI flows.

Keywords: Cultural Institutes, Bilateral Trade, Bilateral FDI, Country Heterogeneity

JEL Classification: F14, F15, F21, Z10

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1. Introduction

Do cultural affinity and language familiarity affect bilateral economic exchanges? This question has been at the heart of a large and growing number of papers with a mostly affirmative answer. The existing evidence suggests that common language, religion, cultural affinity and other aspects of cultural and historical connections are significant drivers of bilateral trade and investment flows. In this paper we contribute to this debate by exploring the heterogeneous effects of cultural and language institutes on bilateral trade in goods and services and FDI flows.

Cultural and language differences are known to be major drivers of economic decision-making and preferences at least since the time of John Stuart Mill, who argued that such differences can be even more important than the pursuit of self-interest (1956: 484). Since then a large and growing literature has established that language or cultural heterogeneity create non-tariff entry barriers and are important determinants of economic exchanges between countries. Common language and language proficiency, for example, are found to be robust and significant determinants of bilateral trade and FDI flows (Anderson and Wincoop, 2004; Bergstrand and Egger, 2007; Melitz, 2008; Guiso et al., 2006, 2009; Ku and Zussman, 2010; Egger and Lassmann, 2012, 2015; Melitz and Toubal, 2014; Gokmen, 2017).¹

Cultural similarity (or distance) is also shown to be a significant driver of bilateral economic exchanges. Guiso et al. (2006, 2009) argue that cultural biases, conditioned by traits such as religion, history of conflicts, and genetic and somatic differences, have a significantly negative effect on bilateral trade, portfolio investment and FDI flows. Likewise, Boisso and Ferrantino (1997), Disdier and Mayer (2007) and Gokmen (2017) confirm that cultural familiarity

¹ Using meta-analysis on 81 articles, Egger and Lassmann (2012) show that the effect of common language on trade is positive and significant, increasing trade on average by 44%. Ku and Zussman (2010) also show that the level of English proficiency, measured by TOEFL scores has a positive effect on trade, suggesting that language acquisition can help negate historically determined fixed language barriers to trade.

has a significantly positive effect on bilateral trade flows. Culture also affects the type and structure of domestic institutions (Hofstede, 2001). Particularly, institutional differences in legal codes, transparency, financial system, corruption, law and order, etc. are shown to be significant drivers of trade and investment flows. Such differences create non-tariff entry barriers, increase the cost of doing business and hurt exporter entry, growth and survival as well as trade volumes (Anderson and Marcouiller, 2002; Belloc, 2006; Konya, 2006; Levchenko, 2007; Papaioannou, 2009; Fernandes et al. 2016; Araujo et al. 2016).

In short, increasing language and cultural recognition and affinity between countries can help develop bilateral economic exchanges by lowering entry barriers and transaction costs through providing know-how and country-specific information.² Recognizing such benefits, many countries have established cultural and language centers as well as foreign language radio and TV broadcasts across a wide range of countries. Furthermore, cultural institutes offer various scholarships, allowing students and academics to visit those home countries. British Council (2015), for example, reports that its work helps improve the economic prosperity of the U.K. through establishing international connections, building trust and cultural understanding, and increasing trade and investment flows.³ Cultural institutes can also serve political purposes as they promote the social, cultural and political values and priorities of home country governments.⁴ Overall, therefore, language and cultural institutes are expected to play a major role in lowering non-tariff entry barriers and help build bridges between home and host countries, allowing increased trade, investment and social, political and educational exchanges.

² Ginsburgh et al. (2017) find that trade linkages increase the demand for foreign language acquisition.

³ British Council (2015) reports that people who attended British Council's cultural and language activities trust the UK on average 24 percentage points more than other countries.

⁴ The British Council, for example, states that it aims at promoting equality and human rights while fighting against discrimination (British Council, 2015).

Seeing them as strategic instruments for economic penetration into new markets and for soft power through cultural and political influence, home country governments subsidize these cultural institutes and support their operations.⁵ British Council of the U.K., for example, was operational with 193 offices in 118 countries in 2015. Likewise, Germany's *Goethe Institut*, Japan's *Foundation*, France's *Institut Francais*, Spain's *Instituto Cervantes*, Portugal's *Instituto Camoes* are other similar centers that are established across a wide range of countries. While up until recently most such institutes were from developed countries, developing countries have also started following suit, including the *Confucius Institute* of China and the *Yunus Emre* institute of Turkey. Particularly, reflecting its growing global power, China has become a major exporter of cultural institutes around the world through its Confucius Institute, which reached a record number of 453 in 118 countries in 2015.⁶ Reflecting Chinese government's strategic goals to expand its soft power, the majority of these institutes are opened in developed countries with the U.S. coming first with 99, and the U.K. coming second with 27 institutes. We observe similar soft power and economic expansion objectives for Turkey, whose Yunus Emre institute is mostly opened in former Ottoman territories of Balkan states with Bosnia and Herzegovina and Kosovo coming as the top two destinations with three institutes in each.

Despite a large number of studies on the economic effects of cultural and language similarities, research on the effects of institutional networks remain limited. Among the few, Rose (2007) finds a significantly positive effect of foreign embassies on home country exports. Likewise, Ferguson and Forslid (2013) show that the number of Swedish exporters to a given

⁵ The annual report of British Council (2015) indicated that they helped establish networks with emerging markets and facilitated the export of 1.3 billion pounds worth direct higher education exports and indirect contribution to higher education of 5.5 billion pounds in 2015.

⁶ The Confucius Institute Headquarters is also referred to as Hanban, named after the parent organization, headquartered in Beijing.

destination increases significantly after the opening of a new Swedish embassy. In a meta-analysis, Moons and Bergeijk (2016) report that economic diplomacy through embassies, consulates, other diplomatic facilities, investment and export promotion offices, trade and state visits has a significantly positive effect on trade and investment flows. In addition, Kandogan and Hiller (2018) show that membership in intergovernmental organizations helps build trust and increases the likelihood of signing trade agreements. Among existing studies, the closest to ours are Akhtaruzzaman et al. (2017), Lien and Co (2013), Lien et al. (2012, 2014, 2016) for the case of Confucius Institutes, and Lien and Lo (2017) for the Goethe Institute. Akhtaruzzaman et al. (2017) report a significantly positive effect of Confucius Institutes on FDI outflows from China to Africa and Lien et al. (2012) report a positive effect on Chinese exports and FDI outflows to the rest of the world. Lien and Co (2013) reports a similar effect for US exports to China and Lien et al. (2014) find a positive effect on demand for international travel to China. Likewise, Lien and Lo (2017) report a significantly positive effect of Goethe Institute on German exports and FDI flows.

However, these papers are case studies focusing on one or two cultural institutes at a time, and are usually for aggregate trade flows, and therefore are much more limited in scope. They also do not separate goods trade from services trade. Regarding estimation, the use of OLS rather than Poisson Pseudo-Maximum Likelihood (PPML) method in Lien et al. (2012), Lien and Co (2013), and Lien and Lo (2017), and log-linearization in Lien et al. (2012), Lien and Co (2013), and Akhtaruzzaman et al. (2017) most likely cause biased estimates. Moreover, the limited sample sizes and the lack of bilateral and country-year fixed effects in most of these studies make it difficult to address home and host country heterogeneity, multilateral resistance, or time-invariant and country-specific factors. As is shown by Anderson and van Wincoop (2003), bilateral trade between i and j is sensitive to multilateral resistance from other trade partners, a point mostly ignored in

previous research on cultural institutes. Lastly, the use of case study approach makes it difficult to examine cultural institute heterogeneity and to test whether cultural institutes all have the same economic effect on different types of bilateral exchanges.

In this paper, we contribute to the literature in six novel ways. First, we examine the effects of cultural institutes on bilateral trade in goods and services, and FDI flows. While cultural, historical, institutional and language similarities are path dependent and are slow-changing, countries through cultural institutes can build and develop new cultural ties with their country of destination, allowing them to lower entry barriers into those markets. They can also facilitate trade and investment flows by providing know-how and helping establish connections and partnerships between investors. Second, we study the heterogeneous effects of these institutes on different types of economic exchanges including exports and imports of goods and services, and FDI inflows and outflows. Third, we control for heterogeneous effects of cultural institutes based on destination country development levels. Fourth, we examine cultural institute heterogeneity and test whether their effects differ from one institute to the next, and from one type of economic exchange to another. Fifth, we tackle the issues of zero observations and log-linearization of dependent variable using the Poisson Pseudo-Maximum Likelihood (PPML) method of Santos Silva and Tenreyro (2006). Sixth, we employ an identification strategy that controls for multilateral resistance and omitted variable bias by including country, year, country-year and bilateral fixed effects.

The empirical analysis is based on 1,266 cultural centers from China, France, Germany, Japan, Portugal, Spain, Turkey and the UK for the period of 1990-2015, and is conducted using a gravity equation. The empirical results using both cross section and panel data analysis suggest that cultural institutes have a significantly positive effect on bilateral trade and FDI flows. However, these effects are most significant and robust only for goods exports and FDI outflows. For other

types of trade flows and FDI inflows, the predicted effects are not significant or robust across different specifications or estimation methods. Our findings also reveal persistently positive effects from these institutes over time, especially so for goods exports. In the extensions, we also find that the positive effects of cultural institutes are not homogenous across destination countries but are stronger for developed than developing countries. The predicted effects also differ significantly across different cultural institutes.

The rest of the paper is organized as follows. Section 2 introduces the empirical analysis, including the estimation method and data. Section three presents the empirical results, followed by extensions and robustness tests in section four. Section 5 concludes.

2. Empirical Analysis

2.1 The empirical specification

In order to test the effects of cultural institutes on bilateral trade and investment flows we use a standard gravity model applied to both cross-section and panel data in Eq. (1) as in Anderson and Wincoop (2004), Disdier and Mayer (2007), Guiso et al. (2009), Egger and Lassmann (2012) and Melitz and Toubal (2014).

$$X_{ijt} = \alpha_0 + \beta_1 Inst_{ijt} + \alpha_i Gravity_{ijt} + V_{ijt} + \varepsilon_{ijt} \quad (1)$$

where X_{ijt} is the level of bilateral trade (i.e. exports and imports) in merchandise goods, and services, and FDI inflows and outflows between home country i and host country j in year t (in current US dollars); $Inst_{ijt}$ is the total (log) number of cultural institutes operated by home country i in host country j in year t ; $Gravity$ includes standard gravity variables, which are described below; V_{ijt} is a vector of year, host and home country fixed effects, which help control for the omitted variable bias and multilateral resistance; and ε_{ijt} is the error term.

Inst is our main variable of interest, and as discussed before, we expect the total number of cultural institutes to have a positive effect on bilateral economic exchanges by lowering non-tariff trade and entry barriers and by increasing the range of economic opportunities for economic agents. We propose that this positive effect is increasing in the number of institute branches both within and across countries as increasing availability and accessibility of cultural institutes allows stronger ties and growing interactions between countries. There could also be network externalities as different branches can pool their resources and share their expertise within and across countries.

Gravity includes the standard gravity controls as follows: GDP_{it} and GDP_{jt} are the (log) levels of GDPs of country i and j in current dollars, which control for the market size and home market effects; $GDPPC_{it}$ and $GDPPC_{jt}$ are the GDP per capita of country i and j (in current dollars), controlling for income effects (GDP variables are dropped in the cross section estimation because of country fixed effects); *Distance* is (log km) distance between i and j and helps control for trade costs; *Language_{ij}*, *Border_{ij}*, *Colony_{ij}*, *Religion_{ij}* and *Legal_{ij}* are time invariant dummy variables equaling to one if i and j share a common: language, common border, colonial past, religion or legal code, respectively. Controlling for time-invariant cultural, historical and religious determinants of economic exchanges such as *Language*, *Colony*, *Religion* or *Legal* helps us separate the direct and time-variant effects of cultural institutes. A common legal system, for example, lowers the cost of entry and exit barriers and transaction costs. Likewise, common religion affects cultural and institutional affinity and trust between countries and therefore can affect economic exchanges. *Areap* is (log product) area in square km of i and j . PTA_{ijt} is a dummy variable equaling one for bilateral preferential trade agreements; and EU_{ijt} is a dummy variable if i and j are both in EU. We should note that similar to the effects of gravity controls such as *Language*, *Colony*, *Religion* and *Legal*, *PTA* and *EU* dummies also capture some of the cultural

and institutional affinity between countries. For example, Kandogan and Hiller (2018) argue that intergovernmental organizational networks influence the signing of PTAs. Trade agreements, such as the European Economic Community before the launching of EU, also increase cultural and institutional ties, leading to higher economic exchanges. Additionally, the EU dummy controls for the unique experience of EU member states, which went through decades-long institutional harmonization of rules, laws, and standards prior to their EU membership.

In both cross-section and panel analysis, we include a full set of fixed effects. First, in order to control for time invariant but country specific determinants of trade and FDI flows, including unobservable differences in various characteristics of cultural institutes, we include exporter and importer country fixed effects. Time-specific and country-invariant global changes in trade and FDI flows are captured by year fixed effects. Furthermore, as pointed out by Anderson and van Wincoop (2003) bilateral trade between i and j can be sensitive to country specific and time varying multilateral resistance from other trade partners. However, the lack of controls for multilateral resistance remains a major problem in previous work on this topic. To address this issue, we include exporter-year, importer-year and country-pair fixed effects in Eq. (1) for the panel estimation, which remove all other control variables that are country-year or country-pair specific.

To estimate Eq. (1) we use the PPML method of Santos Silva and Tenreyro (2006) (clustered at country-pair level), which is shown to consistently estimate the gravity equation for trade flows and is robust to different patterns of heteroskedasticity and measurement error, especially in the presence of large number of zero observations.⁷ For example, compared to PPML, standard OLS and FE methods with log-linearization of positive trade flows are shown to over-estimate the effects of standard gravity

⁷ An alternative could be the IV-PPML method of Windmeijer and Santos Silva (1997). However, this estimation is likely to suffer from the incidental parameter problem in the presence of fixed effects, which are crucial to capture country and time specific determinants of bilateral trade and investment flows in our paper.

variables such as colonial ties, common language and PTAs (Santos Silva and Tenreyro, 2006). In using the PPML method, to avoid estimation problems caused by the log-linearization of positive trade flows, we include both zero and positive trade flows in levels as our dependent variable. The usual practice of censoring at zero-trade introduces a bias into the estimation and causes inconsistent parameter estimates. Besides, when throwing away zero observations, there is no way of knowing whether those observations are caused by missing observations that are wrongly inputted as zeros, rounding errors or truly zero trade. It is also likely that the rounding-down errors, rather than rounding-up, are more likely to occur for smaller and more distant countries, causing an estimation bias (Head and Mayer, 2014).⁸ To address these issues, following Santos Silva and Tenreyro (2006, 2011), we inputted zeros for all missing observations between all possible country-pairs that have recorded a positive trade or FDI flow for at least one period during the period analyzed. This method is shown to perform well even in the presence of large number of zero observations, which is usually the case in studies on bilateral trade and FDI (Santos Silva and Tenreyro, 2011). Additionally, for comparison we also report the fixed effects (FE) results with robust standard errors after log-linearizing Eq. (1).⁹

2.2 Data

The data on bilateral merchandise trade between eight home (i.e. China, Germany, France, Japan, Portugal, Spain, Turkey and United Kingdom) and 214 host countries are from the IMF's Direction of Trade Statistics dataset, covering the period of 1990-2015 and are in current dollars. When not available, we used the mirror values of exports and imports from trading partners for the full time

⁸ In the sample, 4% of goods exports, 8% of goods imports, 79% of services exports, 85% of services imports, 76% of FDI outflows and 76% of FDI inflows are zero observations.

⁹ The number of non-zero observations in the sample is much smaller in goods trade than services trade. Particularly, in the full sample for panel data, the total number of non-zero observations for services exports and imports are 10,489 and 8,936 while the same numbers are 39,614 and 38,154 for goods exports and imports, respectively. Furthermore, the PPML estimation does not allow negative values in the dependent variable, which is why we had to include only non-negative values of FDI here. The alternative of rescaling or winsorizing with a fixed value would arbitrarily turn missing and zero observations to a positive value.

period and adjusted the cif (cost, insurance, freight) values to fob (free on board) values using the average margins for the full sample, which was 5%. The bilateral services trade and FDI data are from the OECD (2017) statistics for the period of 1990-2015. The FDI data are based on FDI-receiving host countries if both i and j are in OECD. For China, we used the FDI inflows and outflows data from the OECD countries using mirror values.¹⁰

The data on cultural institutes are hand-gathered from official websites and publicly available annual reports. In a few cases, we also gathered information through our e-mail correspondence with the institutes. In the end we have information on eight home countries, which are China (Confucius Institute), France (Institut de Francais), Germany (Goethe Institute), Japan (Foundation), Portugal (Instituto Camoes), Spain (Instituto Cervantes), Turkey (Yunus Emre Institute), and the U.K. (British Council). For 5 countries, China, Germany, Japan, Portugal, and Spain, we have a time-variant panel data that include the establishment dates of the institutes in each host country. For three countries, France, Turkey and U.K., we only have cross-section data for their total numbers in 2015 as the establishment dates were not made publicly available.¹¹ Ideally, we would like to control for cross-country differences in size and activity levels of each

¹⁰ We should note that this leaves out those destination countries that are not OECD members for China. We preferred to use the mirror approach from OECD FDI statistics for China because of the lack of consistent, reliable and comparable data for a large number of partner countries from Chinese official statistics. For example, 2016 Chinese Statistical Yearbook (<http://www.stats.gov.cn/tjsj/ndsj/2016/indexeh.htm>) provides net FDI outflows and stocks data but only for 25 destination countries in 2015. Of the total FDI outflows in 2015 (2014), 62% (69%) were to Hong Kong, which is a Specially Administered Region (SAR) of China. Furthermore, Cayman Islands and Virgin Islands together received over 8% of total outflows from China in 2015. Therefore, almost 70% of total FDI outflows went to Hong Kong, Cayman Islands and Virgin Islands. Turning to FDI inflows, 68% of the total in both 2014 and 2015 were from Hong Kong, and 6% were from Cayman Islands and Virgin Islands together. It is highly likely that FDI flows to and from tax havens are a way for domestic and foreign firms to bypass domestic financial regulations in China. Therefore, relying on Chinese statistics will likely yield biased estimates as these three countries are very unlikely to be the final destinations or sources of FDI flows.

¹¹ We also contacted these institutes through e-mail but did not receive any response regarding their establishment dates.

cultural institute in each country and across time. However, the lack of reliable and continuous data on these variables makes it impossible to include them in the regression analysis. Besides, the use of country fixed effects, and later country-year and country-pair fixed effects, help control for country and country-pair specific differences in such unobservables.

Gravity variables for GDP and GDP per capita are from the World Development Indicators of the World Bank. PTA data are from the WTO. Distance, country size (*Area_p*), colonial links, common border, language, religion, and legal system are from the CEPII database.¹² Tables 1 and 2 show the descriptive statistics for data used in the cross section and panel data analysis.

<Insert Table 1 & 2 Here>

The distribution of cultural institutes reflects the economic and political priorities of home countries. For China, the trading partner with the highest number of cultural institutes is the USA, reaching 99 in 2015, up from 0 in 2004. For Germany it is France (8 institutes), for Spain it is Brazil (8 institutes), for France, it is Germany (21 institutes), for the U.K. it is India (9 institutes), for Japan it is India and USA (two institutes each), for Portugal it is Italy (12 institutes), and for Turkey it is Bosnia and Herzegovina and Kosovo (two institutes each) in 2015. In terms of the aggregate totals (and in the regression sample), China is the heavyweight with 453 (449) institutes established in 118 (114) countries, followed by France with 207 (201) institutes in 97 (93) countries, and Great Britain with 193 (188) institutes in 118 (113) countries. Then comes Germany with 151 (150) institutes in 94 (93) countries, Portugal with 121 (117) institutes in 46 (43) countries, Spain with 75 (68) institutes in 43 (41) countries, Turkey with 43 (38) institutes in 35 (32) countries, and lastly Japan with 23 (23) institutes in 21 (21) countries. The regional

¹² *Religion* is measured as the products of population shares with the same religion, including Buddhist, Christian, Hindu, Jewish and Muslim, atheists, which are further broken down to Roman Catholic, Catholic Orthodox, Protestants, Shia and Sunni (Head and Mayer, 2014).

distribution of these institutes also reflects the priorities and motivations of home country governments. For China, the largest concentration of Confucius Institutes is in Europe (172) followed by North America (110) whereas Middle East and North Africa (MENA) region hosts only 8 while Sub Saharan Africa and Latin America regions, which are the targets of increasing Chinese investment and trade flows, host 37 and 35 institutes, respectively. For Germany, Spain, France, Great Britain, Portugal and Turkey, the highest concentration of cultural institutes is in Europe and is intra-regional.

The total number of cultural institutes by China, Germany, Spain, Japan and Portugal increased almost seven-folds from 1990 to 2015, up from 122 to 823. Once we include France, Turkey and the UK, for which we only have cross sectional data in 2015, the total number for all eight countries increases to 1,266 in 2015. In the final regression sample, the total is 1,234 institutes in 550 countries. Particularly striking is the expansion of Confucius Institutes since 2004, when it was first opened in only one country, Republic of Korea. At the end of 2015, the number of Confucius Institutes increased to 453 in 118 countries. Meanwhile, of the five countries, the share of the Goethe Institute of Germany dropped from 89% in 1990 to 19% in 2015. Looking at all seven countries in the sample, the share of China was 36%, followed by France at 16%, UK at 15%, Germany at 12%, Portugal at 10%, Spain at 6%, Turkey at 3%, and Japan at 2% in 2015.

<Insert Table 3 Here>

3. Empirical Results

We start our analysis on the effects of cultural institutes using cross section data, which allows us to use the largest possible sample as of 2015. As noted earlier, the time series data are not available for the British Council of the U.K., Institut de Francais of France and Yunus Emre Institute of Turkey. Table 4 presents results from the cross section analysis with regard to the effects of cultural

institutes on merchandise goods and services exports and imports of eight home countries, including a full set of country fixed effects. While the PPML results are our benchmark regressions, we also report fixed effect results for comparison. The dependent variables are goods exports, goods imports, services exports and services imports in columns (1)-(2), (3)-(4), (5)-(6) and (7)-(8), respectively.

The results suggest that cultural institutes have a significantly positive effect on goods exports and imports as well as services exports and imports at economically and statistically significant levels. The coefficient estimates appear to be lower in the PPML estimations compared to the FE. In comparison, while the economic effect of cultural institutes on goods exports and imports in the PPML estimates appear to be quite close (i.e. 0.131 and 0.112), the effects on services exports and imports are significantly higher (i.e. 0.313 and 0.357). Looking at the gravity variables, consistent with previous research, distance has a significantly negative effect across all regressions while having a common legal system has a positive one. Other gravity variables appear to affect goods and services trade differently, which is not unexpected. Joint country size, common border, and common language affect goods exports and imports positively but show mixed effects for services trade. Common language affects goods imports and services exports positively while PTAs and EU membership affect mostly goods trade.

Arguably, the point estimates both from FE and PPML regressions suggest that cultural centers are more important for services trade than goods trade as consumers in services are more directly exposed to language and cultural barriers.¹³ In fact, using the PPML estimates as the benchmark, cultural institutes increase bilateral services trade around three times more than goods trade. This finding is consistent with the results from gravity variables, which show that having a

¹³ For example, compare the effect of language and cultural affinity on demand for tourism or financial services with the demand for crude oil or smart phones.

common legal system increases services exports and imports more than goods exports and imports. Likewise, sharing a common religion or language is found to be increasing services exports more than goods exports.

<Insert Table 4 Here>

Columns (1)-(2) in Table 5 shows the effects of cultural institutes on FDI outflows from home county i to destination country j and reveal a significantly positive effect, even though at only 10% significance level in the PPML estimate. We also note that the economic effect of cultural institutes on FDI outflows is significantly larger than the effect on trade flows. In columns (3)-(4) we examine the effects of cultural institutes on FDI inflows to home countries but do not find any significant effect. The results suggest that cultural institutes affect FDI outflows but not inflows. Regarding other control variables, we find that sharing a common border, language and religion, and having signed a PTA all have a positive and significant effect on FDI inflows.

<Insert Table 5 Here>

While cross-section analysis is suggestive, it is hardly conclusive, as we cannot control any observed or unobserved time-variant or bilateral determinants of trade and investment flows. Therefore, we continue our empirical examination using panel data analysis in Table 6, which allows us to explore the effects of changes in the number of cultural institutes in destination countries over time. However, this comes at a cost as three countries, France, U.K. and Turkey, do not have time series information on their cultural institutes in host countries, and therefore have to be dropped from the sample. Thus, Table 6 repeats the regression estimations of Table 4 from both FE and PPML estimations but this time using panel data with country and year fixed effects, in addition to other country and time variant control variables. We also replace the (log) level of cultural institutes variable with its first difference, which yields more parsimonious estimates in

our regression analysis. Using the first difference of $(\log)Inst$ also addresses the unit root problem.¹⁴ Columns (1)-(2) show the results for total merchandise goods exports and yield a significantly positive coefficient estimate (at 1% level) for cultural institutes, which is 0.534 in the FE and 0.291 in the PPML regression. Columns (3)-(4) present the results for merchandise goods imports and again yield a significantly positive effect of cultural institutes, which is 0.373 in the FE and 0.119 in the PPML regressions. These results are consistent with the cross-section analysis and highlight the positive trade-enhancing role of cultural institutes. However, the panel data results suggest that the positive effect is significantly larger for goods exports than goods imports. Whereas the estimated effects from PPML regressions were 0.131 for goods exports and 0.112 for goods imports in the cross-section analysis of Table 4, these effects are found to be 0.291 and 0.119 in the panel-data analysis of Table 6. Interestingly, the beta estimate for goods imports remains almost identical between cross-section and panel data analysis. In columns (5)-(8), we examine the case for services trade and, unlike before, we do not detect any significant effect of cultural institutes on either exports or imports of services despite a positive coefficient estimate in the PPML estimations. Gravity controls in all sets of regressions appear mostly with expected signs and significance levels and are similar to those reported in Table 4. We should also note that all regressions include four sets of (unreported) control variables for income and market size at home and destination markets that are home and host country nominal GDPs and per capita incomes (in current dollars), which are reported in the online Appendix.

<Insert Table 6 Here>

¹⁴ We used the Harris-Tzavalis panel unit root test in Stata 14.2, which showed the presence of a unit root in levels but not in first difference of this variable. We should note that the presence of a unit root in panel data with large N and small T, as is common in gravity models, is not a major problem and regression analysis with year fixed effects still produces robust estimates of parameters of interest. Furthermore, we also repeat regressions with country-year and country-pair fixed effects in Tables 8-11, which drop all other control variables except for *Inst*.

Table 7 presents panel data results for FDI flows as the dependent variable. In columns (1)-(2) we find that *Inst* has a significantly positive effect on FDI outflows from home to host countries, similar to the cross sectional results in Table 5. Likewise, we again find that *Inst* has a stronger effect on FDI outflows than on merchandise goods exports or imports.¹⁵ Regarding FDI inflows in columns (3)-(4), the estimated effects are significantly smaller in column (4) than in column (2), both economically and statistically, which is again consistent with the cross section analysis in Table 5. This finding provides support to the view that cultural institutes are more instrumental in establishing networks and increasing know-how about destination countries, enabling more investment flows in that direction. However, we find no evidence of a two-way relationship that could suggest that the same was true for destination countries. In all sets of regressions other control variables are found with expected signs for the most part, showing that increasing distance discourages FDI inflows and outflows while colonial past, common language, and PTAs increase FDI outflows. Common religion and PTAs do not appear to have any effect on FDI inflows but positively effect FDI outflows. Common legal code is found to have a positive effect only on FDI inflows.

<Insert Table 7 Here>

In Table 7 we used country and year fixed effects to control for any unobservable country or year specific factors. While this is sufficient for the cross-section analysis, as pointed out by Anderson and van Wincoop (2003), bilateral trade between *i* and *j* can be affected by country specific and time varying multilateral resistance from other trade partners. To control for it, we repeated our benchmark regressions using PPML by including exporter-year and importer-year fixed effects together with country-pair fixed

¹⁵ This is a similar finding to that of Lien et al. (2012) where they report stronger effects on FDI outflows than exports for the case of Confucius Institutes.

effects and reported the results in Table 8.¹⁶ However, including these fixed effects causes country-year and country-pair specific control variables to drop from the regressors. Once we account for all country-year and fixed country-pair determinants of bilateral trade and investment flows, we continue to find that cultural institutes have a significantly positive effect on goods exports and FDI outflows, and to a smaller degree, on FDI inflows. And yet, we fail to detect any such effect for services exports or imports.

<Insert Table 8 Here>

Overall, our findings suggest that cultural institutes facilitate goods market penetration and encourage exports through both home and host country effects. It is likely that through these institutes' home countries gain know-how and market familiarity while establishing new networks in destination markets. Likewise, they help increase country recognition and familiarity among destination country consumers. Therefore, both pull and push factors are most likely at play here, stimulating goods exports and FDI outflows.

4. Extensions

4.1 Partner country heterogeneity

The results presented in Tables 4-8 suggest that cultural institutes have a significantly positive effect on bilateral goods exports and FDI outflows. Their effects on imports, services trade and FDI inflows, however, are either insignificant or inconclusive. It is possible that the trade and investment enhancing effects of cultural institutes are conditional on the economic development level of partner countries, a likely cause of country heterogeneity. The effects of Confucius Institutes on Chinese exports and imports to and from a developing country such as Brazil, for example, might be different than those from a developed country such as the US. The availability and accessibility of other sources of language acquisition, cultural recognition and educational

¹⁶ Estimations are done using the *ppml_panel_sg* command in Stata 14.2 (Larch et al., 2019).

opportunities are much limited in developing countries than developed ones and therefore cultural institutes such as the British Council can have a larger effect in those markets. Furthermore, developing country markets enjoy higher growth potential than more mature economies, allowing cultural institutes to facilitate faster trade and investment growth. Therefore, we may expect increasing cultural and language ties with developing countries to have stronger trade and investment boosting effects than those with more mature economies.

However, the opposite can also be true. First, while developing country investors enjoy a comparative advantage in other developing country markets, they lack the know-how and experience to help them with market penetration in developed country markets (Demir and Hu, 2016). Second, similarities in institutions, trade and investment laws, legal codes, consumer preferences and endowments between developed country pairs can help cultural institutes be more effective in other developed host countries (Hallak, 2010). Such similarities can also influence the operational goals of cultural institutes. For example, in managed or command economies such as China, cultural institutes may not have too much room for encouraging bilateral economic exchanges but instead focus on cultural activities. Third, the resource endowments of cultural institutes might be biased in favor of advanced host countries, either because of cultural familiarity, economic size and importance, or safety and operational ease. All offices of British Council in Russia, for example, was shut down by the Russian government in 2018 as a part of a political tit-for-tat between Britain and Russia. Consequently, the operational goals of home countries in opening such institutes, be that economic, political or cultural, may also differ between developed and developing countries. Thus, whether the effects of cultural institutes differ between developing and advanced host countries is an empirical question.

To test this hypothesis, we divide the sample of host/destination countries into two using the IMF's categorization of advanced economies and repeat the regression analysis for these two subsets using our benchmark specification.¹⁷ For brevity we report coefficient estimates only for *Inst* but provide full results in the online Appendix. Table 9 repeats the cross-sectional analysis of Tables 4 and 5 for goods and services trade, and FDI flows and suggests significant differences between advanced host economies and the rest. Particularly, in column (1) we find that cultural institutes have a significantly positive effect on goods exports to both advanced and developing countries, though the effect is larger for the latter. For imports in column (2), we find that the effect is significant only for those from advanced but not developing economies. For services exports in column (3) the effect is significant again only for those from advanced economies. For services imports in column (4), we detect significant effects for both advanced and developing economies but more so for the latter. Regarding FDI flows, we find a significant effect only for FDI outflows to developing countries but not to advanced economies. We do not detect any significant effect for FDI inflows either from developing or advanced economies.

<Insert Table 9 Here>

Next, we examine the case of advanced and developing countries with more scrutiny in Table 10 using the panel data analysis of Tables 6 and 7. The results show that our previous findings are highly dependent both on the development levels of destination countries and on country-and-time-variant effects. In columns (1)-(2) of Table 10, we find that cultural institutes have a significantly positive effect on exports and imports of goods to and from advanced economies. The effects on developing country trading partners, however, are found to be much smaller and statistically insignificant. In columns (3)-(4) we confirm these findings for services

¹⁷ As noted in endnote 11, because of data limitations, we rely on OECD data for FDI flows, which causes FDI outflows from China to non-OECD countries to be treated as zero.

exports and imports as well where the predicted effects are in fact positive and significant for advanced economies but negative for developing countries. Results in column (5) suggest that the significantly positive effect of *Inst* on FDI outflows are limited with only developing countries and show no statistical evidence of such effects in advanced host countries.¹⁸ In column (6), we find a positive and significant effect on FDI inflows from advanced countries. Surprisingly, the effect for developing countries is negative but only marginal significant.

<Insert Table 10 Here>

In Table 11 we further examine the findings from Table 10 by introducing exporter-year, importer-year and country-pair fixed effects, which take care of the multilateral resistance effects and remove all our control variables except for *Inst*. Similar to Table 9, this approach helps control for all observed and unobserved country-time variant or country-pair fixed determinants of bilateral trade and investment flows. The results suggest that cultural institutes have a significantly positive effect on exports to both developing and advanced economies, though with an almost twice larger effect for the latter. Unlike in Table 10, we do not find any effect on imports from either advanced or developing countries. The results for services exports and imports are similar to those before with no robust or economically meaningful effect. Regarding FDI flows, we find significant and positive effects on FDI outflows and inflows but only for advanced countries.

<Insert Table 11 Here>

4.2 Are all cultural institutes the same?

In this section we examine whether the effects of cultural institutes on bilateral trade and FDI flows are homogenous across different countries of origin. In other words, we test if all cultural institutes are the same. It is possible, and in fact highly likely, that cultural institutes differ in terms of what

¹⁸ Lien et al. (2012) report a similar positive effect of Confucius Institutes on Chinese exports and FDI outflows to developing but not to developed countries.

they do and how they do. Their missions and operational goals are also likely to differ from one another. Chinese government through the Confucius Institute, for example, may have different goals than those of the Turkish government, which operates the Yunus Emre institute. The hierarchy of those goals may also differ with some countries prioritizing economic benefits while others emphasizing cultural ones. Furthermore, even if these institutes share the same set of goals in the same order of priority, their success rates in achieving those goals may differ, be that because of differences in resource endowments, know-how or other country specific reasons. To examine this possibility, we introduce interaction terms between cultural institutes and country of origin dummies in Eq. (2):

$$X_{ijt} = \alpha_0 + \beta_1 Inst_{ijt} + \beta_2 Inst_{ijt} * Home_i + \alpha_i Gravity_{ijt} + V_{ijt} + \varepsilon_{ijt} \quad (2)$$

where *Home* is a vector of dummy variables for country of origin of cultural institutes, equaling one for each, and zero otherwise (Portugal is the base). The interaction term between *Inst* and *Home* will reveal whether the effect of *Inst* is homogenous across different home countries. As before, we run two sets of regressions using both cross-sectional and panel data and report results in Tables 12 and 13 below. For brevity, we present only the net effects for each country and report full results in the online Appendix.

<Insert Tables 12 &13 Here>

The results suggest that the effects of cultural institutes are indeed heterogeneous and very much depend on the country of origin. Based on cross-section and panel analysis in Tables (4)-(8) we previously reported that the most robust effects of cultural institutes are on goods exports and FDI outflows. However, we now find that these effects differ significantly from one cultural institute to the next. Particularly, we find that cultural institutes have a significantly positive effect on goods exports from China, Japan, and Portugal in the cross section analysis, and China and

Germany in panel analysis. That is, the Confucius Institute of China is the only country where we find a significantly positive effect in both cross-section and panel analysis after controlling for country-year and country-pair fixed effects. Regarding goods imports in column (2) in both tables, we find a positive and significant effect for China, Portugal and the U.K. but only in the cross-section analysis and detect no positive effect in the panel analysis. Likewise, for services exports and imports the only positive effects are found in the cross section analysis and none in the panel analysis. As for FDI outflows, the positive effects differ across different cultural institutes. In fact, while we find a positive effect for France, Germany, Japan, Turkey and U.K. in the cross section analysis, the only country that stands out in the panel analysis is Spain. Regarding FDI inflows, while we previously found no significant effect in the cross section analysis and only a marginally positive effect in panel analysis, the effects differ across countries now. Particularly, Japan in the cross section and China, Germany and Portugal in the panel analysis stand out with positive and significant effects.¹⁹ Of the two, our preferred method is the panel data given our ability to control for country-year and country-pair specific factors. Given the results presented so far, China and Germany appear to be benefitting from their cultural institutes the most among others when it comes to merchandise exports. As for FDI outflows, Spain is a clear beneficiary. For FDI inflows, China, Germany and Portugal are the ones benefitting the most. For those countries where we only have cross-section data, France benefits in FDI outflows, Turkey benefits in services exports and imports and FDI outflows, and the U.K. benefits in both goods and services imports, and FDI outflows.

These differences across different cultural institutes are indeed fascinating and suggest the presence of significant differences in terms of goals and operational capabilities of these institutes.

¹⁹ We should also note that there are several cases where the predicted effects are negative and significant. We hope to examine the causes of this unexpected finding in future research.

We detect no significant effect, for example, for Japan from its *Foundation* in the panel analysis. The same is true for *Instituto Cervantes* of Spain, except for FDI outflows. What causes these differences? Why some cultural institutes are more effective in stimulating bilateral trade and capital flows than others? These are questions that we hope will be examined in future research. Lastly, our analysis shows the heterogeneous responses of goods and services trade as well as FDI inflows and outflows to cultural institutes. As it turns out, establishment of cultural institutes do not necessarily boost all economic exchanges equally.

4.3 Robustness analysis

In this section we conduct a rich battery of robustness tests to examine the sensitivity of our findings. All (unreported) test results are available in the online Appendix. First, to remove the effect of outliers, we exclude those observations where trade and FDI flows are above the 99th percentile. Second, we restrict the sample to those above and below the bottom and top one percentile levels of GDP per capita. Third, to test the long-term effects of cultural institutes, we repeat the panel regression analysis using lags up to five, first one by one and then jointly. Using lags also allows us to control for any reverse causality problem running from bilateral economic exchanges to cultural institutes. The results suggest that the most persistent effect of cultural institutes is for goods exports with a significantly positive effect for every year up to year four. This finding is true both with the standard gravity controls and also country-year and country-pair fixed effects. Fourth, as a falsification test we repeated the cross-section and panel regression analysis by introducing an interaction term between cultural institutes and common language. If it is true that cultural institutes facilitate language and cultural recognition and familiarity in host countries, these effects should be smaller between country pairs that share a common language, which signals either a common colonial past or national heritage. The results, which are again reported in the online

Appendix confirm this prediction showing that the marginal effect of cultural institutes on goods trade and FDI flows is significantly smaller in countries that share a common language with the home country.²⁰

Lastly, to address the concern that the estimated effect of cultural institutes is indeed driven by institutional similarities between country pairs, we include an institutional similarity variable. Institutional development implies sophistication in economic and political institutions including government bureaucracy, level of corruption, law and order, property rights, civil institutions and democracy, etc. All these aspects of institutional development are arguably highly correlated with each other and are expected to affect bilateral economic exchanges (Levchenko, 2007; Demir and Hu, 2016; Fernandes et al., 2016; Lien et al., 2016; Liu et al., 2018). Market entry, growth and survival, for example, require familiarity with destination institutions, which determines the level of entry costs (Araujo et al., 2016). Similarity in institutional development also implies similar regulatory environments, including patents, safety standards, financial codes and contract enforcement, which can facilitate bilateral economic exchanges. However, we should note that institutional similarities also reflect societal and cultural affinity, as argued by Hofstede (2001), and positively affect consumer preferences. The Linder hypothesis also suggests that countries with similar preferences are more likely to trade with each other (Hallak, 2010). Therefore, the inclusion of this variable is likely to cause a downward bias in our coefficient estimates. Moreover, cultural institutes can directly influence the level of institutional similarity between countries as they introduce new modes of cultural and institutional practices and know-how. The slow-

²⁰ We should interpret these results with caution given that the probability of opening a new cultural institute is negatively correlated with having a common language (based on a probit regression). In other words, these two variables are likely to be endogenously determined. Also, we find that the effect of cultural institutes on services exports and imports become significantly positive in countries that share a common language.

changing nature of institutional development also makes this variable redundant once we include bilateral fixed effects.

With these caveats in mind, we introduce a bilateral institutional similarity measure into our benchmark specification. We measure institutional development by the International Country Risk Guide (ICRG) that provides the longest time series covering various aspects of institutional development in a majority of our sample countries. We use 12 subcomponents of this measure, including government stability, socioeconomic conditions, investment profile, internal conflict, external conflict, corruption, military in politics, religion in politics, law and order, ethnic tensions, democratic accountability, and bureaucracy quality. Next, to measure institutional similarity between country pairs along these twelve dimensions, we employ the Kogut and Singh's (1988) method:

$$InstSim = \frac{1}{12} \sum_{d=1}^{12} (ICRG_{dit} - ICRG_{ajt})^2 / V_d \quad (2)$$

where d indicates the dimensions of the ICRG index; V_d indicates the variance of the d^{th} dimension for the full dataset of ICRG; $Inst_{dit}$ and $Inst_{dit}$ and $Inst_{ajt}$ refer to the institutional quality index of order d for country i and j at time t . Lower values of $InstSim$ reflect greater institutional similarity. After including this institutional similarity variable in our regression analysis, the results look very similar to those before and are reported in the online Appendix. We also note that the effect of institutional similarity on our sample of countries appears to be insignificant for the most part.²¹

5. Conclusion

The use of cultural and language institutes for economic and political benefits is a long-standing

²¹ The correlation between $Inst$ and $InstSim$ is very low, -0.01 in the cross section data, and -0.04 in the panel data.

practice among countries. Furthermore, teaching a foreign language is a major part of school curriculums in many countries, motivated by existing or expected economic benefits. In Turkey, for example, the teaching of French and German in K-12 education, which was common in the early 20th century, was later replaced by the teaching of English as the economic and political priorities of the country changed overtime. The same is true for the USA where teaching Spanish and Mandarin has become more common than other languages as the economic and political importance of Latin America and China for the US has changed in the 21st century.

In this paper we examined the question of whether or not cultural and language institutes such as the British Council or Confucius Institute affect bilateral economic exchanges. The empirical analysis using both cross-section and panel data analysis and using the most comprehensive dataset available provides an affirmative but conditional answer. We find that cultural institutes overall have an economically and statistically significant positive effect on bilateral trade and investment flows. Our results also highlight the importance of estimation techniques and sample characteristics. Particularly, our pooled cross section analysis suggests that cultural institutes have a positive and significant effect on both exports and imports of goods and services as well as FDI outflows (but not inflows). It also suggests that the effects are larger for services trade than for goods trade. However, the panel data analysis reveals different dynamics once we control for all unobserved country-year and country-pair determinants of bilateral trade and investment flows. We find that the most robust and significant effects of cultural institutes are on goods exports and FDI outflows in the pooled sample. The effects on goods imports, services exports and imports, and FDI inflows, however, were not robust and depended on the specification and method used for estimation.

We also find that country heterogeneity based on economic development levels of host

countries for these cultural institutes plays a significant role in these results. While the effects differed across different types of trade and investment flows in the cross section analysis, the panel data analysis suggests a significantly stronger effect for advanced than developing host economies. Overall the results suggest that developed and emerging economies use these institutes as a part of their soft power, allowing them to increase market penetration, trade expansion and new investment opportunities. Our findings also complement recent studies that highlight the importance of cultural diffusion for the expansion of bilateral trade patterns.

Lastly, our findings also highlight the importance of addressing country heterogeneity and the omitted variable bias, which, if left unattended, cause significant bias in empirical results. In fact, our findings shed doubt on a majority of previous research that found an unconditional positive effect of cultural institutes on trade flows. Our results, instead, provide a more nuanced answer, highlighting country and cultural institute peculiarity. As it turns out, not all cultural institutes are the same and there are significant differences both across different cultural institutes and also the type of economic exchanges these countries engage in. Ignoring the home country heterogeneity appears to have caused biased conclusions in previous studies. The same is true for the omitted variable bias, particularly involving country-year and country-pair fixed effects. To the best of our knowledge, this is the first study that addressed home and host country heterogeneity, omitted variables bias and multilateral resistance in bilateral exchanges, and estimation error caused by log-linearization and the use of OLS or FE methods, altogether.

Several caveats are also in order here. While beyond the scope of current paper, we hope future research will explore causes of differential responses of goods and services trade and FDI flows to cultural institutes. We also expect new research to analyze differential effects of cultural institutes at a more disaggregated level of trade and investment flows, including sectoral as well

as geographical and spatial distributions at the subnational level. Third, the causes of heterogeneous effects of cultural institutes remain unanswered and need to be explored further in future research. While we find that there are significant differences across different cultural institutes, we know little about what causes these differences. Depending on data availability, future work should explore the effects of cultural institute heterogeneity based on operational capabilities and goals, size, distribution and financial resources.

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Table 1: Summary Statistics: Cross section data

| | Obs | Mean | Median | Std | Max | Min |
|---------------------------------|-------|-----------|---------|-----------|-----------|--------|
| <i>Exports_{ij}</i> | 1,489 | 3,478.275 | 151.548 | 16,670.97 | 458,000 | 0 |
| <i>Imports_{ij}</i> | 1,489 | 3,164.979 | 80.255 | 12,558.1 | 174,000 | 0 |
| <i>Services_Ex_{ij}</i> | 1,489 | 710.330 | 0 | 3,489.871 | 81,039.5 | 0 |
| <i>Services_Im_{ij}</i> | 1,489 | 661.816 | 0 | 3,366.151 | 54,265.4 | 0 |
| <i>FDI_Out_{ij}</i> | 1,489 | 449.757 | 0 | 2,260.519 | 43,664.46 | 0 |
| <i>FDI_In_{ij}</i> | 1,489 | 304.617 | 0 | 1,654.293 | 30,259.74 | 0 |
| <i>lnInst_{ij}</i> | 1,489 | 0.359 | 0 | 0.557 | 4.605 | 0 |
| <i>lnDistance_{ij}</i> | 1,489 | 8.631 | 8.816 | 0.785 | 9.883 | 5.156 |
| <i>lnAreap_{ij}</i> | 1,489 | 24.587 | 24.902 | 2.912 | 32.728 | 14.478 |
| <i>Colony_{ij}</i> | 1,489 | 0.097 | 0 | 0.297 | 0 | 0 |
| <i>Border_{ij}</i> | 1,489 | 0.028 | 0 | 0.164 | 0 | 0 |
| <i>Language_{ij}</i> | 1,489 | 0.083 | 0 | 0.275 | 0 | 0 |
| <i>Religion_{ij}</i> | 1,489 | 0.162 | 0.022 | 0.260 | 0 | 0 |
| <i>Legal_{ij}</i> | 1,489 | 0.343 | 0 | 0.475 | 0 | 0 |
| <i>PTA_{ij}</i> | 1,489 | 0.317 | 0 | 0.465 | 0 | 0 |
| <i>EU_{ij}</i> | 1,489 | 0.051 | 0 | 0.220 | 0 | 0 |

Notes: All data are for 2015. Home countries are China, France, Germany, Spain, Japan, Portugal, Turkey, and U.K. *Obs* is number of observations, *mean* and *median* are sample mean and medians. *Std* is the standard deviation, *max* and *min* are the maximum and minimum values. *ln* is natural log and all values are in current dollar prices. *Exports* and *Imports* are goods exports and imports of country *i* to (from) country *j* in 2015 (millions USD). *Services_Ex* and *Services-Im*, are service exports and imports of country *i* to (from) country *j* (millions USD). *FDI_Out* (*FDI_In*) is FDI outflows (inflows) from (to) country *i* to (from) country *j* (millions USD). *lnInst* is (log) total number of cultural institutes by home country *i* in host country *j*. *Inst_positive* is the total number of non-zero cultural institutes by home country *i* in host country *j*. *Distance* is (km) distance between *i* and *j*. *Areap* is (log product) area in square km of *i* and *j*. *Language_{ij}*, *Border_{ij}*, *Colony_{ij}*, *Religion_{ij}* and *Legal_{ij}* are equal to one if *i* and *j* share a common: language, common border, colonial past, religion or legal code, respectively. *PTA_{ijt}* is a dummy variable equaling one if *i* and *j* have a PTA; and *EU_{ijt}* is a dummy variable equaling 1 if *i* and *j* are both in EU.

Table 2: Summary Statistics: Panel Data

| | Obs | Mean | Median | Std | Max | Min |
|----------------------------------|--------|----------|--------|-----------|-----------|--------|
| <i>Exports_{ijt}</i> | 22,025 | 2,608.12 | 57.701 | 13,318.45 | 458,000 | 0 |
| <i>Imports_{ijt}</i> | 22,025 | 2,309.94 | 37.665 | 10,132.25 | 194,000 | 0 |
| <i>Services_Ex_{ijt}</i> | 22,025 | 319.064 | 0 | 1,916.81 | 42,038.10 | 0 |
| <i>Services_Im_{ijt}</i> | 22,025 | 336.601 | 0 | 2,230.24 | 58,109.50 | 0 |
| <i>FDI_Out_{ijt}</i> | 22,025 | 206.958 | 0 | 1,541.37 | 50,811.80 | 0 |
| <i>FDI_In_{ijt}</i> | 22,025 | 123.084 | 0 | 1157.8 | 87,095.20 | 0 |
| <i>Inst_{ijt}</i> | 22,025 | 0.399 | 0 | 1.900 | 99 | 0 |
| <i>dlnInst_{ijt}</i> | 22,025 | 0.011 | 0 | 0.086 | 2.39 | 0 |
| <i>lnGDP_{jt}</i> | 22,025 | 23.519 | 23.288 | 2.420 | 30.521 | 16.056 |
| <i>lnGDP_{it}</i> | 22,025 | 27.897 | 28.138 | 1.294 | 30.035 | 25.215 |
| <i>lnGDPPC_{jt}</i> | 22,025 | 8.014 | 7.991 | 1.631 | 11.674 | 4.187 |
| <i>lnGDPPC_{it}</i> | 22,025 | 9.585 | 10.055 | 1.254 | 10.792 | 5.812 |
| <i>lnDistance_{ij}</i> | 22,025 | 8.738 | 8.912 | 0.727 | 9.883 | 5.156 |
| <i>lnAreap_{ij}</i> | 22,025 | 24.726 | 24.922 | 2.981 | 32.728 | 14.692 |
| <i>Colony_{ij}</i> | 22,025 | 0.037 | 0 | 0.188 | 1 | 0 |
| <i>Border_{ij}</i> | 22,025 | 0.027 | 0 | 0.162 | 1 | 0 |
| <i>Language_{ij}</i> | 22,025 | 0.036 | 0 | 0.187 | 1 | 0 |
| <i>Religion_{ij}</i> | 22,025 | 0.154 | 0.009 | 0.257 | 0.943 | 0 |
| <i>Legal_{ij}</i> | 22,025 | 0.272 | 0 | 0.445 | 1 | 0 |
| <i>PTA_{ijt}</i> | 22,025 | 0.162 | 0 | 0.368 | 1 | 0 |
| <i>EU_{ijt}</i> | 22,025 | 0 | 0.059 | 0.236 | 1 | 0 |

Notes: Data refer to observations used in the panel data analysis for the period of 1990-2015 for five countries, which are China, Germany, Spain, Japan, and Portugal. $dlnInst_{ijt}$ is the logarithmic growth rate of $Inst$. GDP_i and GDP_j are the (log) GDP of country i and j ; $GDPPC_i$ and $GDPPC_j$ are the GDP per capita of country i and j . For other variable definitions refer to Table 1.

Table 3: Regional Distribution of Cultural Institutes

| Host Region\ Home country | China | Germany | France | Spain | Japan | Portugal | Turkey | U.K. |
|------------------------------|-------|---------|--------|-------|-------|----------|--------|------|
| East Asia & Pacific | 78 | 25 | 22 | 8 | 8 | 8 | 2 | 25 |
| Europe & Central Asia | 172 | 60 | 97 | 42 | 7 | 65 | 29 | 67 |
| Latin America & Caribbean | 35 | 15 | 7 | 8 | 2 | 12 | 0 | 15 |
| MENA | 13 | 17 | 42 | 9 | 1 | 1 | 8 | 28 |
| North America | 110 | 9 | 2 | 6 | 3 | 3 | 1 | 5 |
| South Asia | 8 | 10 | 2 | 1 | 2 | 0 | 1 | 21 |
| Sub Saharan Africa | 37 | 15 | 35 | 1 | 0 | 32 | 2 | 32 |

Notes: Data refer to total number of cultural institutes by each home country in respective geographical region in 2015. MENA refers to the Middle East and North Africa.

Table 4: Cultural Institutes and trade in goods and services - cross section analysis

| | (1) FE Exports | (2) PPML Exports | (3) FE Imports | (4) FE Imports | (5) FE ServicesEx | (6) PPML ServicesEx | (7) FE ServicesIm | (8) PPML ServicesIm |
|--------------------------------|-----------------------|------------------------|----------------------|-----------------------|-------------------------|---------------------------|-------------------------|---------------------------|
| <i>lnInst_{ij}</i> | 0.403*** (0.063) | 0.131*** (0.039) | 0.238*** (0.070) | 0.112*** (0.041) | 0.878*** (0.138) | 0.313*** (0.071) | 0.706*** (0.141) | 0.357*** (0.074) |
| <i>lnDistance_{ij}</i> | -0.796*** (0.082) | -0.461*** (0.063) | -0.819*** (0.094) | -0.620*** (0.052) | -0.314** (0.135) | -0.492*** (0.086) | -0.495*** (0.125) | -0.541*** (0.072) |
| <i>lnAreap_{ij}</i> | 0.959*** (0.032) | 0.501*** (0.029) | 0.743*** (0.038) | 0.991*** (0.069) | -0.156*** (0.043) | 0.208 (0.131) | -0.061 (0.040) | 0.413*** (0.118) |
| <i>Colony_{ij}</i> | 0.406*** (0.129) | 0.096 (0.164) | 0.296** (0.138) | -0.132 (0.143) | 0.292 (0.199) | -0.016 (0.282) | 0.324 (0.231) | -0.498** (0.226) |
| <i>Border_{ij}</i> | 0.508** (0.198) | 0.459*** (0.094) | 0.086 (0.239) | 0.182** (0.088) | 0.209 (0.341) | -0.096 (0.151) | 0.462 (0.396) | 0.066 (0.143) |
| <i>Language_{ij}</i> | 0.542*** (0.136) | -0.000 (0.160) | 0.428*** (0.144) | 0.288** (0.119) | 0.254 (0.224) | 0.388** (0.188) | 0.119 (0.258) | 0.255 (0.213) |
| <i>Religion_{ij}</i> | 0.514*** (0.117) | 0.424*** (0.163) | 0.249 (0.154) | 0.203 (0.146) | -0.369* (0.195) | 0.629** (0.290) | -0.366** (0.182) | 0.255 (0.315) |
| <i>Legal_{ij}</i> | 0.140** (0.061) | 0.299*** (0.071) | 0.118 (0.080) | 0.299*** (0.065) | 0.367** (0.142) | 0.549*** (0.105) | 0.431*** (0.139) | 0.562*** (0.111) |
| <i>PTA_{ij}</i> | 0.156 (0.097) | 0.505*** (0.115) | 0.498*** (0.127) | 0.565*** (0.101) | 0.285 (0.219) | 0.247 (0.246) | 0.377* (0.207) | 0.168 (0.194) |
| <i>EU_{ij}</i> | 0.525*** (0.107) | 0.335*** (0.127) | 0.263** (0.119) | 0.440*** (0.106) | -0.571* (0.339) | 0.193 (0.208) | -0.515 (0.344) | 0.617*** (0.214) |
| <i>Constant</i> | -12.694*** (0.929) | -2.547** (1.133) | -7.575*** (1.110) | -14.437*** (2.278) | 7.322*** (1.459) | -0.258 (3.897) | 6.488*** (1.337) | -4.865 (3.301) |
| Exporter FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Importer FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs | 1,545 | 1,489 | 1,545 | 1,489 | 1,545 | 1,505 | 1,545 | 1,425 |
| R-squared | 0.918 | 0.959 | 0.883 | 0.943 | 0.722 | 0.907 | 0.719 | 0.911 |

Notes: The dependent variables are in levels for PPML estimations and log-levels for FE estimations. *Exports (Imports)* and *ServiceEx (ServiceIm)* refer to levels of merchandise goods exports (imports) and service exports (imports) in 2015. Home countries are China, France, Germany, Spain, Japan, Portugal, Turkey, and U.K. *, **, and *** refer to significance at 10%, 5% and 1% levels. *Exporter FE* and *Importer FE* are exporter and importer fixed effects. Robust standard errors clustered in country-pair level are in parenthesis. For other variables refer to Table 1.

Table 5: Cultural institutes and FDI flows - cross section analysis

| | (1) | (2) | (3) | (4) |
|--------------------------------|---------------------|----------------------|----------------------|------------------------|
| | FE | PPML | FE | PPML |
| | FDI_Out | FDI_Out | FDI_In | FDI_In |
| <i>lnInst_{ij}</i> | 0.856*** (0.268) | 0.408* (0.234) | 0.190 (0.214) | -0.296 (0.124) |
| <i>lnDistance_{ij}</i> | -0.420* (0.219) | -0.596*** (0.201) | -0.512*** (0.174) | -0.288 (0.148) |
| <i>lnAreap_{ij}</i> | 0.506* (0.291) | 0.525*** (0.180) | 0.834*** (0.274) | -1.354*** (0.517) |
| <i>Colony_{ij}</i> | 0.538 (0.372) | -0.405 (0.538) | 0.373 (0.298) | 0.197 (0.485) |
| <i>Border_{ij}</i> | 0.201 (0.782) | 0.672 (0.543) | 0.876 (0.715) | 0.709* (0.378) |
| <i>Language_{ij}</i> | 0.651 (0.534) | 0.478 (0.519) | 0.944* (0.543) | 1.071** (0.498) |
| <i>Religion_{ij}</i> | 0.510 (0.348) | 0.903* (0.531) | 0.960*** (0.320) | 1.508* (0.910) |
| <i>Legal_{ij}</i> | -0.320 (0.240) | -0.515* (0.293) | 0.250 (0.209) | -0.101 (0.250) |
| <i>PTA_{ij}</i> | 0.192 (0.324) | -0.098 (0.314) | 0.396 (0.242) | 0.740** (0.366) |
| <i>EU_{ij}</i> | 0.243 (0.716) | -1.012** (0.395) | -0.659 (0.573) | 0.121 (0.505) |
| <i>Constant</i> | -7.953 (7.991) | -10.126** (5.093) | -15.770** (7.249) | -38.664*** (14.206) |
| Exporter FE | Yes | Yes | Yes | Yes |
| Importer FE | Yes | Yes | Yes | Yes |
| Observations | 817 | 684 | 809 | 558 |
| R-squared | 0.560 | 0.829 | 0.686 | 0.820 |

Notes: The dependent variables are FDI outflows from i to j in columns (1)-(2) and FDI inflows to i from j in columns (3)-(4) in 2015. The sample home countries are China, France, Germany, Spain, Japan, Portugal, Turkey, and U.K. *, **, and *** refer to significance at 10%, 5% and 1% levels. Robust standard errors clustered at country-pair level are in parenthesis. For other variable definitions refer to Tables 1 and 4.

Table 6: Cultural institutes and trade flows - panel analysis

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|--------------------------------|-----------------------|----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | FE | PPML | FE | PPML | FE | PPML | FE | PPML |
| | Exports | Exports | Imports | Imports | ServicesEx | ServicesEx | ServicesIm | ServicesIm |
| <i>dlnInst_{ijt}</i> | 0.534*** (0.071) | 0.291*** (0.044) | 0.373*** (0.088) | 0.119** (0.058) | -0.168 (0.178) | 0.115 (0.086) | -0.150 (0.168) | 0.135 (0.131) |
| <i>lnDistance_{ij}</i> | -0.903*** (0.019) | -0.426*** (0.074) | -1.015*** (0.023) | -0.623*** (0.072) | -0.314*** (0.035) | -0.517*** (0.115) | -0.577*** (0.035) | -0.463*** (0.155) |
| <i>lnAreap_{ij}</i> | 1.195*** (0.269) | 0.595*** (0.201) | -0.203 (0.358) | 0.451*** (0.133) | 4.686*** (0.563) | 0.155 (0.347) | -3.796*** (0.536) | -0.116 (0.090) |
| <i>Colony_{ij}</i> | 0.450*** (0.073) | 0.084 (0.286) | 0.383*** (0.075) | -0.430** (0.207) | 0.631*** (0.109) | -0.534* (0.300) | 0.703*** (0.117) | 0.319 (0.370) |
| <i>Border_{ij}</i> | 0.043 (0.070) | 0.381** (0.155) | -0.115 (0.076) | 0.230 (0.154) | -0.504*** (0.124) | -0.180 (0.311) | -0.217 (0.134) | -0.324 (0.437) |
| <i>Language_{ij}</i> | 0.933*** (0.093) | 0.068 (0.214) | 0.296*** (0.098) | 0.168 (0.120) | 0.460*** (0.131) | 0.344 (0.306) | 0.476*** (0.143) | 0.705 (0.506) |
| <i>Religion_{ij}</i> | -0.081 (0.051) | 0.212 (0.261) | -0.034 (0.059) | 0.051 (0.196) | -0.528*** (0.077) | 0.265 (0.400) | -0.409*** (0.075) | 0.230 (0.589) |
| <i>Legal_{ij}</i> | 0.138*** (0.021) | 0.540*** (0.124) | 0.184*** (0.025) | 0.479*** (0.080) | 0.166*** (0.037) | 0.404*** (0.145) | 0.139*** (0.038) | 0.110 (0.224) |
| <i>PTA_{ijt}</i> | 0.236*** (0.028) | 0.474*** (0.125) | 0.269*** (0.035) | 0.409*** (0.107) | 0.221*** (0.055) | 0.508*** (0.166) | 0.250*** (0.055) | 0.839*** (0.295) |
| <i>EU_{ijt}</i> | 0.254*** (0.042) | 0.573*** (0.166) | 0.166*** (0.048) | 0.751*** (0.147) | -0.156 (0.110) | -0.242 (0.224) | -0.472*** (0.112) | -0.247 (0.410) |
| <i>Constant</i> | -34.410*** (2.514) | -24.583** (9.933) | -17.936*** (3.541) | -18.120 (15.368) | -10.976** (5.065) | 3.543 (30.095) | 61.606*** (4.703) | -50.839 (40.176) |
| Income | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Exporter FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Importer FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs | 22,565 | 22,025 | 22,565 | 22,025 | 22,565 | 20,275 | 22,565 | 22,565 |
| R-squared | 0.889 | 0.944 | 0.838 | 0.922 | 0.547 | 0.818 | 0.533 | 0.742 |

Notes: The sample includes China, Germany, Spain, Japan, and Portugal. $dlnInst_{ijt}$ is the logarithmic difference of total number of cultural institutes opened by home country i in host country j . *, **, and *** refer to significance at 10%, 5% and 1% levels. Robust standard errors are in parenthesis. *Income* refers to unreported variables of current GDP and GDP per capita of home and host countries. *Year FE* refers to year fixed effects. For other variable definitions refer to Tables 1 and 4.

Table 7: Cultural institutes and FDI flows - panel analysis

| | (1) | (2) | (3) | (4) |
|--------------------------------|----------------------|---------------------|-----------------------|-----------------------|
| | FE | PPML | FE | PPML |
| | FDI-Out | FDI-Out | FDI-In | FDI-In |
| <i>dlnInst_{ijt}</i> | -0.231 (0.153) | 0.607** (0.285) | 0.246* (0.143) | 0.376* (0.203) |
| <i>lnDistance_{ij}</i> | -0.658*** (0.030) | -0.228* (0.124) | -0.301*** (0.026) | -0.724*** (0.108) |
| <i>lnAreap_{ij}</i> | 1.058** (0.505) | 0.882 (0.547) | 2.327*** (0.436) | 0.173 (0.619) |
| <i>Colony_{ij}</i> | 0.313*** (0.099) | 0.014 (0.260) | 0.024 (0.087) | -0.173 (0.241) |
| <i>Border_{ij}</i> | -0.072 (0.109) | -0.113 (0.270) | 0.204* (0.105) | -0.544** (0.255) |
| <i>Language_{ij}</i> | 0.642*** (0.125) | 1.195*** (0.213) | 0.323*** (0.113) | 0.472* (0.248) |
| <i>Religion_{ij}</i> | -0.049 (0.070) | 1.597*** (0.333) | 0.074 (0.061) | -0.256 (0.374) |
| <i>Legal_{ij}</i> | 0.288*** (0.034) | 0.219 (0.168) | 0.322*** (0.029) | 0.827*** (0.159) |
| <i>PTA_{ijt}</i> | 0.200*** (0.050) | 0.693*** (0.168) | 0.159*** (0.039) | 0.420 (0.310) |
| <i>EU_{ijt}</i> | 0.126 (0.098) | 0.150 (0.246) | 0.223** (0.089) | -0.342 (0.289) |
| <i>Constant</i> | -0.499 (4.420) | -30.519 (48.662) | -20.337*** (3.704) | -80.661** (41.095) |
| Income | Yes | Yes | Yes | Yes |
| Exporter FE | Yes | Yes | Yes | Yes |
| Importer FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes |
| Observations | 22,565 | 21,970 | 22,565 | 19,810 |
| R-squared | 0.522 | 0.530 | 0.540 | 0.451 |

Notes: PPML estimates. The sample includes China, Germany, Spain, Japan, and Portugal. *, **, and *** refer to significance at 10%, 5% and 1% levels. Robust standard errors are in parenthesis. For other variable definitions refer to Tables 1, 4 and 6.

Table 8: Panel analysis with country-year and country-pair fixed effects

| | (1) | (2) | (3) | (4) | (5) | (6) |
|------------------------------|---------------------|------------------|-------------------|----------------------|---------------------|-------------------|
| | Exports | Imports | ServicesEx | ServicesIm | FDI Out | FDI In |
| <i>dlnInst_{ijt}</i> | 0.093*** (0.016) | 0.017 (0.021) | -0.051 (0.074) | -0.210*** (0.081) | 0.935*** (0.324) | 0.570* (0.298) |
| Exporter-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Importer-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country-pair FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 24,760 | 24,659 | 6,556 | 4,989 | 9,307 | 6,883 |
| R-squared | 0.996 | 0.997 | 0.964 | 0.976 | 0.871 | 0.843 |

Notes: PPML estimates. *Exporter-year* and *Importer-year FE* refer to exporter-year and importer-year fixed effects. *Country-pair FE* refer to country-pair fixed effects. *, **, and *** refer to significance at 10%, 5% and 1% levels. Robust standard errors are in parenthesis, clustered by country-pairs. For other variable definitions refer to Table 1.

Table 9: Cultural Institutes and trade in goods and services - cross section: Country heterogeneity

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|--------------------|------------------|------------------|---------------------|----------------------|-------------------|
| | Exports | Imports | ServicesEx | ServicesIm | FDI Out | FDI In |
| <i>lnInst_{ij}</i> | 0.203** (0.092) | 0.046 (0.093) | 0.260 (0.160) | 0.442*** (0.166) | 1.278*** (0.296) | 0.188 (0.309) |
| <i>lnInst_{ij}_Advanced_j</i> | -0.080 (0.102) | 0.080 (0.096) | 0.063 (0.173) | -0.091 (0.157) | -1.065*** (0.283) | -0.320 (0.291) |
| <i>Advanced-Net Effect</i> | 0.123*** | 0.126*** | 0.322*** | 0.351*** | 0.213 | -0.132 |
| Gravity | Yes | Yes | Yes | Yes | Yes | Yes |
| Exporter FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Importer FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs | 1,489 | 1,489 | 1,505 | 1,425 | 684 | 680 |
| R-squared | 0.960 | 0.942 | 0.908 | 0.913 | 0.854 | 0.770 |

Notes: PPML estimates. *Advanced* refers to a dummy variable equaling one when the destination country is classified as an advanced economy by the IMF. *lnInst_{ij}_Advanced_j* is the interaction term between *lnInst_{ij}* and *Advanced*. *Advanced-Net Effect* refers to the net effect of *lnInst* in advanced economies. *Gravity* refers to the same set of gravity controls as in previous tables. *, **, and *** refer to significance at 10%, 5% and 1% levels. Robust standard errors are in parenthesis, clustered by country-pairs. For other variable definitions refer to Tables 1 and 4.

Table 10: Cultural Institutes, trade and investment flows - panel: Country heterogeneity

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--|---------------------|-------------------|----------------------|----------------------|--------------------|--------------------|
| | Exports | Imports | ServicesEx | ServicesIm | FDI Out | FDI In |
| <i>dlnInst_{ij}</i> | 0.002 (0.077) | -0.066 (0.110) | -1.207*** (0.430) | -1.729*** (0.655) | 0.481** (0.239) | -1.791* (0.983) |
| <i>dlnInst_{ij}_Advanced_j</i> | 0.388*** (0.102) | 0.282* (0.147) | 1.448*** (0.441) | 1.975*** (0.662) | 0.192 (0.500) | 2.217** (0.998) |
| <i>Advanced-Net Effect</i> | 0.390*** | 0.217*** | 0.241** | 0.247* | 0.673 | 0.426** |
| Gravity | Yes | Yes | Yes | Yes | Yes | Yes |
| Income | Yes | Yes | Yes | Yes | Yes | Yes |
| Exporter FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Importer FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Obs | 22,025 | 22,025 | 20,275 | 22,565 | 21,970 | 19,810 |
| R-squared | 0.946 | 0.922 | 0.819 | 0.742 | 0.530 | 0.451 |

Notes: PPML estimates. *, **, and *** refer to significance at 10%, 5% and 1% levels. Robust standard errors are in parenthesis, clustered by country pairs. *Income* refers to unreported variables of current GDP and GDP per capita of home and host countries. Gravity is the gravity control variables as in Table 4. *Advanced_Net Effect* refers to the net effect of *dlnInst* in advanced economies. For other variable definitions refer to Tables 1, 4 and 8.

Table 11: Cultural Institutes, trade and investment flows - panel: Country heterogeneity with country-year and country-pair fixed effects

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|--------------------|------------------|-------------------|-------------------|-------------------|------------------|
| | Exports | Imports | ServicesEx | ServicesIm | FDI_Out | FDI_In |
| <i>dlnInst_{ijt}</i> | 0.056** (0.024) | 0.015 (0.029) | -0.066 (0.226) | 0.019 (0.258) | 0.293 (0.320) | 0.175 (0.834) |
| <i>lnInst_{ij_Advanced_j}</i> | 0.052* (0.028) | 0.004 (0.038) | 0.017 (0.237) | -0.241 (0.267) | 0.895* (0.526) | 0.403 (0.899) |
| <i>Advanced-Net Effect</i> | 0.108*** | 0.019 | -0.049 | -0.222*** | 1.189*** | 0.578* |
| Exporter-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Importer-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country-pair FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 24,760 | 24,659 | 6,556 | 4,989 | 9,307 | 6,883 |
| R-squared | 0.996 | 0.997 | 0.964 | 0.976 | 0.872 | 0.843 |

Notes: PPML estimates. *Advanced_Net Effect* refers to the net effect of *dlnInst* in advanced economies. *Exporter-year* and *Importer-year FE* refer to exporter-year and importer-year fixed effects. *Country-pair FE* refer to country-pair fixed effects. *, **, and *** refer to significance at 10%, 5% and 1% levels. Robust standard errors are in parenthesis, clustered by country-pairs. For other variable definitions refer to Table 1.

Table 12: Cultural Institutes, trade and investment flows - cross: Home country heterogeneity

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------|----------|---------|------------|------------|----------|----------|
| | Exports | Imports | ServicesEx | ServicesIm | FDI_Out | FDI_In |
| <i>Net effects</i> | | | | | | |
| Portugal | 0.466*** | 0.353** | 0.424*** | 0.261** | -1.047 | -1.044* |
| China | 0.156*** | 0.108** | 0.420*** | 0.473*** | 0.220 | 0.820 |
| Germany | 0.145 | -0.015 | 0.325* | 0.444** | 0.765** | 0.186 |
| Spain | 0.150 | -0.033 | 1.122*** | 1.229*** | 0.635 | -0.529 |
| France | 0.115 | 0.008 | 0.128 | 0.082 | 0.975** | -0.945** |
| UK | -0.082 | 0.263* | 0.162 | 0.640*** | 1.912* | 0.618 |
| Japan | 0.592*** | -0.322 | -0.293 | 1.062*** | 1,972*** | 1.315* |
| Turkey | 0.185 | 0.103 | 2.088*** | 1.150*** | 2.612*** | -0.357 |
| Gravity | Yes | Yes | Yes | Yes | Yes | Yes |
| Exporter FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Importer FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,489 | 1,489 | 1,505 | 1,425 | 684 | 558 |
| R-squared | 0.962 | 0.947 | 0.915 | 0.926 | 0.889 | 0.868 |

Notes: PPML estimates. *Net effects* refer to the net effect of $(\ln) Inst$ on each country calculated as the sum of coefficient estimates for $(\ln) Inst$ and its interaction term with country dummies. *Gravity* refers to the same set of gravity controls as in previous tables. *, **, and *** refer to significance at 10%, 5% and 1% levels. Robust standard errors are in parenthesis, clustered by country-pairs. For other variable definitions refer to Tables 1 and 4.

Table 13: Cultural Institutes, trade and investment flows - panel: Home country heterogeneity with country-year and country-pair fixed effects

| | (1) | (2) | (3) | (4) | (5) | (6) |
|--------------------|----------|----------|------------|------------|----------|----------|
| | Exports | Imports | ServicesEx | ServicesIm | FDI Out | FDI In |
| <i>Net effects</i> | | | | | | |
| Portugal | -0.052 | -0.084 | -0.189 | -0.427*** | 0.373 | 1.547** |
| China | 0.104*** | 0.041 | -0.034 | -0.309*** | -0.396 | 0.923*** |
| Germany | 0.163*** | -0.301** | -0.100 | 0.365 | -0.348 | 2.327** |
| Spain | -0.027 | 0.023 | -0.009 | -0.149 | 1.451*** | -0.542 |
| Japan | 0.144 | -0.001 | 0.007 | -0.021 | 0.037 | 0.823 |
| Exporter-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Importer-year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Country-pair FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 24,760 | 24,659 | 6,556 | 4,989 | 9,307 | 6,883 |
| R-squared | 0.996 | 0.997 | 0.964 | 0.977 | 0.872 | 0.844 |

Notes: PPML estimates. *Net effects* refers to the net effect of (ln) *Inst* on each country calculated as the sum of coefficient estimates for (ln) *Inst* and its interaction term with country dummies. *Exporter-year* and *Importer-year FE* refer to exporter-year and importer-year fixed effects. *Country-pair FE* refer to country-pair fixed effects. *, **, and *** refer to significance at 10%, 5% and 1% levels. Robust standard errors are in parenthesis, clustered by country-pairs. For other variable definitions refer to Table 1.