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Institutional Quality and Homogeneity, and Types of International Transactions

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Abstract

This paper investigates the conditions under which institutional homogeneities rather than qualities affect international flows. This issue is important for the validity of harmonization, because no matter which direction negotiations over harmonization take, harmonization is an attempt to enhance homogeneity between the institutions of different countries. Estimation results indicate that when the qualities of trading countries are equally high, while improving institutional qualities does not increase international flows, institutional homogeneity increases transactions, suggesting the validity of harmonization of institutions. We also examine whether institutions have a larger effect on foreign direct investment (FDI) than on trade in goods. While previous studies on institutions and trade investigate each transaction separately, our study treats different types of transactions simultaneously. The empirical results on relative effects show that institutional qualities and homogeneities have a larger effect on FDI than on trade in goods, implying that better and similar institutions decrease domestic transaction and production costs more than trade costs.

Keywords: Institutional quality, Institutional homogeneity, International trade, Foreign Direct Investment

JEL Classifications: F10, F23, K33.

1 Introduction

The relationship between institutions and trade has been explored in the international trade literature. High institutional qualities are considered to facilitate international transactions because they reduce trade costs (Anderson and Marcouiller 2002; Berkowitz, Moenius, and Pistor 2006; Rajan and Lee 2007; Papaioannou 2009; Ali, Fiess, and MacDonald 2010). Similarly, institutional homogeneities, rather than the level of institutional quality, are considered important for international transactions (de Groot, Linders, Rietveld, and Subramanian 2004; Islam and Reshef 2006). Countries that have homogeneous institutions have similar institutional characteristics and contractual environments that make it easy for foreign firms to undertake local transactions.

This study attempts to add new insights on the effects of institutions by addressing two issues that have not been examined extensively: 1) Under what conditions does homogeneity rather than quality matter and 2) What are the relative effects of institutions on international flows. First, we examine the differences in circumstances in which institutional qualities or homogeneities matter. This issue is important for the validity of harmonization. If institutional qualities are high for trading countries, but differ between countries, it is difficult to further improve institutional quality. For example, with respect to competition policy, the EU and the United States both use narrower criteria for the evaluation of claims of predatory pricing than does Japan. While in the EU and the United States market dominance is a condition for claims of predatory pricing, it is not so in Japan. The problem is that it is not obvious as to which rule is of higher quality. Since no matter which direction negotiations over harmonization take, harmonization attempts to enhance homogeneity between the institutions of different countries, our examination provides an important insight into the impact of harmonization.

It has been shown by de Groot, Linders, Rietveld, and Subramanian (2004) and Islam and Reshef (2006) that homogeneous institutions have a positive effect on trade in goods. Our main point of difference is that, although these studies focus on whether institutional qualities or homogeneities have an impact on trade, our interest is in the conditions under which homogeneity rather than quality matters.

The second goal of our paper is to examine the relative effect of institutions. The effects of institutions can differ across types of international transactions. Nowadays, trade negotiations are conducted over not only trade in goods but also trade in services and direct investment. Therefore, it is important to study which international flow is affected most by institutions in order to predict the effects of trade agreements. Because institutions reflect general business and contractual environments, better and more similar institutions can offer parties superior contract enforcement and transaction mechanisms such that both trade in goods and foreign direct investment (FDI) are likely to increase on average. However, the relative effect may differ between transactions. As Berkowitz, Moenius, and Pistor (2006) show, institutions affect not only international transaction costs but also domestic transaction and production costs. If better and similar institutions lower the costs associated with local affiliates, such as governance, information acquisition, and local labor employment, more than trade costs, FDI tends to occur more than trade in goods.

This study estimates gravity models and incorporates not only institutional quality measures but also institutional homogeneity measures of OECD countries from 1999 to 2007. Institutional quality measures are taken from Kaufmann, Kraay, and Mastruzzi (2008). Several previous studies use their measures for a country's institutional environment (Nunn 2007). We use legal origin taken from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998) to represent homogeneities in institutions. Countries sharing the same legal origin are considered to have a similar contractual environment (Acemoglu and Johnson 2005), and thus their institutions are treated as homogeneous. Our homogeneity measure is similar to Islam and Reshef (2006) but differs from de Groot, Linders, Rietveld, and Subramanian (2004), where homogeneity means that countries share a similar level of institutional qualities. Because institutional characteristics may differ, even if the level of qualities is similar, our approach enables us to focus on a different subject from theirs, which is the conditions under which homogeneities rather than qualities have an impact on trade. In the estimations, we first classify the countries into high and low institutional quality and examine transactions between these countries.

To evaluate the relative effects of institutions, we then construct the dependent variable, international flow, by pooling the data of three types of transactions: Trade in goods, trade in services, and FDI. We estimate the international flow gravity equation and examine the relative

effect of institutions on each type of flow. While previous studies on institutions and trade, to our knowledge, investigate each transaction separately, our study treats different types of transactions simultaneously. Our methodology is similar to that in Smith (2001). Smith (2001) demonstrates that the effect of intellectual property rights protection is most prominent for US knowledge transfer through FDI and licensing, rather than through exports, by estimating deviation terms from the average effect of property rights protection. In this paper, the effects of institutions are similarly examined by estimating the relative effect on trade in goods, trade in services, and FDI.

With respect to the effect of institutional quality and homogeneity, we find that institutional quality positively affects international flows when trading countries' qualities are different or equally low. This suggests that unilateral improvement of institutional quality increases international transactions when trading involves low quality countries. On the other hand, institutional homogeneity has a positive impact when qualities are similar. If both countries' qualities are high, they need to make their institutions similar to promote trade and FDI. These results have a direct implication for the harmonization of regulations and rules: harmonization will facilitate international transactions.

By examining the average and relative effects, estimations indicate that institutional homogeneities affect international flows positively on average. Thus, our results imply that a better understanding of institutions generally facilitates international transactions. By estimating relative effects, we find that institutional qualities and homogeneities affect FDI more than trade in goods. As mentioned earlier, institutions affect not only international transaction costs but also production costs (Berkowitz, Moenius, and Pistor 2006), which drive different effects for different transactions. Our empirical findings provide the insight that better and similar institutions decrease FDI-related costs more than international trade costs. The results are robust over sample selection, as the Heckman two-step estimation results are qualitatively similar.

Our results for the relative effects have an important implication for the current issue of the relationship between institutions, trade, and growth. Better institutions are considered a facilitator of trade and growth (Anderson and Marcouiller 2002; Acemoglu and Johnson 2005). Because better institutions have a larger impact on FDI, the effect of institutions on growth may be mainly through FDI. FDI can induce technology transfer and better governance structures; thus, FDI has a larger effect on both source and host countries than trade. This will have a large impact on economic growth.

Our paper is organized as follows. In Section 2, we introduce our data, hypotheses, and empirical methodology. Section 3 reports estimation results. The final section concludes the paper.

2 Data, hypotheses, and methodology

2.1 Data

We use data for OECD countries. One reason we focus on OECD countries is the availability of FDI bilateral flow data. In addition, when considering the quality of our institution measure, there may be more noise in developing countries' measures than in those of developed countries. Confining the sample to OECD countries allows us to use the least noisy cross-country institutional measures. Our sample period ranges from 1999 to 2007. Trade in goods, trade in services, and FDI data are from the OECD Stat Extracts (http://stats.oecd.org/index.aspx). We use export data for trade in goods. FDI flows are outward FDI data classified by partner country. According to the OECD database, FDI is an investment made to obtain a lasting interest in enterprises. The case in which a foreign investor owns 10 per cent or more of the ordinary shares

or voting power implies a lasting interest; thus, it is regarded as FDI. It includes initial investment and subsequent capital transactions. Trade in services includes transportation services, travel, financial services, and computer and information services. Financial services include intermediary service fees, such as those associated with letters of credit, bankers' acceptances, and foreign exchange transactions. The trade in services category also includes royalties and license fees. For example, royalty payments accounted for about 17 percent of trade in services in the USA in 2007.

A summary of statistics is reported in Table 1. The average size of trade in goods is larger than trade in services and FDI. From Table 1, we can see negative values recorded for trade in services and FDI. For FDI, if firms exit or reduce their FDI position, these are counted as a negative flow. Similarly, for trade in services, outgoing tourist spending and royalty payments to foreign countries are counted as negative flows. For consistency with outward shipments of goods (exports), and because we focus on the choice of outward international transaction forms, only new net outflow transactions are used in our analysis. That is, negative values are treated as zero net outflows. This may create a self-selection bias, which, nevertheless, will be controlled by the sample selection model in estimations.

Table 1 Summary of Statistics 1

Variable	Mean	Std. Dev.	Min.	Max.	N
Trade in goods (mil USD)	5077.329	16631.338	0.005	331873.406	7771
Trade in services (mil USD)	1992.925	4840.407	-1706.283	61128	3932
FDI (mil USD)	1079.102	5194.079	-29159.48	172210.094	6066
GDP (bil USD)	1055.063	2080.083	7.936	13741.6	7830
Distance (km)	3232.023	3188.326	117.308	12294.42	7830
Border	0.078	0.268	0	1	7830
Common Language	0.097	0.295	0	1	7830
Rule of Law	1.32	0.635	-0.560	2.12	7830
Regulatory Quality	1.29	0.455	0.04	2.01	7830
Same Legal Origin	0.198	0.398	0	1	7830
English Legal Pair	0.034	0.182	0	1	7830
French Legal Pair	0.103	0.305	0	1	7830
German Legal Pair	0.023	0.15	0	1	7830
Scandinavian Legal Pair	0.023	0.15	0	1	7830
Socialist Country Pair	0.014	0.117	0	1	7830

Note: Data Sources are OECD Stat Extracts and La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2008).

We measure quality of institutions by combining two measures developed by Kaufmann, Kraay, and Mastruzzi (2008), their Rule of Law index and their Quality of Regulation index. The Rule of Law index reflects the general contractual environment, while the Quality of Regulation index is related to the international transaction mechanism. The other institutional variable is the dummy variable that takes the value 1 if two countries share the same legal origin. The legal origin variable is taken from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998). The origins of our sample of countries are reported in Table 2.

With respect to quality measures, the average Quality of Regulation is 1.29, the minimum is 0.04 and the maximum is 2.01. The minimum corresponds to Turkey in 2002, where in 1999 the value was 0.36, which then fell to 0.04 in 2002, and increased to 0.23 in 2007. The highest value is The Netherlands in 2000, after which the value of the measure gradually fell. The average Rule of Law is 1.32, the minimum is -0.56, and the maximum is 2.12. Mexico records the lowest value in 1999, -0.435, this improved to -0.33 in 2002, and then decreased to -0.56 in 2007. Therefore, these

Table 2 Summary of Statistics 2

Countries	English	French	German	Scandinavian	Socialist
Australia	1	0	0	0	0
Austria	0	0	1	0	0
Belgium	0	1	0	0	0
Canada	1	0	0	0	0
Czech Republic	0	0	0	0	1
Denmark	0	0	0	1	0
Finland	0	0	0	1	0
France	0	1	0	0	0
Germany	0	0	1	0	0
Greece	0	1	0	0	0
Hungary	0	0	0	0	1
Iceland	0	0	0	1	0
Ireland	1	0	0	0	0
Italy	0	1	0	0	0
Japan	0	0	1	0	0
Korea	0	0	1	0	0
Luxembourg	0	1	0	0	0
Mexico	0	1	0	0	0
Netherlands	0	1	0	0	0
New Zealand	1	0	0	0	0
Norway	0	0	0	1	0
Poland	0	0	0	0	1
Portugal	0	1	0	0	0
Slovak Republic	0	0	0	0	1
Spain	0	1	0	0	0
Sweden	0	0	0	1	0
Switzerland	0	0	1	0	0
Turkey	0	1	0	0	0
United Kingdom	1	0	0	0	0
United States	1	0	0	0	0
Total	6	10	5	5	4

Note: Legal Origins are from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2008).

measures vary not only between countries but also over time. In each year we classify the top third of countries as high quality countries and the bottom third as low quality countries.

Our other explanatory variables are real GDP, the Great Circle distance between capitals, a dummy for shared borders and a dummy for a shared language. The first two are basic variables for gravity models and the last two variables are important to control for country characteristics when analyzing the effect of institutions.

2.2 Hypotheses

Our hypothesis comes from the theoretical predictions of contract and transaction costs theories. The basic idea in incomplete contract theory is that, if parties cannot verify the outcome of a specific investment, ex-post opportunistic behavior causes inefficiency. This is called a hold-up problem. In the trade and institution literature, higher institutional quality implies that contracts are

less incomplete in a production process (Levchenko 2007; Nunn 2007). Therefore, better quality improves contract enforcement so that international transactions will increase. This effect will be more prominent in low quality countries than in high quality countries. Private firms can circumvent incomplete institutions by using alternative contracts (Acemoglu and Johnson 2005). However, in low quality countries, such practices may have limited effectiveness. Thus, marginal increases in institutional quality will have a larger impact on trade involving low quality countries than on trade between high quality countries.

The differences in quality between trading countries have been considered by Berkowitz, Moenius, and Pistor (2006). Because the exporting country's court is the last resort for importers, importers care about the quality of the exporting country's institutional quality. Therefore, the exporting country's institutional qualities are important for complex goods transactions. In our study, FDI is considered to be more complex than trade in goods. Thus, the source country's quality may matter for FDI.

If both countries have high quality institutions, quality itself may not be an issue. Sufficiently high quality institutions make contracts less incomplete. Therefore, the remaining obstacles are transaction costs associated with unfamiliarity with foreign institutions. If foreign business practices are very different from those of the home country, it is costly to do business abroad. Thus, institutional homogeneities may matter for high quality countries. We can consider the following hypothesis:

Hypothesis 1 Institutional qualities matter for flows involving low quality countries. If qualities are high, institutional homogeneities matter.

We consider next the relative effect of institutions on international flows. We compare three types of transactions: trade in goods, trade in services, and FDI. As Acemoglu and Johnson (2005) considered, the number of procedures required to enforce contracts is related to high transaction costs. While the simple shipment of products to foreign countries may require more than "buy and sell" contracts, for example, insurance contracts, the basic operation is to "buy and sell" goods. This does not normally involve local labor contracts or local distribution costs. FDI requires a broader range of contracts in host countries. For example, in addition to a "buy and sell" agreement with local retailers, firms doing business locally may sign a labor contract with local workers, will have to meet local authorities' regulations, as well as engage in financial markets. Because many types of contracts may be required for FDI, transaction costs associated with FDI are severe. Following a similar argument in Berkowitz, Moenius, and Pistor (2006), we expect that institutions affect FDI-related costs more than international transaction costs. If this is the case, institutions will affect FDI more than trade in goods.

In addition, institutions strongly affecting FDI are not only those in the host country but also those in the source country. When firms undertake a large FDI, financial conditions affect a firm's decision and therefore the source country's institutions associated with the capital market may have a significant effect (Klein, Peek, and Rosengren 2002). Furthermore, because of the prevalence of multinational firms, transfer pricing is a major issue for a source country's taxation revenue. A source country's institutions will affect the compliance requirements in accounting and financial practices. Thus, a source country's institutions will have a larger effect on FDI than other transactions.

Trade in services will be intermediate in terms of the degree of impact of institutions. Trade in services involves the host country's activities, such as travel, and requires more communication, for example, for information technology services and technology licensing contracts. Therefore, it will be more complicated and require more business procedures than trade in goods; but trade in services will involve less complicated procedures than those needed for FDI. This means that trade

in services depends on institutions more than trade in goods does, but less than FDI does. In summary, the relative responsiveness to host institutions is: exports of goods will respond least, FDI most, and trade in services in between. Thus, the hypothesis is expressed as follows:

Hypothesis 2 Better and similar institutions increase FDI relatively more than trade in services, and trade in services more than exports of goods.

2.3 Methodology

A gravity model is used to verify our hypotheses. Gravity models are used to study the determinants of not only trade in goods but also other transactions, such as cross-border M&A (di Giovanni 2005) and international licensing (Smith 2001). To examine under what conditions quality and homogeneity matter, the following gravity model is employed:

$$\ln(Flow_{ijt}) = \alpha_0 + \alpha_1 Quality_{it} + \alpha_2 Quality_{jt} + \alpha_3 Law_{ij} + \alpha_4 \ln GDP_{it}$$
$$+ \alpha_5 \ln GDP_{jt} + \alpha_6 \ln Distance_{ij} + \alpha_7 Border_{ij} + \alpha_8 ComLag_{ij} + \eta D_{ijt} + \varepsilon_{ijt},$$

where $Flow_{ijt}$ is trade in goods or FDI, i is the exporting country index, j is the importing country index, and t is the time index. $Quality_{it}$ is the average of two indices (the Rule of Law index and the Quality of Regulation index) used to obtain the quality measure in country i. Law_{ij} takes the value 1 if two countries share the same legal origin, which captures homogeneities of institutions. Other explanatory variables are from a standard gravity model. We use GDPs of exporting and importing countries, distance between two countries' capital cities for transportation costs, index of border sharing to control for remoteness and an index of common languages for cultural similarities. Other country and year specific effects (D_{ijt}) are captured by a year dummy and exporting and importing country dummies. The error term is ε_{ij}.

We divide our sample into high and low quality countries in the above specification and then estimate, for example, exports from low quality countries to high quality countries. High quality countries correspond to the top third and low countries to the bottom third. While Islam and Reshef (2006) examine trade flows by using both institutional quality and homogeneity measures as explanatory variables, our approach differs from theirs and is appropriate for our purpose, which is to examine for which country pairs (e.g., high quality and high quality, or low quality and high quality) institutional homogeneity matters. Our estimation results are qualitatively similar when using different percentiles, for example, 25 percent. Because we use a smaller sample, statistical significances change. Therefore, instead of using the 25th percentile, we use the 33rd percentile.

To examine the relative effect, we follow the approach of Smith (2001) and pool three types of transactions, trade in goods, trade in services, and FDI, and then estimate our international flow gravity model. We do not divide our sample into high and low quality countries for the relative effect estimations. The gravity equation is expressed by:

$$\ln(T_{ijt}) = \gamma_1 Quality_{it} + \gamma_2 Quality_{it} DM_{type} + \gamma_3 Quality_{jt} + \gamma_4 Quality_{jt} DM_{type}$$
$$+ \gamma_5 Law_{ij} + \gamma_6 Law_{ij} DM_{type} + \beta_0 + \beta_1 \ln GDP_{it} + \beta_2 \ln GDP_{jt}$$
$$+ \beta_3 \ln Distance_{ij} + \beta_4 Border_{ij} + \beta_5 ComLag_{ij} + \delta D_{ijt} + e_{ijt},$$

where T_{ijt} is the pooled variable of trade in goods, trade in services, and FDI. In this specification, we examine the relative effect of institutions. To do so, we use a dummy variable (DM_{type}) for each type of international transaction: Trade in goods, trade in services, and FDI. While the coefficients of Law_{ij} and $Quality_{it}$ depict the average effect on international flows, the

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coefficients of the interaction terms of institutional variables and transaction type, such as $Law_{ij}DM_{type}$, show deviations for particular types of transactions. For example, if institutions matter more for FDI, the deviation coefficient for FDI will be significantly larger than the average effect of institutions on all types of flows (Smith 2001).[1]

Because there are many zero and missing trade data, it may be important to control for biases caused by self-selection. We employ the Heckman two-step procedure to consider the selection problem of observable international transaction data.

3 Results

First, we discuss under what circumstances qualities or homogeneities matter in Table 3. Here, we focus on trade in goods and FDI. Columns 2 and 3, and 8 and 9 report these results for transactions between similar quality countries and Columns 4 to 7 report the results for those between different quality countries. From Columns 4 to 9, our results indicate that institutional qualities are significant for exports and FDI involving low quality countries, except for Columns 6 and 9. While there are several insignificant effects, all significant results are positive. Columns 2 and 3 show an insignificant effect of quality for transactions between high quality countries. This suggests that improving qualities increases international transactions in which at least one low quality country is engaged.

If we focus on exports, our results indicate that the qualities of both host and source countries are important when the source country's quality is low. This is consistent with our Hypothesis 1. Marginal improvements in institutional qualities may have a larger effect on trade with low quality countries than on that between high quality countries. This is confirmed by our significantly positive effect of institutional qualities in Columns 4 and 8. On the other hand, with respect to FDI, only the source country's quality has a significant effect. This is consistent with Berkowitz, Moenius, and Pistor (2006), where the source country's quality is important for complex transactions. Because FDI is in general a more complicated business practice than simply shipping goods, source countries with better institutional qualities facilitate outward FDI. This result is also related to the idea from Klein, Peek, and Rosengren (2002). Financial conditions may depend on institutional qualities; therefore, good source country institutions affect FDI positively through good financial conditions.

We also find that, if qualities are similar (i.e., transactions between high and high or low and low countries), institutional homogeneity increases international transactions, as reported in Columns 2, 3, 8, and 9 in Table 3. The significantly positive effects are robust among transaction types (export and FDI). This result has an important implication for harmonization of regulations and rules, particularly for high institutional quality countries. If institutional qualities are already high, but different, it is difficult to improve institutional quality because it is not clear as to Which direction the rules should be modified. Our results imply that harmonization that creates similar institutions will facilitate international transactions.

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[1] We do not specify the dependent variable as a relative form, for example, FDI/(FDI+Export). This specification would allow us to examine the substitution effect of institutions. However, our focus is not on the substitution effect *per se*, but on the effect of both total transactions and those of each type. In addition, if there are more than two transaction types, as in our study, the ratio measure does not provide us with a simple interpretation. For example, if we have a measure FDI/(FDI+Export+Service), and the degree of positive effect of institutions on FDI is lower than for exports but higher than for services, this measure may induce a negative effect of institutions on FDI. However, we would like to identify whether, in such a case, FDI is encouraged on average but is encouraged relatively less by institutions.

Table 3 Estimation Results: High-Low Quality (Upper and Lower Thirds)

	H → H Export	H → H FDI	L → H Export	L → H FDI	H → L Export	H → L FDI	L → L Export	L → L FDI
LogGDPsource	-0.077	2.109	0.204	-3.761	0.513	5.375c	0.230	1.304
	(0.906)	(3.210)	(0.705)	(3.038)	(0.854)	(2.880)	(0.743)	(3.310)
LogGDPhost	0.413	-1.282	0.323	5.265	0.773	3.253c	1.471b	-3.035
	(0.915)	(3.052)	(0.900)	(3.905)	(0.714)	(1.894)	(0.747)	(2.931)
LogDistance	-1.005a	-0.996a	-1.078a	-1.788a	-1.702a	-1.722a	-1.303a	-0.662a
	(0.051)	(0.152)	(0.062)	(0.281)	(0.062)	(0.280)	(0.051)	(0.189)
BorderShare	-0.614a	-1.086b	0.659a	0.075	-0.036	0.971b	0.896a	1.013b
	(0.166)	(0.490)	(0.176)	(0.585)	(0.178)	(0.436)	(0.115)	(0.415)
ComLang	0.420a	0.323	-0.019	-0.151	0.132	-0.540	1.513a	1.505
	(0.102)	(0.329)	(0.150)	(0.603)	(0.151)	(0.415)	(0.367)	(1.471)
QualitySource	-0.405	-1.258	0.742c	3.895b	-0.474	2.472c	1.133a	0.683
	(0.538)	(1.589)	(0.395)	(1.822)	(0.503)	(1.359)	(0.406)	(1.982)
QualityHost	-0.047	-1.524	1.102b	-0.553	0.246	-0.870	0.959b	1.744
	(0.540)	(1.710)	(0.510)	(2.225)	(0.398)	(1.082)	(0.407)	(1.697)
Homogeneity	0.694a	1.337a	-0.072	-0.074	0.128	0.398c	0.180b	0.813a
	(0.077)	(0.227)	(0.101)	(0.375)	(0.099)	(0.237)	(0.073)	(0.279)
Constant	5.634	-1.807	8.081	8.792	6.611	-51.400b	1.971	5.742
	(8.055)	(28.044)	(9.240)	(38.769)	(7.500)	(25.769)	(7.189)	(20.342)
R-squared	0.911	0.634	0.901	0.694	0.912	0.614	0.884	0.516
N	884	466	904	433	923	500	811	377

Note: Export refers to exports of goods. H→L means flows from a high quality source country to a low quality host country. Homogeneity takes the value 1 if trading countries share the same legal origin, and 0 otherwise. The numbers in parentheses are standard errors. The letters a, b, and c indicate statistical significance at the 1, 5, and 10 percent levels. All estimations include time dummies, and exporting and importing country dummies.

Estimation results on relative effects are reported in Tables 4 and 5. We mainly discuss the results in Table 4, because Table 5 shows the results using our sample selection model and these results are qualitatively similar. Column 2 in Table 4 reports the results of the baseline specification. It only examines the average effects of institutions on international flows. These results show that institutional homogeneities affect all types of international transactions positively. This confirms the idea of de Groot, Linders, Rietveld, and Subramanian (2004) and Islam and Reshef (2006) that better understanding of institutions increases international trade. On the other hand, the coefficient of institutional quality is found to be insignificant. The link between institutional qualities and trade may not be straightforward, because, as Levchenko (2007) and Nunn (2007) show, differences in institutional qualities may create comparative advantage. Thus, increasing institutional quality may reduce trade because of a loss in comparative advantage. Comparative advantage also affects FDI and trade in services. Therefore, we do not find a significant effect of institutions when only considering average effects.

For other explanatory variables, the baseline specification model gives us reasonable estimates. GDP is positively related to international transactions and distance has a negative effect. Thus, our gravity specification explains traditional determinants of trade. Because institutional homogeneities can be considered a closer institutional distance, the negative effects of distance and positive effects of institutional homogeneities imply that international transactions are encouraged between countries that are closer both physically and institutionally.

Table 4 Estimation Results: Baseline, Goods, Services, and FDI

	Baseline	Export	Service	FDI
Exportdummy	2.584a	6.252a	2.592a	6.647a
	(0.026)	(0.215)	(0.026)	(0.234)
Servicedummy	1.347a	1.312a	0.715a	5.442a
	(0.030)	(0.029)	(0.259)	(0.235)
LogGDPSource	0.777a	0.871a	0.794a	0.906a
	(0.279)	(0.265)	(0.276)	(0.255)
LogGDPHost	1.798a	1.710a	1.697a	1.854a
	(0.271)	(0.257)	(0.269)	(0.248)
LogDistance	-1.068a	-0.988a	-1.116a	-1.079a
	(0.022)	(0.024)	(0.023)	(0.021)
BorderShare	0.183a	0.180a	0.158a	0.255a
	(0.050)	(0.060)	(0.056)	(0.053)
ComLang	0.095b	-0.066	0.058	0.176a
	(0.046)	(0.057)	(0.051)	(0.047)
QualitySource	-0.005	1.026a	0.056	-0.847a
	(0.150)	(0.145)	(0.149)	(0.138)
QualityHost	0.105	0.340b	0.039	0.001
	(0.150)	(0.144)	(0.149)	(0.138)
Homogeneity	0.523a	0.747a	0.539a	0.341a
	(0.030)	(0.038)	(0.034)	(0.032)
LogGDPSource*DM		-0.021	-0.101a	0.148a
		(0.015)	(0.020)	(0.016)
LogGDPHost*DM		0.137a	0.029	-0.201a
		(0.016)	(0.020)	(0.017)
LogDistance*DM		-0.160a	0.161a	0.060b
		(0.023)	(0.028)	(0.025)
BorderShare*DM		0.041	0.078	-0.111
		(0.085)	(0.101)	(0.089)
ComLang*DM		0.235a	0.150	-0.409a
		(0.075)	(0.092)	(0.082)
QualitySource*DM		-1.794a	-0.593a	2.674a
		(0.047)	(0.064)	(0.051)
QualityHost*DM		-0.533a	0.561a	0.191a
		(0.039)	(0.047)	(0.043)
Homogeneity*DM		-0.439a	-0.079	0.627a
		(0.053)	(0.066)	(0.057)
Constant	-9.391b	-11.960a	-8.213b	-13.830a
	(3.776)	(3.587)	(3.743)	(3.468)
R-squared	0.747	0.773	0.752	0.788
N	15830	15830	15830	15830

Note: DM=1 for export in Column 3, DM=1 for trade in services in Column 4, and DM=1 for FDI in Column 5. For example, QualitySource*DM reports the relative effect of the source country's institutions. Homogeneity takes the value 1 if trading countries share the same legal origin, and 0 otherwise. The numbers in parentheses are standard errors. The letters a, b, and c indicate statistical significance at the 1, 5, and 10 percent levels. All estimations include time dummies, and exporting and importing country dummies.

Including deviation effect terms yields the relative effects of institutions. We examine the relative effect of institutions on each international transaction. Column 3 in Table 4 reports estimation results of goods exports. Quality of institutions has a positive average effect, as found by Anderson and Marcouiller (2002) and Berkowitz, Moenius, and Pistor (2006). On the other hand, the relative effect on exports is found to be negative. This suggests that better institutions affect exports less and other transactions more. Similarly, the relative effects of institutional homogeneities have negative effects on exports. Therefore, one part of Hypothesis 2 is confirmed. Better and similar institutions induce trade in goods relatively less than other transactions because trade in goods is less contractually complex and thus responds weakly to institutional quality.

Reduction of FDI-related costs by institutional quality may be important. In fact, the relative effect of institutional quality on FDI is positive, which is shown in Column 5 in Table 4. While the average effect turns out to be negative, the overall effect is positive for FDI (the average effect is -0.847 but the deviation term is 2.674). This contrasts with the results for exports. Empirical findings indicate that relative responsiveness of international transactions to institutions is consistent with our Hypothesis 2. The same result is obtained for the effect of institutional homogeneities. The relative effect of institutional homogeneities is negative for exports but positive for FDI. Institutional homogeneities affect international transactions positively on average and affect FDI relatively more. Our statistical test shows that the coefficient of the relative term is different from the average term: the null hypothesis that both coefficients are same is rejected by an F-test at the 1 percent level. Thus, institutional homogeneities are a strong driving force for FDI.

Column 4 in Table 4 reports our results for trade in services. The relative effect of institutions differs between the exporter's and importer's institutional quality. Our findings indicate that the higher the quality of the importing country's institutions the more trade in services will occur, whereas the higher the export country's quality the lower is trade in services. This may reveal a unique aspect of trade in services; however, it is beyond the scope of this paper. The effect of institutional homogeneities on trade in services is found to be insignificant. Because the effect on trade in goods is negative and that on FDI is positive, this result corresponds to the prediction in Hypothesis 2, that is, that the response by trade in services is between the other two.

Turning to other variables, the effect of GDP on average is positive. However, we found a relatively negative effect of the exporting country's GDP on exports and of the importing country's GDP on FDI. This may reveal that richer countries tend to invest in less rich countries. The effect of distance also has a different effect. The average effect of distance is negative, as expected. The relative effect on trade in goods is negative, but is positive for FDI. This implies that firms may set up a foreign affiliate to avoid trade costs and engage in local business activities; firms engage relatively more in FDI than in trade when trade costs are high.

Table 5 reports results of our Heckman two-step estimation. After controlling for selection bias, we found similar results for institution effects on international transactions. The inverse Mill's ratio is significant for FDI, but not for other transactions. Thus, our results are consistent with Wong (2008), in which no selection problem was found to be severe for trade in goods, in contrast to some other types of transactions, such as mergers.

4 Conclusion

This paper has investigated the effects of both institutional quality and homogeneity as well as the relative effects of institutions on international transactions. Our results are consistent with the basic idea about institutions that they are related to contractual and business environments and

Table 5 Heckman Two-Step Estimation: Baseline, Goods, Services, and FDI

	Baseline	Export	Service	FDI
Exportdummy	2.480a	6.138a	2.563a	6.920a
	(0.044)	(0.229)	(0.045)	(0.242)
Servicedummy	1.343a	1.310a	0.730a	5.562a
	(0.030)	(0.029)	(0.259)	(0.236)
LogGDPSource	0.661b	0.790a	0.761a	1.099a
	(0.281)	(0.271)	(0.279)	(0.259)
LogGDPHost	1.800a	1.703a	1.698a	1.848a
	(0.271)	(0.256)	(0.268)	(0.248)
LogDistance	-1.058a	-0.976a	-1.114a	-1.086a
	(0.022)	(0.025)	(0.023)	(0.021)
BorderShare	0.186a	0.187a	0.158a	0.249a
	(0.050)	(0.060)	(0.056)	(0.053)
ComLang	0.096b	-0.061	0.058	0.184a
	(0.046)	(0.057)	(0.051)	(0.048)
QualitySource	-0.008	1.012a	0.056	-0.849a
	(0.150)	(0.145)	(0.148)	(0.138)
QualityHost	0.109	0.339b	0.040	-0.006
	(0.150)	(0.143)	(0.148)	(0.138)
Homogeneity	0.518a	0.740a	0.537a	0.340a
	(0.030)	(0.038)	(0.034)	(0.032)
LogGDPSource*DM		-0.012	-0.103a	0.174a
		(0.016)	(0.020)	(0.017)
LogGDPHost*DM		0.147a	0.026	-0.179a
		(0.018)	(0.020)	(0.018)
LogDistance*DM		-0.172a	0.164a	0.026
		(0.024)	(0.028)	(0.026)
BorderShare*DM		0.033	0.083	-0.125
		(0.085)	(0.101)	(0.089)
ComLang*DM		0.225a	0.150	-0.446a
		(0.075)	(0.091)	(0.083)
QualitySource*DM		-1.777a	-0.600a	2.700a
		(0.049)	(0.064)	(0.051)
QualityHost*DM		-0.531a	0.563a	0.211a
		(0.039)	(0.047)	(0.043)
Homogeneity*DM		-0.431a	-0.077	0.663a
		(0.053)	(0.066)	(0.057)
Constant	-8.299b	-11.180a	-7.904b	-15.816a
	(3.789)	(3.622)	(3.754)	(3.496)
λ	-0.161a	-0.089	-0.044	0.246a
	(0.055)	(0.064)	(0.057)	(0.056)
N	23490	23490	23490	23490

Note: DM=1 for export in Column 3, DM=1 for trade in services in Column 4, and DM=1 for FDI in Column 5. For example, QualitySource*DM reports the relative effect of the source country's institutions. Homogeneity takes the value 1 if trading countries share the same legal origin, and 0 otherwise. λ is the coefficient of the inverse Mill's ratio. The numbers in parentheses are standard errors. The letters a, b, and c indicate statistical significance at the 1, 5, and 10 percent levels. All estimations include time dummies, and exporting and importing country dummies.

therefore affect international flows. If trading partners' qualities are low, they must first improve their quality. On the other hand, if both are high, their mission will be harmonization.

Because FDI requires more local transactions than trade in goods and may entail local production, the effect on FDI is larger than on trade in goods. The relative effects reveal the degree of impact institutions have on international flows. Our empirical results also provide several findings: Higher quality host country institutions result in a relative increase in trade in services; richer countries invest abroad and higher transportation costs induce more FDI. Even if on average institutions promote all types of transactions, the relatively large effect on FDI has an important implication for the relationship between institutions and growth. Because FDI can induce technology transfer and lead to better governance structures, it has a large impact on economic growth. This may mean that a link can be created between institutions and growth.

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