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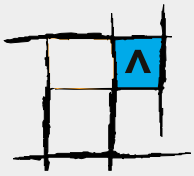
Longitude Matters: Time Zones, the Location of FDI, and Trade



Preliminary Draft

Longitude Matters: Time Zones, the location of FDI, and Trade

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This draft: May 2001

Abstract

In recent years a lot of attention has been paid to geographic latitude and its relationship with key variables like economic growth, development, and institutional quality. In this paper we show that longitude (time zones) also matters. Using bilateral Foreign Direct Investment (FDI) data and gravity model estimations, we find that time zones have a significant impact on the location of FDI. Furthermore, we find that, once we control for time zones, distance is no longer significant. This indicates that for FDI, the relevance of distance is primary due to transaction and coordination costs (longitude) rather than transportation costs considered by the traditional specification. When we analyze trade flows, we also find a significant effect of the longitude dimension. The inclusion of time zone variables in a gravity model of trade leads to a reduction in the estimated effect of distance on trade flows. However, in the case of trade distance remains highly significant, so that both, transaction and transportation costs, seem to play an important role. These results are robust to different estimation techniques and specifications.

JEL: F21, F10

1. Introduction

A lot has been written recently about the importance of latitude in economics, especially in the empirical growth and development literature. Hall and Jones (1999) find that the absolute value of the distance to the equator is positively correlated with output per worker. Additionally, Gallup, Sachs and Mellinger (1999) argue that proximity to the equator and tropical climate have an adverse effect on human health and agricultural productivity and consequently on economic growth. Also, Acemoglu, Johnson and Robinson (2000) make the case that tropical diseases affected the kind of settlements and institutions colonizers installed in the colonies, and thus had an important impact on their later development path.

In this paper, we consider the role of longitude instead. In particular, we study the impact of time zones on the location of FDI, using a database on bilateral FDI stocks between 18 source countries and 58 host countries. Difference in time zones should have important effects on FDI, particularly in sectors in which business requires a great deal of interaction in real time between the firm's headquarters and the foreign affiliate.

A friend who works at a multinational consulting firm has clients in Australia. Often, she has to stay at her office until 9:00 p.m. in order to answer or make a call to her clients in order to communicate issues that cannot wait or be replied by email. Also business travels and meetings are more expensive, difficult to coordinate and not always very effective because of the jet lag of the participants.[1] Actually, what in the beginning seemed to be an interesting business opportunity has faced mayor obstacles for these reasons.

[1] Even though the jet lag may not sound very important, it actually might induce serious problems and high costs. For example when a delegation from Australia came to visit several potential business partners and their headquarters, some of the Australian executives were so exhausted that they felt asleep in a meeting, while some got active not before late in the evening. After this experience the next visit was planned lasting nearly the double amount of time than in normal cases, in order to contemplate these problems.

Difference in time zones should also introduce transaction costs for trade. However, the need for live interaction in the case of trade is much smaller than is the case for FDI, so we expect these transaction costs to be less important.

The paper is organized as follows: In section 2, we describe the FDI data and control variables, as well as the empirical strategy, based on the gravity model. In Section 3, we study the effect of time difference on location of FDI. We find that time zones have a significant impact on the location of FDI. Furthermore, we find that, once we control for time zones, distance is no longer significant. In section 4, we study the role of time difference as a determinant of bilateral trade. As expected, time zones matter also for trade, but their impact is much smaller than that on FDI.

2. Data and empirical methodology

As mentioned in the previous section, we will analyze the effects of longitude on FDI and trade. So, our first dependent variable is the bilateral stock of FDI for 1996, from the OECD Direct Investments Statistics. This data is available for 18 source countries (all of them from the OECD) and 58 host countries, which results in a total of 1025 observations (18*[58-1]).[2] The same data set has been previously used by Wei (1997, 2000) to study the effects of corruption on FDI and by Stein and Daude (2001) to address the impact of the quality of institutions on the location of FDI.

We use stocks rather than flows because the characteristics of host countries should have an effect on the total amount of exposure that a firm in a source country may want to have in them. Firms can and do adjust this exposure, upwards or downwards, according to their business strategies, and to changes in the relative attractiveness of different locations.[3]

[2] Data availability for some of the other variables we use further restricts the sample to around 900 observations.

We work with a gravity model, which we augment with the time zones variables.[4] Our specification is as follows:

$$log(FDI_{ij}+1) = \alpha d_j + \beta x_{ij} + \gamma z_j + \delta timezone_{ij} + \varepsilon_{ij}, \quad (1)$$

where FDI_{ij} is the stock of outward FDI of source country i in host country j in 1996, d_i is a vector of source country dummies, x_{ij} is a vector of bilateral control variables (such as the logarithm of the distance between source and host country, and dummies for adjacency, common language and past colonial links), z_j is a vector of host country characteristics (including traditional gravity variables such as log GDP and log GDP per capita, as well as other characteristics which may affect the attractiveness of the host for FDI, such as tax rates on foreign corporations, quality of infrastructure, quality of institutions, etc.), $timezone_{ij}$ is a variable that captures the distance in latitude between both countries, while ε_{ij} is the error term.[5]

The double-log specification is used because it has typically shown the best adjustment to the data in the empirical trade literature. In the sample, most source countries show some zero values for the bilateral FDI stock. These observations, which would be dropped by using logs, provide very relevant information for the location of FDI, so their omission would lead to an important bias in the estimation of the coefficients of interest. For this reason, we use the $log\ (FDI_{ij} + 1)$ as our dependent variable in order to keep these zero

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[3] An example of a downward adjustment would be the closure or sale of a foreign owned manufacturing facility in a host country. However, in section 3 we use also the gross bilateral flows of FDI, in order to check the robustness of our results.

[4] For a detailed discussion of the empirical use and theoretical foundations in trade see Frankel et al (1997). Recent applications to trade and FDI can be found in Eaton and Tamura (1994), Wei (1997, 2000), Lipsey (1999), Portes and Rey (1999) and Blonigen and Davis (2000), Stein and Daude (2001).

[5] Notice that we work with some variables that are bilateral in nature (the x_{ij}), while in others the observations are independent across host countries, but not within host countries. For this reason, in our empirical work we will use clustered standard errors. This recognizes the fact that, in estimating these coefficients, we do not really have close to one thousand independent observations, but rather 58 of them. As a result, the standard errors are adjusted upwards, while the coefficients are unaffected by this procedure.

observations.[6] The standard gravity model usually includes the source country's size (GDP) and also its population or GDP per capita. In our specification, we include instead source country dummies, which capture all the relevant characteristics of the source countries. As Wei (2000) points out, this specification is preferred because it also solves the problem posed by possible differences in the definition and measurement of FDI across source countries.

The bilateral distance is the "great circle distance" used in Frankel, Stein and Wei (1995). The information on adjacency, official language and colonial links, taken from Rose (2000), is available on his web site, and was complemented with information from the 1999 *World Factbook* available on the CIA's web site.[7] GDP and GDP per capita are adjusted for purchasing power parity, and were taken from the World Bank's WDI (2000).

Another variable we include is the quality of institutions, measured by the summary index of six institutional variables developed by Kaufmann et al (1999), already used in Stein and Daude (2001), where we explore in detail the effects of different institutional dimensions and variables on FDI location decisions.

We also consider tax rate data of withholding tax rates of foreign corporations on dividends, reported by Price Waterhouse (1997). In case tax treaties exist between the host country and some source countries, tax rates on foreign corporations may differ according to the nationality of the foreign owners. In order to take in account these differences, we use bilateral data on tax rates, considering the content of the tax treaties in existence. Tax rates may also differ, within a host country, according to the sector of activity, or the structure of ownership of the firm (i.e., on the share of the firm that is foreign-owned). In these cases, since we do not have information on the structure of

[6] This specification to deal with the problem of the observations with a value of zero for the dependent variable has been used in gravity models of trade by Eichengreen and Irwin (1995, 1997), and more recently by Redding and Venables (2000).

[7] We do not include a dummy for common currency unions in the regressions for FDI, which have been found by Rose (2000) to have very important effects on trade, because Panama and the U.S. are the only pair of countries in our sample that shared the same currency.

foreign ownership, or the sectors of activity, we just use the simple average of the different rates reported. We expect a negative impact of tax rates on FDI.[8]

The quality of communication and transportation facilities, the reliability of the provision of electricity may critically affect the location decision in many industries. In this sense, we use an index of quality of infrastructure developed by Micco and Perez (2001), that takes into account the number of telephone lines per capita, paved highways and airports (km) and railways.[9] We expect countries with a higher quality of infrastructure to be able to attract more FDI.

In order to quantify the transaction costs related to the longitudinal distance between the source and the host countries, we construct two variables. First, we consider the time difference in hours ($timedif_{ij}$) between the host country and the source country. By construction, this variable ranges between 0 and 12. Second, as argued above, longitude may imply additional coordination and transaction costs. In this sense, we constructed an additional variable ($overlap_{ij}$) that intends to capture these effects by the number of overlapping office hours (considering a standard 9 a.m. – 5 p.m. workday) between both countries.

3. Empirical Results

The next step is to estimate equation (1). First, we estimate several specifications using OLS. Second, we show that the basic results are robust to different dependent variables using FDI flows, and estimation techniques. In Table 1 we present our estimates.

In the first column we show the OLS estimates of the standard extended gravity equation. First, it is interesting to point out that the model explains a significant proportion of the

[8] We left out of the analysis is the existence of tax credits in some source countries, which may reduce the effect of this variable. For evidence on the impact of tax credits on the effects of tax rates on FDI location, see Hines (1996).

[9] It should be pointed out that when we use a "subjective" measure of the quality of infrastructure provided by surveys (concretely the *World Business Environment Survey*), the results are quite the same (see Stein and Daude, 2001).

total variance (the R^2 is of 0.64). This indicates once again the "success" of the gravity model in empirical modeling.

All variables are statistically and economically significant, expect for Colonial Links, and show the expected sign. As well as in the remaining specifications presented in Table 1, a one-percentage increase in the size of the host country, holding constant the level of GDP per capita, is associated with a proportional change in the FDI stock. Additionally, the distance between the source and the host countries has a significantly negative impact on the bilateral amount of FDI. A one-percentage increase in this variable implies a reduction in over half percent in FDI. Also, the effect of sharing a common language is positive and highly significant. Sharing the same language increases the bilateral FDI stock by a factor of 6![10] This large magnitude shows that cultural links may play an important role in reducing transaction costs or the importance of the similitude in the way in which incomplete contracts are resolved between parts.[11]

The host countries GDP per capita shows also a positive and significant coefficient. So more developed countries attract more FDI. This result can be related to the fact that higher levels of GDP per capita are associated to better institutional quality, higher skills of the labor force or a higher quality of infrastructure, among others.

In column 2 we introduce two additional variables that in Stein and Daude (2001) have been found to be important factors in attracting FDI, tax rates on foreign companies' dividends and the quality of institutions. Both variables are highly significant and economically important. An improvement in one standard deviation in the quality of institutions leads to an increase of 158% in FDI[12], while a one-percentage increase in the tax rate implies a reduction in FDI of nearly five percentage points.

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[10] exp (1.974)-1 = 6.199.

[11] The estimated effect on linguistic ties on trade is lower, between 40% and 116% (see Frankel et al., 1995, as well as the estimates in section 4 of this paper).

[12] The variable of institutional quality has been standardized within the sample to mean zero and a unity standard deviation, so that the effect is exp (0.949)-1=1.583.

It is interesting to notice that once we control for institutions the GDP per capita is no longer significant, so that we exclude it from the remaining regressions. In column 3 we substitute this variable by including as additional control the quality of infrastructure in the host country. This variable has a positive and highly significant effect, although once we include the institutional quality variable it shows the correct sign but is no longer significant (in column 4).

In column 5 we include $timedif_{ij}$ as explanatory variable. The estimate shows the expected negative sign and is highly significant. So, there seems to be evidence that after holding constant for the remaining factors that matter in FDI location, the greater time difference exists between two countries the lower is their bilateral FDI. An increase in one hour of time is associated with a 16% reduction in the stock of bilateral FDI.[13]

The results for the hours of workday overlap are shown in column 6. As expected the coefficient is positive, so that FDI will be higher between two countries the greater coincidence of office hours they have. The estimated effect is that an additional hour of overlapping in the working days of both countries is associated with an increase of 22% in the FDI stock.[14]

It is important to notice that in both cases, the distance between the host and the source country is no longer significant, once we include the time difference variable. This result indicates that for FDI the distance dimension that seems to be more relevant is longitude. Thus, in the case of FDI transaction costs seem to be a more important factor than transportation costs.

Robustness

The estimates in Table 1 may be subject to several criticisms, especially endogeneity problems, and the estimation techniques. In order to show that our results still hold once

[13] exp (-0.18) – 1 = -0.1647.
[14] exp (-0.244) – 1= -0.2165.

we take into account these problems, in this subsection we carry out several robustness checks.

First, some variables - especially GDP and institutions – may be endogenous. Even though we use the average GDP from 1990 to 1995, a predetermined variable, we consider the FDI stock as the depended variable, so that endogeneity is still an issue. Also, FDI inflows can have effects on the country's institutions. In this sense, reverse causality could be present in the regressions of Table 1. On the other hand, the institutional variable we use is constructed using subjective information[15], and the answers could be biased by the fact that a country received a large amount of FDI. In order to address this problem we instrument GDP by the log of the land area[16], and institutions by using mortality data of European settlers in the 19th century from Acemoglu et al (2000).

In the first two columns of Table 2, we show the OLS estimates for the restricted sample by availability of data of the instruments, especially the mortality data. Even though the sample size is reduced considerable the estimates are quite similar to those shown in Table 1. The major changes are that the Adjacency and Common Language variables are no longer significant, while the tax rate still shows the expected sign but is no longer significant at traditional levels. Also, the quality of infrastructure is now significant, while the effect of the institutional quality is lower. However, the most important fact is that the estimated coefficients of the longitude variables remain fairly the same. The point estimates are slightly higher than those of Table 1.

The IV estimations are presented in the third and fourth columns of Table 2. As it can be observed, the main results hold once we control for possible endogeneity problems. Especially, it should be pointed out that both variables, $timedif_{ij}$ as well as $overlap_{ij}$, are highly significant and their point estimates do not vary substantially comparing them with

[15] See Kaufmann et al. (1999) and Stein and Daude (2001) for a more detailed discussion on this issue. However, Stein and Daude (2001) show that the strong impact of institutions on FDI holds regardless of the kind of institutional variable is used.
[16] We have also used the log of population as instrument for the GDP with identical results.

the OLS in column 1 and 2. On the other hand, the distance between the host and the source countries is also not significant in all regressions.

A different concern can be raised about using OLS estimates given the left-hand truncation nature of the dependent variable. This fact may induce an important bias in the estimation, and consequently inconsistency of the OLS estimates. In order to address this problem we estimate equation (1) using TOBIT estimations. The results are presented in column 4 of Table 2. The point estimates are a little bit higher than the OLS, consistent with the existence of a small bias in the OLS estimates, but the significance and main results presented above still hold.

An additional robustness check is presented in Table 3 where we carry out the same OLS estimations as in Table 1 substituting the stock data by the average flows of FDI between 1995 and 1997. As it can be seen the main results hold whether we consider as dependent variable flows or stocks.

4. Trade

In order to analyze the effects of time zones on bilateral trade flows, we use Frankel and Rose (2000) database. This database contains 41678 bilateral trade observations over different years (1970, 1975, 1980, 1985, 1990, and 1995) for 186 countries, dependencies and territories from the United Nation's *World Trade Database* and *International Trade Statistics Yearbook*.[17]

The basic gravity model we consider is the same used in Rose (2000) and Frankel and Rose (2000). In all regressions we include the log of the product of the GDP of the host and the source country, their log of the product of the GDP per capita and the log of the distance between them. We also consider a common language dummy, an adjacency dummy and a dummy that equals unity when both countries are members of the same

[17] For more details see the appendix in Frankel and Rose (2000). The database is available on Rose's website: http://www.haas.berkeley.edu/~rose.

FTA. Other dummy controls are used for Common Colonizer, for the case where both "countries" are part of a political union, and if there are direct colonial links (Ex-Colony – Colonizer) between them. Finally, other controls used by Frankel and Rose (2000) included in our regressions are the number of landlocked countries in pair, the number of island, the log of the product of their Land Areas and a dummy if one of the countries is member of a currency union.[18]

In the first column of Table 4 and 5 we present the baseline model of Frankel and Rose (2000). All variables show the expected sign and are economically meaningful. Our variables of interest ($overlap_{ij}$ in Table 4 and $timedif_{ij}$ in Table 5) are also highly significant and show the expected sign. This indicates that transaction costs, not captured by the standard variables of the gravity model, associated to the longitudinal distance, time zones, are also an important determinant of bilateral trade flows.

An interesting feature of these estimations is that in contrast to the case of FDI, here the bilateral distance is still significant when we include the time zone variables. Obviously, this shows the importance of transportation costs in bilateral trade, while they seem to be less important regarding FDI. Also, once we consider the time zone variables, the estimates of the bilateral distance is lower, for example it fall from –1.083 to –0.926, adding $overlap_{ij}$ to the baseline model (see regression 2 in Table 4).

Finally the estimated effect on trade is lower than on FDI. While an increase in one hour of time zone difference, reduces FDI in 16%, as mentioned earlier, the effect on trade is four times lower, 3.7%.[19] In the case of the other variables the results are quite similar. This indicates that while the time zone effect is relevant for both, trade and investment, for the latter – maybe because it requires a more fluent and continuos flow of information – it is more important.

[18] Also, for further information on sources and definitions see the appendix in Frankel and Rose (2000).
[19] More precisely it is exp (-0.038) –1 = -0.03729.

5. Conclusions

In this paper we investigated the effect of a geographical dimension fairly forgotten in the empirical literature until now, longitude, on bilateral FDI and trade. We find that this characteristic of bilateral distance is highly relevant to understand both, trade and investment. The effects on FDI seem to be more important than on trade, while we find that once we control for time zones the distance – usually a proxy for transportation costs – is no longer relevant in order to understand bilateral investment. These results are robust to different specifications, considering flows and stocks of FDI, as well as when we control for possible endogeneity problems and censorship in the data.

Longitude matters. While our empirical exercise is quite intuitive and simple, we are convinced that the results are robust enough in order to introduce this consideration in further analysis on the determinants of FDI and Trade. Future estimates of gravity models should include this variable in the "extended" baseline model.

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Table 1: OLS Estimation
Dependent Variable: FDI bilateral stock in 1996, log (FDI+1)

Regression	(1)	(2)	(3)	(4)	(5)	(6)
GDP	0.993 (9.20)***	1.001 (9.83)***	0.978 (9.78)***	0.996 (10.1)***	1.002 (10.6)***	1.010 (10.8)***
GDP per capita	0.934 (4.53)***	-0.042 (0.13)	-	-	-	-
Distance	-0.556 (3.86)***	-0.498 (4.28)***	-0.431 (3.07)***	-0.496 (3.91)***	0.093 (0.41)	0.226 (0.88)
Common Language	1.974 (4.68)***	1.217 (3.10)***	1.781 (3.93)***	1.224 (3.09)***	1.194 (3.04)***	1.183 (3.05)***
Colonial Links	0.535 (0.69)	1.413 (3.95)***	0.303 (0.44)	1.412 (3.65)***	1.602 (4.30)***	1.533 (4.19)***
Adjacency	1.037 (2.11)**	1.016 (2.08)**	1.197 (2.40)**	1.006 (2.08)**	1.409 (2.79)***	1.450 (2.79)***
Tax Rate	-	-4.716 (2.28)**	-	-4.595 (2.27)**	-4.337 (2.30)**	-4.381 (2.36)**
Infrastructure	-	-	1.616 (5.69)***	0.060 (0.10)	0.192 (0.37)	0.263 (0.51)
Institutional Quality	-	0.949 (3.26)***	-	0.895 (3.07)***	0.941 (3.35)***	0.920 (3.33)***
Timedif	-	-	-	-	-0.180 (3.72)***	-
Overlap	-	-	-		-	-0.244 (3.83)***
Number of Obs.	989	864	989	864	864	864
R – squared	0.64	0.70	0.65	0.70	0.71	0.71

Robust t-statistics in parentheses. GDP, GDP per capita and Distance are used in natural logs. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

Table 2: Robustness Checks
Dependent Variable: FDI bilateral stock in 1996, log (FDI+1)

Regression	(1)	(2)	(3)	(4)	(5)	(6)
Estimation Method	OLS	OLS	IV	IV	TOBIT	TOBIT
GDP	0.987 (7.65)***	0.990 (7.76)***	1.057 (9.05)***	1.052 (9.16)***	1.381 (11.2)***	1.393 (11.5)***
Distance	0.004 (0.02)	0.016 (0.05)	0.036 (0.16)	0.047 (0.16)	0.226 (0.72)	0.379 (1.13)
Common Language	0.423 (0.77)	0.442 (0.80)	0.350 (0.59)	0.378 (0.64)	1.603 (3.13)***	1.566 (3.11)***
Colonial Links	1.549 (3.75)***	1.439 (3.89)***	1.583 (4.01)***	1.468 (4.21)***	2.104 (3.74)***	1.967 (3.72)***
Adjacency	-0.076 (0.13)	-0.157 (0.26)	-0.137 (0.22)	-0.21 (0.34)	1.168 (1.74)*	1.206 (1.77)*
Tax Rate	-0.644 (0.25)	-0.684 (0.27)	-0.494 (0.20)	-0.551 (0.22)	-5.386 (1.95)*	-5.408 (1.99)**
Infrastructure	1.263 (3.44)***	1.326 (3.62)***	1.281 (3.78)***	1.344 (3.94)***	0.445 (0.62)	0.547 (0.78)
Institutional Quality	0.698 (2.10)**	0.652 (1.97)*	0.694 (2.19)**	0.648 (2.05)*	1.163 (3.05)***	1.133 (3.07)***
Timedif	-0.212 (5.10)***	-	-0.214 (5.23)***	-	-0.312 (4.42)***	-
Overlap		0.257 (4.20)***	-	0.260 (4.30)***	-	0.394 (4.55)***
Number of Obs.	390	390	390	390	864	864
R – squared	0.77	0.77	0.77	0.77	-	-

Robust t-statistics in parentheses. GDP, GDP per capita and Distance are used in natural logs. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

TABLE 3: OLS Estimation
Dependent Variable: FDI Average Flows 1995-97, log(FDI+1)

Regression	(1)	(2)	(3)	(4)	(5)	(6)
GDP	0.727 [9.25]***	0.71 [9.48]***	0.717 [9.59]***	0.706 [9.60]***	0.707 [9.72]***	0.71 [9.85]***
GDP per capita	0.59 [3.73]***	-0.047 [0.22]				
Distance	-0.401 [3.78]***	-0.381 [4.81]***	-0.313 [3.14]***	-0.383 [4.44]***	-0.174 [1.09]	-0.091 [0.50]
Common Language	1.477 [4.67]***	0.975 [3.25]***	1.342 [4.02]***	0.982 [3.28]***	0.963 [3.25]***	0.966 [3.25]***
Colonial Links	0.194 [0.36]	0.74 [2.24]**	0.049 [0.10]	0.751 [2.17]**	0.826 [2.51]**	0.802 [2.45]**
Adjacency	0.737 [2.30]**	0.645 [2.30]**	0.818 [2.50]**	0.635 [2.28]**	0.783 [2.68]**	0.818 [2.65]**
Tax Rate		-3.682 [2.50]**		-3.624 [2.47]**	-3.55 [2.46]**	-3.556 [2.49]**
Infrastructure			1.069 [4.60]***	-0.015 [0.04]	0.023 [0.06]	0.057 [0.16]
Institutional Quality		0.599 [3.15]***		0.572 [2.93]***	0.595 [3.16]***	0.587 [3.12]***
Timedif					-0.064 [1.99]*	
Overlap						0.099 [2.32]**
Observations	879	768	879	768	768	768
R-squared	0.67	0.75	0.68	0.75	0.75	0.75

Robust t-statistics in parentheses. GDP, GDP per capita and Distance are used in natural logs. * significant at 10% level, ** significant at 5% level, ***significant at 1% level.

TABLE 4: OLS Estimation
Dependent Variable: Bilateral Trade in logs

Regression	(1)	(2)	(3)	(4)	(5)
Common Currency	1.542 [12.23]***	1.63 [12.92]***	1.298 [9.95]***	1.776 [14.30]***	1.444 [11.38]***
Distance	-1.083 [70.29]***	-0.926 [40.51]***	-0.939 [41.22]***	-0.772 [32.86]***	-0.951 [41.60]***
Log of Product of Real GDPs	0.792 [158.28]***	0.792 [157.83]***	0.801 [156.11]***	0.961 [135.60]***	0.803 [162.07]***
Log of Product of Real GDP per capitas	0.643 [67.47]***	0.65 [67.84]***	0.663 [68.82]***	0.455 [41.13]***	0.638 [66.31]***
Common Language	0.754 [21.21]***	0.762 [21.46]***	0.472 [13.20]***	0.798 [22.92]***	0.721 [20.36]***
Common Land Border	0.352 [4.93]***	0.476 [6.61]***	0.532 [7.45]***	0.842 [11.22]***	0.486 [6.77]***
Regional FTA Members	1.261 [19.47]***	1.338 [20.51]***	1.27 [20.04]***	1.209 [18.64]***	1.304 [20.01]***
Overlap		0.053 [8.47]***	0.047 [7.64]***	0.098 [15.52]***	0.049 [7.90]***
Currency Union					0.356 [14.54]***
Number of Landlocked Countries				-0.356 [13.12]***	
Number of Island Nations				0.071 [3.16]***	
Log of Product of Areas				-0.169 [29.65]***	
Common Colonizer Dummy			0.662 [12.65]***		
Common Country Dummy (colonies, dependencies, territories)			1.101 [3.99]***		
Colony:Colonizer dummy			2.115 [32.82]***		
Observations	31101	31101	31101	31101	31101
R-squared	0.62	0.62	0.63	0.64	0.63

Robust t-statistics in parentheses. Distance is in natural logs. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.

TABLE 5: OLS Estimation
Dependent Variable: Bilateral Trade in logs

Regression	(1)	(2)	(3)	(4)	(5)
Common Currency Pairs	1.542 [12.23]***	1.614 [12.82]***	1.286 [9.87]***	1.752 [14.12]***	1.43 [11.28]***
Log of distance	-1.083 [70.29]***	-0.95 [43.14]***	-0.962 [43.83]***	-0.808 [35.86]***	-0.97 [44.08]***
Log of Product of Real GDPs	0.792 [158.28]***	0.792 [157.78]***	0.8 [156.14]***	0.958 [136.22]***	0.803 [162.00]***
Log of Product of Real GDP per capitas	0.643 [67.47]***	0.65 [67.79]***	0.662 [68.76]***	0.456 [41.29]***	0.638 [66.27]***
Common Language	0.754 [21.21]***	0.765 [21.52]***	0.475 [13.25]***	0.803 [23.05]***	0.724 [20.41]***
Common Land Border	0.352 [4.93]***	0.468 [6.48]***	0.524 [7.33]***	0.835 [11.11]***	0.482 [6.70]***
Regional FTA Members	1.261 [19.47]***	1.336 [20.48]***	1.269 [20.02]***	1.211 [18.69]***	1.304 [20.02]***
Timedif		-0.038 [7.60]***	-0.034 [6.81]***	-0.074 [14.59]***	-0.037 [7.32]***
Union					0.361 [14.73]***
Number of Landlocked Countries				-0.355 [13.06]***	
Number of Island Nations				0.079 [3.48]***	
Log of Product of Areas				-0.167 [29.41]***	
Common Colonizer Dummy			0.66 [12.63]***		
Common Country Dummy (colonies, dependencies, territories)			1.089 [3.93]***		
Colony:Colonizer dummy			2.125 [32.91]***		
Observations	31101	31101	31101	31101	31101
R-squared	0.62	0.62	0.63	0.64	0.63

Robust t-statistics in parentheses. Distance is in natural logs. * significant at 10% level, ** significant at 5% level, *** significant at 1% level.