Trade and Labor Standards in the European Union: A Gravity Model Approach[*]

Yiagadeesen Samy
The Norman Paterson School of International Affairs
Carleton University

Vivek H. Dehejia
Department of Economics
Carleton University & CESifo

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Abstract

Using a gravity model, we examine whether labor standards are important determinants of bilateral export performance for EU-15 countries over the period 1988-2001. We assess the conventional wisdom that countries with low labor standards and less stringent regulations have performed better in terms of trade performance and use a panel data set in a triple-indexed gravity model to conduct our empirical investigation. Our empirical results indicate that labor standards matter, but that the conventional wisdom does not always hold. The standard variables used in gravity equations conform to theoretical expectations and are highly significant.

Keywords: international trade, labor standards, gravity equation
JEL: F13, F14, F15

Corresponding author: Yiagadeesen Samy, The Norman Paterson School of International Affairs, 1408 Dunton Tower, Carleton University, 1125 Colonel By Drive, Ottawa ON K1S 5B6, CANADA, E-mail: yiagadeesen_samy@carleton.ca, Telephone: +1 613 520 2600 ext. 1218, Fax: +1 613 520 2889.

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1. Introduction

An issue that continually attracts a lot of attention during trade negotiations between developed and developing countries is the conventional wisdom that countries with lower labor standards gain an unfair advantage in the production and export of labor-intensive goods because of lower labor costs. This question, however, has not been analyzed (empirically) as much in a North-North framework, especially for countries that are part of regional trade agreements (RTAs) such as the European Union (EU), and with distinct labor laws and practices[1]. The issue that arises in the case of RTAs is whether harmonization of standards is necessary in order to prevent trade liberalization resulting from economic integration from leading to an erosion of working conditions. Since differences in labor standards (and hence labor costs) may increase the threat of social dumping, it is important to consider whether trade is indeed affected by labor standards in the first place. This paper, therefore, seeks to contribute empirically to a complex and politically sensitive area, where empirical work is lacking.

Indeed, the choice of labor standards across EU-15 countries is likely to be different and shaped by domestic interest groups, voters and national governments,

[1] A cursory look at data (for example unionization rates, social protection as a percentage of GDP hours worked, and number of ILO conventions ratified) for EU-15 countries reveals that there are important differences even though these countries have similar political systems (Van Beers 1998).

even though these countries have similar political systems[2]. In spite of several attempts for harmonization of standards over time, EU countries continue to maintain distinct labor practices. For instance, a European Union Charter of Fundamental Rights was signed at the 2000 European Council meeting in Nice, but these rights are principles rather than binding rights.

An examination of labor standards among EU countries, and their potential impact on trade flows, is thus important. As the largest trading area in the world, the EU is an ideal candidate for such an analysis because of the considerable degree of integration within that trading bloc[3]. Increased integration in the EU has brought member countries into closer and more frequent contact with each other, and the recent enlargement of the EU in 2004 (as well as the possibility of future enlargement) is likely to continue this trend. As a result of these changes, one could argue that policies in one country are now more likely to have welfare redistribution effects and consequences for labor standards in other countries. On a more pragmatic note, the availability of reliable data on labor standards makes empirical analysis possible.

Following the OECD (1996), labor standards are defined as norms, rules and working conditions that govern working conditions and industrial relations. As such, labor standards in this paper include all the institutional elements of labor markets such as unionization rates, the number of hours worked, and rates of

[2] See Gitterman (2003) and Dehejia and Samy (2008) for a brief history of labor standards in the European Union,

occupational injuries among others. Our definition is therefore different from core labor standards, which are represented by eight ILO conventions defining four fundamental rights at work. We use the gravity model of trade augmented with labor standards to examine the link between labor standards and trade across countries in the European Union as it is a standard (and empirically successful) model to examine the determinants of aggregate trade flows between pairs of countries

The plan of the paper is as follows. Section 2 reviews existing empirical work on trade and labor standards. Section 3 presents the modelling framework that will be used as well as the empirical strategy for a panel data environment. Section 4 presents and discusses the main empirical results. Section 5 concludes.

2. Literature Review

Since the OECD (1996) report on *Trade, Employment and Labor Standards*, a number of studies have examined the empirical relationship between trade and labor standards. The OECD (1996) itself, by eyeballing scatterplots, found no evidence that low-standard countries enjoyed a better export performance than high-standard countries. This was followed by other studies (for example Rodrik (1996), Flanagan (2002), Dehejia and Samy (2004, 2009)) based on large sample and more rigorous statistical analysis, and a variety of indicators for labor standards, which found no (or very weak) evidence that low labor standards have an impact

[3] According to estimates from UNCTAD, intra-EU trade as a percentage of total exports for EU

on trade performance. These studies consider both developed and developing countries and conclude that natural determinants of comparative advantage in the form of factor endowments are important factors in explaining trade patterns, as opposed to labor standards.

Flanagan (2002) uses panel data (the others use cross-sectional data) but the validity of the results can be questioned once again as only ILO conventions are used as proxies for labor standards. The Rodrik (1996) and Dehejia and Samy (2004, 2009) studies, based on cross-sectional data, are more compelling since these authors use a variety of better indicators for labor standards, in addition to ILO conventions ratified. A few studies have also analyzed this issue for developed countries. For example, Rodriguez and Samy (2003) use time series data and examine the effects of labor standards on US export performance. They obtain very weak evidence that low standards help boost export competitiveness.

The study that comes closest in terms of empirical framework to the current paper is the one by Van Beers (1998), which extends a gravity model with bilateral trade flows and examines how the latter are influenced by labor standards in OECD countries, using a labor standard indicator (a synthetic index constructed by the OECD) based on actual labor regulations for 1992 data. Van Beers (1998) finds that labor standards do not have any significant impact on the exports of labor-intensive goods. However, when a distinction is made in terms of skill-intensities, both the exports of labor-intensive and capital-intensive commodities,

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and accession countries was more than 60% in 2004 which are produced with relatively high-skilled labor, deteriorate with an increase in the strictness of labor standards. No attempt, however, is made to check the robustness of the results for subsequent years, and to use different indicators of labor standards for sensitivity analysis. The fact that only 1992 data is considered carries the risk that the results of the analysis could be based on an unrepresentative year.

Dehejia and Samy (2008) in a recent paper have examined the relationship between labor standards and trade performance for EU-15 countries based on a Heckscher-Ohlin framework and using panel data for the period 1980-2001. They find some evidence for the conventional wisdom when exports of the EU to the rest of the world are considered but labor standards exert less of an influence than the traditional determinants of comparative advantage. When intra-EU exports are considered, the evidence for the conventional wisdom is rather weak and the authors even find evidence going in the other direction, which they explain through productivity effects. Dehejia and Samy (2008) also investigate whether there has been a race to the bottom of standards over that time period and again their results are not conclusive: some standards have converged while others have diverged.

In assessing existing empirical work on trade and labor standards, Freeman (1996) mentions that "Neither the Rodrik nor the OECD (1996) study is definitive. The effect of labor standards on comparative advantage and trade is one of empirical magnitude, which further research should be able to clarify. We need studies with alternative measures of standards, models and samples of countries" (p. 103). Since Freeman's comments, a number of studies have appeared (as seen above) but very few have examined the issue within the context of RTAs such as the EU, where despite sharing relatively similar political systems, member countries retain their policy autonomy in the choice of labor standards.

In the next section, we examine the modelling framework and empirical strategy that we will use in the current paper to analyze the issue of trade and labor standards for the EU.

3. Modelling Framework

Both Brown et al. (1996) and Dehejia and Samy (2004) have shown that a labor standard is an additional cost (since it uses some capital and some labor) and may change a country's comparative advantage, depending on the factor intensity of the standard and the country's endowments of factors[4]. This will, as a result, determine whether the country exports or imports the good affected by the standard. Because standards are costly, may improve productivity, and enter the worker's utility function in their models, it is important to empirically examine their overall effects on export performance, which are not clear a priori. In other words, it is not necessarily the case that low labor standards will have a positive influence on export performance, as is often argued.

[4] Kanbur and Chau (2002) have in fact confirmed empirically that ratification of ILO Conventions is indeed costly.

In a gravity context, the labor standard can be interpreted as being equivalent to an indirect trade cost, as for example, a government policy that imposes safety standards on certain firms. Suppose the world is made of N countries and a continuum of differentiated goods. In this world, countries specialize in a range of goods. Let the factory gate price of goods from country i to j be equal to p_i. The effect of a labor standard imposed on the production of a good, such as safety at the workplace, going from country i to j is to increase the price to $p_i z_{ij}$ where z_{ij} is a markup factor, so that the buying price with the standard is $p_i z_{ij} > p_i$ since $z_{ij} > 1$. Note, however, in the same spirit as Dehejia and Samy (2004) that the standard may also improve productivity so that in effect it reduces the value of z_{ij}. In fact, the productivity effect may be so high that $p_i z_{ij} < p_i$ if $z_{ij} <$ 1. The sign of z_{ij} is an empirical question that we will examine in the next section. For the time being, leaving productivity effects aside, and as in Anderson and van Wincoop (2003), if consumers have CES preferences and with a common elasticity of substitution among all goods, the gravity equation can be written as

$$X_{ij} = \frac{Y_i Y_j}{Y_w}\left(\frac{z_{ij}}{\prod_i P_j}\right)^{1-\sigma} \qquad (1)$$

where X_{ij} refers to exports from country i to country j; Y_i, Y_j and Y_w refer to the gross domestic products of country i, country j, and the world respectively; $\sigma > 1$ is the elasticity of substitution; z_{ij} is the cost due to the labor standard[5]; Π_i and P_j are

[5] More generally, we can think of the cost due to the labor standard as part of the total trade costs (direct and indirect).

outward and inward multilateral resistance variables for countries *i* and *j* respectively, that is, average trade barriers.

Equation (1) means that we can extend the gravity equation with variables for labor standards to consider the influence of the latter on bilateral trade flows. This approach is beneficial for two reasons. First, compared to a Heckscher-Ohlin model, which relies on multilateral trade flows, the gravity model considers bilateral trade flows; differences in labor standards across countries may lead to opposite effects on trade flows, which can cancel out in a multilateral framework but not in a bilateral one. Second, as mentioned before, the gravity model is consistent with the factor proportions model, models of trade based on increasing returns and product differentiation, and new trade theories (see Bergstrand (1989), Helpman and Krugman (1985) and Deardorff (1998). For example, the new trade theories, which make allowance for increasing returns to scale, imperfect competition, and geography and trade can be easily estimated in a gravity framework by controlling for market size, population size, GDP and distance.

In its simplest form, the stochastic version of the gravity equation for trade can be written as follows:

$$T_{ij} = \alpha_0 Y_i^{\alpha_1} Y_j^{\alpha_2} D_{ij}^{\alpha_3} \eta_{ij} \qquad (2)$$

This equation states that the trade flow from country *i* to country *j* (T_{ij}) is proportional to the product of the two countries' GDP (Y_i and Y_j), and inversely proportional to their distance (D_{ij}). GDP refers to economic mass and distance proxies for the resistance to trade, namely transportation costs and time costs. The amount of trade between two countries is therefore assumed to increase with size (GDP) and decrease with transportation costs (distance). The α's are the unknown parameters to be estimated and η_{ij} is the disturbance term. This simple gravity equation is often augmented with dummy variables for adjacency, common language, and membership in trade agreements. One model that is therefore often considered for estimation is an augmented version of equation (2), which takes the following form:

$$EXP_{ij} = \beta_0 Y_i^{\beta_1} Y_j^{\beta_2} D_{ij}^{\beta_5} e^{\beta_6 P_{ij}} e^{\mu_{ij}} \qquad (3)$$

where

EXP_{ij} refers to exports from country i to country j,

Y_i and Y_j refer to gross domestic product of country i and country j,

D_{ij} refers to distance between country i and country j,

P_{ij} refers to dummy variables for common language and countries that share a common border,

μ_{ij} refers to the disturbance term.

From equation (3) above, the supply of exports from country i is based on this country's own GDP, and the demand for country i's exports (country j's imports) is based on country j's GDP. Once again, distance measures the resistance to trade as described above. Equations (2) and (3) are basically similar to equation (1) and in order to take into account other factors that may affect trade patterns, a number of conditioning variables are added to the basic gravity equation. Specifically, dummy variables (P_{ij}) are included to reflect specific deviations from expected trade patterns as a result of common language and common border. In addition, the land area of the countries is also included since it is expected that countries with larger land masses will trade less. Both equations (2) and (3) follow the same Given the multiplicative nature of the model, we can use its log-linear version for estimation purposes[6]. Because of the nature of the data used in the current paper, the specific econometric representation of our gravity equation takes the form of a triple-indexed model as suggested by Matyas (1997), but with a slight modification for the fixed effects based on Cheng and Wall (2005):

$$\ln EX_{ijt} = \alpha_0 + \alpha_t + \alpha_{ij} + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_3 \ln D_{ij} + \beta_4 LANG + \beta_5 BORDER + \beta_6 \ln AREA_i + \beta_7 \ln AREA_j + \beta_8 LABS_{it} + \beta_9 LABS_{jt} + \mu_{ijt}$$

(4)

where

EX_{ijt} represents exports from country i to country j at time t; Y_{it} and Y_{jt} refer to GDP of countries i and j at time t; D_{ij} is the great circle distance between country i and country j; *LANG* is a binary variable which is unity if countries i and j have a common language; *BORDER* is a binary variable which is unity if countries i and j share a common border; $AREA_{it}$ and $AREA_{jt}$ refers to the land masses of countries i and j; $LABS_{it}$ and $LABS_{jt}$ refer to the different measures for labor standards in countries i and j at time t; μ_{ijt} is the normal disturbance term and is assumed to be well-behaved; $i = 1, 2, ..., N$; $j = 1, 2, ...N$; $N = 13$, $i \neq j$; $t = 1988, 1989,..., 2001$; $T = 14$.

[6] The specification of the gravity model in log-linear terms allows one to interpret the different coefficients as elasticities, even though the model itself is initially expressed in multiplicative form.

The intercept in the above equation has three parts: α_0 is common to all years and country pairs, α_t is specific to year t and common to all pairs, while α_{ij} is specific to country pairs and common to all years. Since we have a high correlation between GDP and population in our data (at 0.95 for i and j), we do not include variables for population for countries i and j, as is often the case in empirical specifications, to avoid the multicollinearity problem. However, we also consider the inclusion of income per capita in the gravity equation instead of population, to verify the idea that higher income countries trade more in general.

It is expected that β_1 and β_2 are positive since countries that are large economically tend to trade more. The coefficients β_4 and β_5 are expected to be positive as countries with a common language or border with another country are expected to trade more among themselves. β_3, which is the coefficient on the distance variable and captures resistance to trade, is expected to have a negative value. β_6 and β_7 are assumed to be negative because countries that are large geographically are expected to trade less. As for the labor standard variables, β_8 and β_9 are assumed to have opposing effects, based on the fact that labor standards represent an additional cost that is likely to influence trade flows. More precisely, an improvement in country *i's* labor standard represents an increase in labor costs and is likely to have a negative influence on export performance according to the conventional wisdom; by the same logic, an improvement in country *j's* labor standard will lead to more trade from country i to country j. However, if labor standards also improve productivity, and lead to an increase in export performance as discussed above, then the signs of β_8 and β_9 may be different from what we have just described. Indeed to the extent that, for example, providing a safer working environment may induce workers to perform better, the overall effect on export performance may be different from the conventional wisdom.

Prior to the papers by Matyas (1997, 1998), a major weakness of empirical studies using the gravity model was the type of data and the associated model restrictions that accompanied the latter. In most cases, gravity models used cross-section data to estimate trade patterns at a given point in time, or single time-series data were considered in a country-by-country approach. However, heterogeneity across countries (or country pairs) is quite likely and should be accounted for, failing which our econometric models might be mis-specified and our estimates biased. In the present case, we use a panel dataset, which not only increases the degrees of freedom, but also allows us to consider the time-varying effects as well as mitigating the risks of choosing an unrepresentative year. Furthermore, the use of panel data allows one to consider unobservable individual effects between trading partners and to control for heterogeneous trading relationships. The choice between a fixed-effects model (FEM) and random-effects model (REM) needs to be considered. As argued by Egger (2000), if one is interested in estimating equations based on a predetermined sample of countries, the FEM should be chosen over a REM. The latter would be more appropriate if one considers a randomly drawn sample of trading partners from a larger population. Given that we consider only countries that are EU members, the

FEM is the most appropriate specification; in fact, the Hausman test confirmed that the FEM is more appropriate in our case.

A problem with the FEM is that it does not allow us to estimate coefficients on time invariant variables (such as distance, common language dummies, and areas). One way to deal with this issue is to perform panel regressions excluding fixed effects, and replacing the latter with the time invariant variables. Even though this approach takes into account some sources of cross-sectional variation, it may produce biased coefficients if omitted individual effects are correlated with the regressors. Cheng and Wall (2005) argue that one can find a reasonable compromise by simply following a two-step procedure. First, a standard FEM regression is estimated without the time invariant variables. Second, a cross-section regression with the country-pair fixed effects obtained from the first step as the dependent variable, and a set of independent variables that includes the time-invariant variables omitted in the first step together with other traditional explanatory variables, is estimated. To summarize, the two-step procedure is represented by equations (4)* and (4)** as follows:

$$\ln EX_{ijt} = \alpha_0 + \alpha_t + \alpha_{ij} + \beta_1 \ln Y_{it} + \beta_2 \ln Y_{jt} + \beta_8 LABS_{it} + \beta_9 LABS_{jt} + \mu_{ijt} \qquad (4)^*$$

$$\hat{\alpha}_{ij} = b_0 + b_1 \ln Y_{it} + b_2 \ln Y_{jt} + b_3 \ln D_{ij} + b_4 LANG + b_5 BORDER + b_6 \ln AREA_i + b_7 \ln AREA_j + b_8 LABS_{it} + b_9 LABS_{jt} + e_{ijt}$$

(4)**

The coefficients for the labor standard variables from equations (4)* and (4)** above measure different things. More precisely, β_8 and β_9 measure the time dimension of labor standards, that is, variations in export performance as a result of the imposition of labor standards and their evolution over time, which is our main focus. b_8 and b_9 measure the cross section dimension of standards, that is, variations in export performance because of differences or similarities among country-pairs. The two-step procedure, therefore, allows us to identify unobserved fixed effects that affect bilateral trade, as well as their determinants. Since our primary interest is in finding the effects of labor standards on export performance, we will focus on the first step mainly, without discounting the fact that the consistent estimation of time-invariant effects is also important. However, we will also discuss the results from the second step, especially with regards to the standard gravity variables.

The papers by Matyas (1997, 1998) identify exporting and importing country effects separately and this distinguishes countries that have strong propensities to export and import after controlling for differences in other factors such as population and GDP. In other words, the underlying structure for their fixed-effects is slightly different from ours. Given once again that our main focus is on the effects of labor standards, and not on the country fixed-effects per se, we model the latter differently by assuming that the country effects are pair-wise and differ according to the direction of trade (that is, $\alpha_{ij} \neq \alpha_{ji}$). This assumption is more realistic because the relation between country-pairs will likely depend on the role of countries within each pair. Furthermore, our sample of countries is fairly homogeneous, compared to a situation where one would have considered a larger sample of countries (for example, developed and developing countries together). As a result, one can reasonably expect the pair-wise effects to be more important in our case than individual exporting- or importing-effects.

Accordingly, the first set estimates that we will present in this paper will be based on the pooled-cross-section model estimated by OLS, which tends to provide biased estimates. In other words, we will assume that pair-specific intercepts are the same across country pairs ($\alpha_{ij} = 0$) and that slope coefficients do not vary across country pairs and over time. We will then compare these results with a second set of estimates based on the FEM, and the associated two-step procedure outlined above.

4. Empirical Analysis

4.1 Data Description

Our empirical analysis exploits an unbalanced panel dataset of annual observations for 13 countries over a 14-year period[7]. The dependent variable EX_{ijt} refers to exports of manufactured goods in US$ (ISIC Rev. 3 categories 15-37) and was obtained from the OECD (2002) Bilateral Trade Database (BTD) and International Trade by Commodity Statistics (ITCS); it is denoted as *lmex*. In order to see whether factor intensities play a role in our model, we use different versions of our dependent variable, namely high technology manufactures exports and low technology manufactures exports (*lhtmex* and *lltmex*), which can be interpreted as reflecting different factor intensities of the exports. High technology manufactures includes goods such as pharmaceuticals, computing machinery, electrical and optical equipment and aircraft and spacecraft; low technology manufactures includes food products, textiles, and wood and paper products. To the extent that high (low) technology manufactures are capital (labor) intensive, labor standards will have a lower (higher) impact on export performance because of different effects on costs. In other words, we should expect labor standards to be more significant in the case of low technology manufactures as the latter tend to be more labor intensive. Data for GDP, GDP per capita and land mass are from the World Development Indicators of the World Bank. Distance is measured in kilometres by great circle air distances between capital cities as a proxy for transportation costs[8].

In order to capture labor standards across countries, we consider a number of indicators. We recognize that some of the measures of labor standards described below are not perfect and that these measures can produce a lot of noise. An example of such a labor standard used in other empirical studies (but not used in the current paper) is the number of core ILO-conventions ratified, which describes the intentions of countries to establish regulations but does not guarantee that such intentions are translated into actual labor regulations. As argued by Van Beers (1998), "The concrete results of labor regulations are a better representation of the

[7] Since we do not have separate data for Belgium and Luxembourg, these two countries had to be removed from the EU-15 countries, leaving us with only 13 countries.

actual costs of a relatively high labor standard to be borne by a producer than measures based on input efforts of governments" (p. 60). Even if some of the indicators that we use such as trade union density or work hours may represent individual choices or the strength of interest groups, rather than standards per se, we are simply using them as proxies for labor standards in order to assess their impact on export performance, and they measure actual regulations. We acknowledge that the indicators are not perfect, but there are few alternative measures of labor standards over long periods of time (despite some headway at the ILO to construct better indicators of worker rights - see for example, Kucera and Sarna, 2006) that can be used in a panel framework such as the one being employed in this paper.

We use total public social expenditure as a percentage of GDP (*lsoc*) from the OECD Social Expenditure Database as one indicator for labor standards, and this variable includes unemployment benefits and incapacity related benefits, which can be proxied as indicators of labor standards in a given country. We consider an overall index of labor market well-being from the Centre for the Study of Living Standards as another indicator, and this variable is denoted as *lwell*. We have data for the latter that covers the period 1989-2001 for nine countries in our sample. The index takes into account average returns from work, the aggregate accumulation of human capital, inequality in current returns from work, and insecurity in the anticipation of future returns from work.

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[8] Variables for distance, language and contiguity were obtained from the "Centre d'Etudes

We consider the number of actual weekly hours worked in the manufacturing sector (*lhou*) by wage earners and salaried employees, and this variable is obtained from the ILO database LABORSTA. Most EU member countries set their working time arrangements by law or through collective bargaining agreements and they differ in their approach to the regulation of working time. In fact, most countries in our sample have a statutory maximum working week of 48 hours (as set in the EU working time directive) or 40 hours. Our data considers the actual hours worked as opposed to what the regulations establish.

Trade union density rates, *lun*, are also considered and they are obtained from the OECD Labor Market Statistics Database, which are based on surveys or administrative data. We also have data on strikes and lockouts, *lstr*, for most of the countries over the period considered, which reflects the ability of workers to express their concerns. Finally, we consider occupational injuries, *linj*, in the manufacturing sector per thousand people employed or insured, which is an indicator of safety at the workplace. Because of the way that the different labor standards explained above are measured, an increase (decrease) in *lsoc*, *lwell*, *lstri*, *lun*, and a decrease (increase) in *lhou* and *linj*, represent improvements (deterioration) in standards over time, with the usual cost and competitiveness implications. Table 1 below provides summary statistics for the variables that are used in the empirical analysis.

Prospectives et d'Informations Internationales" (CEPII) website at http://www.cepii.fr/

Table 1: Summary Statistics

Variable Name	Number of Observations	Mean	Median	Standard Deviation
lmex	2100	14.35	14.42	1.68
lhtmex	2100	12.28	12.62	2.23
lltmex	2100	13.18	13.24	1.50
lgdpi	2184	26.40	26.06	1.12
lgdppci	2184	9.76	9.88	0.35
lgdpj	2184	26.38	26.02	1.11
lgdppcj	2184	9.76	9.87	0.35
ldistance	2184	7.15	7.27	0.58
larea	2184	12.07	12.41	0.90
lwell	1344	-0.56	-0.54	0.09
lsoc	2160	3.17	3.19	0.21
lhou	1872	3.63	3.65	0.11
lun	2184	3.55	3.56	0.61
linj	1380	1.31	1.36	0.69
lstr	1848	4.48	4.81	1.94

Note: All variables are in natural logs.

As one can see, we have fewer observations for the variables representing labor standards than for the other 'economic' variables, but that still leaves us with a large number of observations in each case. The mean and median values are not too different for most variables suggesting that extreme values are not frequent, and the standard deviations are quite small in most cases.

4.2 Results of Empirical Analysis

In table 2 below, we show the results when occupational injuries (*linji* and *linjj* for countries *i* and *j* respectively) are considered as labor standards as it is one indicator that is least likely to be subject to some of the problems mentioned above[9]. In

[9] Results with the other indicators are provided in the appendix, and additional results (discussed but not included in the paper) are available upon request.

particular, they are not individual choices or manifestations of interest group preferences. Column (1) shows the results for the baseline model (without the labor standard) using pooled OLS with *lmex* as the dependent variable, for the period 1988 to 2001.

In addition to the variables listed in table 1, we include additional controls in the form of dummies for membership in the European Free Trade Association, *efta*, membership in the European Community, *ec*, and for countries that have adopted the euro, *euro*. These dummies are included to capture the effects of economic integration and many papers find that the introduction of the euro has increased trade. The euro became legal tender in 2002 but it went into use for accounting purposes and electronic fund transfers in 11 EU member states in 1999, and in Greece in 2001. We therefore constructed the variable *euro* based on this information given that our sample size covers the period 1988 to 2001. Robust t-statistics are reported in parentheses. The results reported in column (1) for the baseline model contain more observations than in the remaining ones because of limited availability of the occupational injuries variable; these results do not change significantly when the baseline model is run by considering the sample that contains data on occupational injuries (*linji* and *linjj*) only. The standard variables used in gravity equations (gdp, area, distance, language and border) are mostly significant with the right signs, and the R-squared is in line with other studies using the gravity model. Columns (2) to (4) show what happens when occupational injuries are added to the model, when fixed effects estimation is considered in addition to pooled OLS, and when *lhtmex* is also considered as a dependent variable.

Table 2: Effects of Occupational Injuries on Trade Performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Explanatory Variables	LMEX (Pooled OLS)	LMEX (Pooled OLS)	LMEX (FEM)	LHTMEX (FEM)	LMEX FEM	LMEX FEM	LHTMEX FEM	LMEX GMM
Constant	-22.30**	-17.67**	-19.30**	-18.89**	-23.79**	-18.71**	-16.98**	-
	(-32.42)	(-29.35)	(-11.63)	(-9.35)	(-12.98)	(-11.16)	(-9.36)	-
lgdpi	0.82**	0.58**	0.54**	0.55**	0.53**	0.44**	0.39**	0.44**
	(40.29)	(56.22)	(12.43)	(8.57)	(12.17)	(9.20)	(6.12)	(3.27)
lgdpj	0.79**	0.69**	0.76**	0.69**	0.76**	0.82**	0.75**	0.74**
	(57.71)	(35.85)	(35.33)	(30.11)	(38.87)	(33.38)	(32.83)	(47.87)
lareai	-0.03**	-0.13**	-	-	-	-	-	-
	(-2.08)	(-7.91)	-	-	-	-	-	-
lareaj	0.01	-0.13**	-	-	-	-	-	-
	(0.23)	(-10.12)	-	-	-	-	-	-
ldistance	-0.79**	-0.61**	-	-	-	-	-	-
	(-34.15)	(-27.53)	-	-	-	-	-	-
language	0.66**	0.15**	-	-	-	-	-	-
	(16.41)	(2.94)	-	-	-	-	-	-
border	0.49**	1.01**	-	-	-	-	-	-
	(50.76)	(25.01)	-	-	-	-	-	-
ec	0.05**	0.04	0.11	0.24**	0.10	0.12	0.22	-
	(2.57)	(1.29)	(0.84)	(2.16)	(0.77)	(0.88)	(1.43)	-
efta	-0.08	-0.19**	0.38	0.39*	0.36	0.23	0.23	-
	(-1.13)	(-2.06)	(1.28)	(1.94)	(1.18)	(0.99)	(1.10)	-
euro	-0.01	-0.08**	-0.16	-0.13	-0.15	0.13	0.09	-
	(-0.35)	(-3.10)	(-1.09)	(-1.04)	(-1.06)	(1.06)	(0.59)	-
linji	-	-0.23**	-0.38**	-0.85**	-0.32**	-	-	-0.04
	-	(-9.70)	(-8.52)	(-17.23)	(-5.03)	-	-	(-0.16)
linjj	-	-0.11**	-0.13**	-0.21**	-0.11**	-	-	0.28**
	-	(-7.43)	(-4.00)	(-7.27)	(-2.27)	-	-	(4.47)
lgdppci	-	-	-	-	0.37	-	-	-
	-	-	-	-	(1.26)	-	-	-
lgpppcj	-	-	-	-	0.08	-	-	-
	-	-	-	-	(0.55)	-	-	-
linji(-1)	-	-	-	-	-	-0.33**	-0.58**	-
	-	-	-	-	-	(-5.68)	(-6.45)	-
linjj(-1)	-	-	-	-	-	0.23**	0.25**	-
	-	-	-	-	-	(7.72)	(6.79)	-
N	2100	801	801	801	801	746	746	612
Adj. R-squared	0.87	0.91	0.73	0.75	0.73	0.73	0.72	0.21
Hausman Test	-	-	52.58	19.19	52.12	60.01	33.85	-
(p-value)			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	
J-statistic	-	-	-	-	-	-	-	41.93

Note: Robust t-statistics are shown in brackets. * significant at 10%; ** significant at 5%.

In column (2), the standard variables used in gravity equations (gdp, area, distance, language and border) are also highly significant and with the right sign. For instance, countries that share a common border or language trade more; countries that are physically larger tend to trade less, while those that are economically larger tend to trade more. The conventional wisdom that lower standards lead to an improvement in export performance is true only for *linjj* and not *linji*. In other words, when a country's own standard improves, its trade performance also improves (as productivity effects outweigh cost considerations), but when its trading partner's standard improves, its trade performance improves again (implying that it is able to better penetrate its partner's market as the latter is less competitive). Our explanation for this is that the effects of a country's own standard materialize faster than what happens in the other country, suggesting that there is a lag before the effects get transmitted. Results based on pooled OLS for the other labor standards are reported in table 1A in the appendix when LMEX is the dependent variable.

In table 1A, we chose not to consider all the indicators together as this reduces the degrees of freedom considerably, and one has to be mindful of multicollinearity among the standards since some of the latter tend to overlap. For example the index of overall labor market well-being is highly correlated with the measure for social expenditure, and the number of hours worked. However, when different combinations of standards that are not highly collinear are introduced, the results did not change substantially[10]. Even though most of the indicators for labor standards are significant, most of them go against the conventional wisdom that lower standards lead to an improvement in export performance. The only exception for country *i*, is *lstrii*, and for country *j*, *lwellj*. For example, an improvement in labor market well-being in country *i* is significantly positively correlated with an improvement in export performance, and the same is true for an improvement in labor market well-being in country *j*. Hence, the conventional wisdom that countries with lower standards obtain an advantage in trade is not confirmed for country *i's* standard (suggesting that productivity effects may be at work because of better standards), but is confirmed for country *j's* standard.

In column (3) of table 1 above, we report fixed-effects estimates with time and country dummies, and these refer to equation (3)*, which is the first stage of the two-step procedure by Cheng and Wall (2005). As explained earlier, the time-invariant variables are omitted from the regression equation. The choice of the FEM is based on the Hausman test, and F-tests could not reject the joint hypothesis that the country effects are all zero, thus confirming the presence of country effects. This finding also suggests that the effect of labor standards on export competitiveness is not the same for all country pairs in our sample. Time fixed effects are included in the regressions to account for institutional integration

[10] This is also carried out in Rodrik (1996) and Dehejia and Samy (2004), for example.

in the EU over time. Once again, the effects of occupational injuries are the same as in column (2). Fixed effects estimates for the other labor standards are reported in table 2A in the appendix (with *lmex* as the dependent variable) and the general observation is that there is mixed evidence regarding the fact that high labor standards reduce export competitiveness.

As expected, the results in column (3) of table 2 above show that countries that are large economically tend to trade more. Concerning the effects of labor standards on export performance, we once again obtain mixed evidence regarding the fact that high labor standards reduce export competitiveness. Results for the second stage of the FEM (equation (3)**) are included in the appendix (see table 3A), and they generally tend to confirm the theoretical expectations of the pair-specific time invariant variables. More precisely, economic size, distance, language and the border effect are significant and of the right sign. There are, however, some strange results with respect to the dummies (*ec* and *efta*) as well as the *area* variables. This could be a result of an omitted variable bias as a result of, for example, the difficulty of clearly identifying cross country variability.

In column (4) of table 2, the results on labor standards do not change significantly when *lhtmex* is considered as the dependent variable even though one would *a priori* have expected high technology manufactures to be less affected by labor standards. This is surprising and may be due to the fact that even though *lhtmex* reflects different factor intensities, it does not allow us to differentiate skill-intensities. For example, capital intensive goods may be produced with relatively low-skilled labor whose demand is more elastic, so that when standards improve, the cost implications are as severe as in the case of *lmex*. Results for the other labor standards and with *lhtmex* as the dependent variable are shown in table 4A in the appendix and suggest the possibility of skill effects being at work given the relatively high significance of the labor standard variables.

In order to check the robustness of the results in table 2 above we perform sensitivity analysis along three dimensions and report the results in columns (5)-(8). First, we examine what happens when GDP per capita for countries *i* and *j* are included to the specification in column (3). As can be seen in column (5), the results do not change significantly (the results for the other labor standards – not shown here – did not change either) when GDP per capita is included. In the case of *lmex*, with fixed effects and the inclusion of GDP per capita for countries *i* and *j*, for instance, the conventional wisdom was confirmed in all cases, except for *lstrii*, and *lstrij*. When *lhtmex* was considered as the dependent variable together with GDP per capita, the conventional wisdom was not obtained in the case of *lsocj*, *lunij*, *linji*, *lhouj*, and *lstrij*, roughly half of the indicators for labor standards considered in this paper. This again suggests that productivity effects tend to outweigh the costs of standards in several cases. Second, reverse causality might also be a problem affecting our results since countries with better export performance can also afford higher labor standards. One way of dealing with this is to use lagged values for labor standards.

Columns (6) and (7) report the results with lagged values of occupational injuries and with *lmex* and *lhtmex* as dependent variables respectively. Surprisingly, the conventional wisdom disappears completely, suggesting that better labor standards improve productivity and are associated with improved export performance. The same result was obtained when other indicators for labor standards in the appendix were lagged (results not shown here). Third, to further deal with the endogeneity problem and given that we have panel data at our disposal, dynamic panel data using a GMM estimator (Arrellano and Bond, 1991) is a possibility worth exploring. In column (8), we re-estimated the model in column (3) using GMM methods but omitted the dummy variables from the specification because of the fixed effects (this is not a problem given the low significance of the dummies in previous specifications). Even though occupational injuries for country *i* (*linji*) are not significant, the conventional wisdom once again disappears in the case of *linjj*. Columns (6), (7) and (8) also confirm the presence of lags in the transmission of the effects of labor standards on export performance as we conjectured earlier.

5. Conclusion

This paper has investigated the conventional wisdom that countries will experience an improvement in export competitiveness as a result of lower labor standards in a panel framework for EU-15 countries over the period 1988-2001, by testing the gravity model of trade. While the issue of trade and labor standards has been examined extensively in a North-South framework, it has been generally overlooked in the case of regional trade agreements, especially when countries that share similar political systems are free to set their own labor standards. Given the recent wave of regionalism around the world, we believe it is important to examine the social policy (of which labor standards are an important element) implications of integration through increased trade. In fact, the data used in this paper show that members of the EU-15 continue to maintain distinct labor practices despite calls and attempts at harmonization. Furthermore, despite its solid empirical record when put to test, the gravity model has hardly been applied in the context of trade and labor standards, possibly because of a lack of data. We focused our attention on occupational injuries as an indicator of safety at the workplace to examine the implications of labor standards for export performance. This choice was based on the fact that occupational injuries are less likely to be affected by problems such as workers in different countries *choosing* a particular level of a standard (e.g. unionization or working hours) compared to 'pure' differences in standards commonly discussed in the literature. We also considered a number of different, albeit weaker, proxies for labor standards and discussed their implications.

Our estimates, based on pooled OLS and the FEM, and after conducting robustness checks, indicate that labor standards matter, but that the conventional wisdom is not always true. In fact, we find numerous cases where improvements in labor standards are related to improvements in export performance, suggesting that productivity improvements as a result of better standards outweigh the costs of the standards themselves. There is thus a need to look into these findings further, possibly through surveys or case studies at the firm level that examine the standards in place, and the response of economic agents to the latter to determine why they have differing impacts on trade flows. These are in our view interesting areas for future research which our existing framework cannot explain. Nevertheless, our empirical results have important implications for policy makers who are working in the area of standards harmonization, who are thinking about linking trade agreements with labor standards, and in our case, the recent enlargement of the EU as well as the possibility of future enlargement. Given that high labor standards do not seem to be systematically related to a deterioration in export performance, there does not appear to be a strong basis for the fear that countries will be forced in a race to the bottom of standards as integration proceeds further, contrary to popular discourse. This is, in our view, an important contribution to the existing literature, given that the latter is largely based on cross-sectional data and a factor-proportions framework, and that there has been no real attempt as of date, to test alternative models of trade such as the gravity model. An interesting question for further research, pending the availability of data, remains the recent accession of the ten new members to the EU and how they will influence the trade-labor nexus.

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Appendix A

Table 1A: Pooled Cross-Section (Dependent Variable: LMEX)

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-22.30**	-14.22**	-22.28	-24.43**	-20.21**	-21.01**
	(-32.42)	(-16.31)	(-53.33)	(-35.19)	(-46.21)	(-98.94)
lgdpi	0.82**	0.60**	0.81**	0.87**	0.90**	0.82**
	(40.29)	(84.20)	(42.45)	(53.07)	(66.10)	(80.45)
lgdpj	0.79**	0.68**	0.79**	0.79**	0.82**	0.78**
	(57.71)	(40.77)	(64.03)	(48.89)	(68.34)	(94.84)
lareai	-0.03**	0.08**	-0.03**	-0.03**	-0.13**	-0.03*
	(-2.08)	(4.92)	(-2.75)	(-1.98)	(-8.03)	(-2.01)
lareaj	0.01	0.01	-0.01	0.01	-0.01	-0.03
	(0.23)	(0.85)	(-0.09)	(0.10)	(-0.43)	(-1.43)
ldistance	-0.79**	-0.70**	-0.79**	-0.79**	-0.72**	-0.81**
	(-34.15)	(-11.07)	(-52.44)	(-24.95)	(-38.52)	(-30.55)
language	0.66**	0.03	0.64**	0.58**	0.81**	0.10**
	(16.41)	(0.33)	(18.41)	(18.11)	(16.82)	(2.12)
border	0.49**	0.45**	0.49**	0.50**	0.44**	0.88**
	(50.76)	(22.88)	(40.16)	(37.40)	(17.35)	(30.07)
ec	0.05**	0.05	0.04*	0.05**	0.03**	0.07**
	(2.57)	(1.09)	(1.76)	(2.17)	(2.87)	(4.65)
efta	-0.08	-0.27**	-0.10	-0.20**	-0.33**	-0.02
	(-1.13)	(-3.56)	(-1.66)	(-3.06)	(-3.40)	(-0.22)
euro	-0.01	0.02	-0.02	-0.02	-0.02	-0.03
	(-0.35)	(0.97)	(-0.61)	(-0.73)	(-0.43)	(-0.62)
lwelli		0.98**	-	-	-	-
		(5.53)	-	-	-	-
lwellj		0.54**	-	-	-	-
		(3.57)	-	-	-	-
lsoci		-	0.17**	-	-	-
		-	(4.11)	-	-	-
lsocj		-	-0.11**	-	-	-
		-	(-2.57)	-	-	-
lunii		-	-	0.05**	-	-
		-	-	(2.17)	-	-
lunij		-	-	-0.20**	-	-
		-	-	(-3.06)	-	-
lhoui		-	-	-	-1.28**	-
		-	-	-	(-18.21)	-
lhouj		-	-	-	0.15**	-
		-	-	-	(1.96)	-
lstrii		-	-	-	-	-0.09**
		-	-	-	-	(-22.43)
lstrij		-	-	-	-	-0.03**
		-	-	-	-	(-6.49)
N	2100	784	2076	2100	1521	1506
Adj. R-squared	0.87	0.87	0.87	0.88	0.88	0.87

Note: Robust t-statistics are shown in brackets. * significant at 10%; ** significant at 5%.

Table 2A: Fixed Effects Estimates (Dependent Variable: LMEX)

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-31.82**	-9.42**	-33.57**	-37.84**	-26.43**	-23.88**
	(-35.78)	(-3.66)	(-36.15)	(-53.96)	(-28.23)	(-16.80)
lgdpi	0.82**	0.20**	0.80**	0.94**	0.94**	0.61**
	(24.33)	(2.08)	(23.37)	(34.49)	(21.07)	(11.83)
lgdpj	0.93**	0.79**	0.92	0.95**	0.95**	0.86**
	(225.84)	(64.72)	(184.88)	(129.50)	(73.43)	(123.66)
ec	0.11*	0.10	0.11*	0.12**	0.07	0.15**
	(1.88)	(1.00)	(1.71)	(1.97)	(1.19)	(2.30)
efta	0.01	0.01	-0.02	0.01	0.04	0.12
	(0.03)	(0.06)	(-0.08)	(0.05)	(0.14)	(0.43)
euro	-0.03	-0.02	-0.03	-0.05	-0.02	-0.01
	(-0.45)	(-0.13)	(-0.39)	(-0.83)	(0.42)	(-0.13)
lwelli	-	0.24	-	-	-	-
	-	(0.46)	-	-	-	-
lwellj	-	3.23**	-	-	-	-
	-	(14.56)	-	-	-	-
lsoci	-	-	0.57**	-	-	-
	-	-	(2.81)	-	-	-
lsocj	-	-	0.23**	-	-	-
	-	-	(3.95)	-	-	-
lunii	-	-	-	0.47**	-	-
	-	-	-	(9.68)	-	-
lunij	-	-	-	0.11**	-	-
	-	-	-	(2.95)	-	-
lhoui	-	-	-	-	-2.33**	-
	-	-	-	-	(-9.92)	-
lhouj	-	-	-	-	-0.24	-
	-	-	-	-	(-1.13)	-
lstrii	-	-	-	-	-	-0.14**
	-	-	-	-	-	(-10.11)
lstrij	-	-	-	-	-	-0.06**
	-	-	-	-	-	(-4.13)
N	2100	784	2076	2100	1521	1506
Adj. R-squared	0.78	0.80	0.78	0.79	0.80	0.73
Hausman Test	34.93	203.09	32.14	45.43	21.97	146.45
(p-value)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Note: Robust t-statistics are shown in brackets. * significant at 10%; ** significant at 5%.

Table 3A: Cross Section Results (Step 2 following Cheng and Wall (2005))

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Constant	0.62	-6.64**	1.15*	1.07*	0.14	1.97*	6.19**
	(1.22)	(-4.31)	(1.70)	(1.86)	(-0.15)	(1.83)	(6.74)
lgdpi	-0.02	0.20**	-0.02	0.03**	0.02	-0.01	0.17**
	(-1.69)	(4.30)	(-0.92)	(2.54)	(1.00)	(-0.65)	(6.37)
lgdpj	0.01	0.33**	-0.01	0.01	0.07**	0.05**	0.12**
	(0.10)	(8.84)	(-0.19)	(0.57)	(3.01)	(2.58)	(5.11)
lareai	0.04**	-0.25**	0.03**	0.04	-0.04**	0.02	0.19**
	(2.94)	(-6.91)	(2.05)	(3.08)	(-1.71)	(0.87)	(7.16)
lareaj	0.01	-0.26**	-0.01	-0.01	-0.12**	0.30	0.10
	(0.84)	(-6.63)	(-0.29)	(-0.11)	(-5.03)	(1.30)	(3.55)
ldistance	-0.09**	0.09	-0.10**	-0.10**	-0.08	-0.12**	-0.29**
	(-4.16)	(1.70)	(-4.70)	(-4.22)	(-1.94)	(-3.29)	(-6.98)
language	0.23**	0.70**	0.21**	0.30**	-0.15	0.21**	0.63**
	(5.87)	(4.50)	(4.78)	(7.18)	(-1.69)	(3.26)	(9.68)
border	-0.06*	0.42**	-0.05	0.13**	0.06	0.03	0.63**
	(-1.90)	(8.89)	(-1.53)	(4.60)	(1.28)	(0.53)	(9.68)
ec	-0.03	-0.25**	-0.08**	-0.06**	0.11**	-0.03	0.07
	(-1.13)	(-3.33)	(-3.10)	(-2.27)	(2.62)	(-0.76)	(1.45)
efta	-0.22**	0.05	-0.34**	-0.45**	-0.42**	-0.46**	-0.24**
	(-4.28)	(0.53)	(-5.48)	(-9.69)	(-5.80)	(-5.68)	(-3.33)
eur	0.05*	-0.26**	0.04*	0.04	-0.04	0.05	-0.06
	(1.81)	(-3.11)	(1.73)	(1.41)	(-0.60)	(1.17)	(-0.70)
lwelli	-	1.21**	-	-	-	-	-
	-	(5.23)	-	-	-	-	-
lwellj	-	1.71**	-	-	-	-	-
	-	(8.79)	-	-	-	-	-
lsoci	-	-	-0.05**	-	-	-	-
	-	-	(-1.19)	-	-	-	-
lsocj	-	-	0.08**	-	-	-	-
	-	-	(1.98)	-	-	-	-
lunii	-	-	-	-0.07**	-	-	-
	-	-	-	(-4.33)	-	-	-
lunij	-	-	-	-0.01	-	-	-
	-	-	-	(-0.74)	-	-	-
linji	-	-	-	-	0.09**	-	-
	-	-	-	-	(4.71)	-	-
linjj	-	-	-	-	0.09**	-	-
	-	-	-	-	(3.82)	-	-
lhoui	-	-	-	-	-	0.12	-
	-	-	-	-	-	(0.75)	-
lhouj	-	-	-	-	-	-0.11	-
	-	-	-	-	-	(-0.75)	-
lstrii	-	-	-	-	-	-	-0.02
	-	-	-	-	-	-	(-1.61)
lstrij	-	-	-	-	-	-	-0.01
	-	-	-	-	-	-	(-0.12)
N	2184	672	2136	2184	722	1558	1525
Adj. R-squared	0.03	0.33	0.03	0.04	0.12	0.03	0.04

Note: Robust t-statistics are shown in brackets. * significant at 10%; ** significant at 5%.

Table 4A: Fixed Effects Estimates (Dependent Variable: LHTMEX)

Explanatory Variables	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-39.29**	-10.90**	-42.03**	-48.76**	-30.92**	-38.41**
	(-64.39)	(-3.56)	(-47.38)	(-97.64)	(-23.56)	(-19.08)
lgdpi	0.99**	0.26**	0.95**	1.19**	1.21**	1.07**
	(41.14)	(2.32)	(37.48)	(68.51)	(30.49)	(14.72)
lgdpj	0.95**	0.72**	0.94**	1.01**	0.96**	0.97**
	(111.96)	(51.22)	(93.65)	(116.46)	(57.63)	(51.18)
ec	0.20**	0.10	0.19**	0.22**	0.23**	0.25**
	(2.62)	(1.02)	(2.18)	(2.68)	(2.22)	(3.81)
efta	0.03	0.13	-0.07	0.03	0.29	0.18
	(0.13)	(0.57)	(-0.28)	(0.16)	(0.93)	(0.67)
euro	-0.01	-0.15	-0.02	-0.05	-0.01	-0.04
	(-0.11)	(-1.38)	(-0.17)	(-0.57)	(-0.19)	(-0.38)
lwelli	-	0.59	-	-	-	-
	-	(0.89)	-	-	-	-
lwellj	-	2.77**	-	-	-	-
	-	(18.81)	-	-	-	-
lsoci	-	-	1.03**	-	-	-
	-	-	(5.56)	-	-	-
lsocj	-	-	0.31*	-	-	-
	-	-	(2.16)	-	-	-
lunii	-	-	-	0.75**	-	-
	-	-	-	(17.06)	-	-
lunij	-	-	-	0.18**	-	-
	-	-	-	(6.53)	-	-
lhoui	-	-	-	-	-3.78**	-
	-	-	-	-	(-14.83)	-
lhouj	-	-	-	-	-0.22	-
	-	-	-	-	(-0.70)	-
lstrii	-	-	-	-	-	-0.57**
	-	-	-	-	-	(-32.55)
lstrij	-	-	-	-	-	-0.13**
	-	-	-	-	-	(-7.32)
N	2100	784	2076	2100	1521	1506
Adj. R-squared	0.67	0.77	0.67	0.68	0.69	0.77

Note: Robust t-statistics are shown in brackets. * significant at 10%; ** significant at 5%.