



OECD Economics Department Working Papers No. 1181

Implicit Regulatory Barriers  
in the EU Single Market:  
New Empirical Evidence  
from Gravity Models

**Jean-Marc Fournier,  
Aurore Doms,  
Yaëlle Gorin,  
Xavier Guillet,  
Délia Morchoisne**

<https://dx.doi.org/10.1787/5js7xj0xckf6-en>

Unclassified

ECO/WKP(2014)77

Organisation de Coopération et de Développement Économiques  
Organisation for Economic Co-operation and Development

05-Jan-2015

English - Or. English

ECONOMICS DEPARTMENT

ECO/WKP(2014)77  
Unclassified

**IMPLICIT REGULATORY BARRIERS IN THE EU SINGLE MARKET: NEW EMPIRICAL EVIDENCE FROM GRAVITY MODELS**

**ECONOMICS DEPARTMENT WORKING PAPERS No. 1181**

**By Jean-Marc Fournier, Aurore Doms, Yaëlle Gorin, Xavier Guillet, Délia Morchoisne**

*OECD Working Papers should not be reported as representing the official views of the OECD or of its member countries. The opinions expressed and arguments employed are those of the author(s).*

*Authorised for publication by Robert Ford, Deputy-Director, Country Studies Branch, Economics Department.*

All Economics Department Working Papers are available through OECD's Internet website at [www.oecd.org/eeco/workingpapers](http://www.oecd.org/eeco/workingpapers)

**JT03368952**

Complete document available on OLIS in its original format

*This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.*

English - Or. English

*OECD Working Papers should not be reported as representing the official views of the OECD or of its member countries. The opinions expressed and arguments employed are those of the author(s).*

*Working Papers describe preliminary results or research in progress by the author(s) and are published to stimulate discussion on a broad range of issues on which the OECD works.*

*Comments on Working Papers are welcomed, and may be sent to OECD Economics Department, 2 rue André-Pascal, 75775 Paris Cedex 16, France, or by e-mail to [eco.contact@oecd.org](mailto:eco.contact@oecd.org)*

*This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.*

*The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.*

**© OECD (2014)**

**You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for commercial use and translation rights should be submitted to [rights@oecd.org](mailto:rights@oecd.org).**

## ABSTRACT/RÉSUMÉ

### **Implicit Regulatory Barriers in the EU Single Market: New Empirical Evidence from Gravity Models**

Gravity models are used to explore the determinants of trade, making use of fixed effect linear estimators and a Poisson estimator (as in Santos Silva and Tenreyro, 2006) with fixed effects. Beyond usual determinants of trade such as GDP, distance, contiguity, free trade areas and language, this analysis mainly focuses on the role of product market regulation stringency and heterogeneity, and on the role of employment protection. The Single Market has a large positive impact on trade. A broad reform package that would align Product Market Regulation (PMR) indicators to the average of the top half of the best performers and would cut regulatory heterogeneity by one fifth could increase trade intensity within the EU by more than 10%. This analysis also makes use of subcomponents of the PMR indicator (by field of regulation) and the OECD Energy, Transport and Communications Regulation (ETCR) indicator (by sector) to focus on elements on the regulatory issues that matter most for trade. In particular, the stringency of airline and telecom regulations has an adverse effect on trade intensity. Empirical findings on the impact of employment protection legislation on trade intensity are somewhat mixed.

This Working Paper relates to the 2014 *OECD Economic Survey of the European Union* ([www.oecd.org/eco/surveys/economic-survey-european-union.htm](http://www.oecd.org/eco/surveys/economic-survey-european-union.htm)).

*JEL classification:* F10, F14, F15, K20

*Key words:* trade, gravity model, EU single market, product market regulation

\*\*\*\*\*

### **Barrières réglementaires implicites dans le marché unique de l'UE : nouveaux résultats de modèles de gravité**

Les modèles de gravité sont utilisés pour explorer les déterminants du commerce, avec des estimateurs linéaires avec effets fixes et un estimateur de Poisson (comme dans Santos Silva et Tenreyro, 2006) avec des effets fixes. Au-delà des déterminants habituels du commerce tels que le PIB, la distance, la contiguïté, les zones de libre-échange et la langue, cette analyse se concentre principalement sur le rôle de la réglementation des marchés de produits et de son hétérogénéité, et sur le rôle de la protection de l'emploi. Le marché unique a un impact positif important sur le commerce. Un ensemble large de réformes qui alignerait les indicateurs de réglementation des marchés de produits (RMP) à la moyenne de la moitié des pays les plus performants et qui réduirait l'hétérogénéité des réglementations par un cinquième pourrait augmenter l'intensité des échanges au sein de l'UE de plus de 10%. Cette analyse utilise également des sous-composantes de l'indicateur RMP (par domaines de réglementation) et de l'indicateur OCDE de la réglementation dans les secteurs de l'énergie, des transports et des communications (ETCR) (par secteur) pour se concentrer sur les éléments de réglementation qui comptent le plus pour le commerce. En particulier, la rigueur de la réglementation aérienne et des télécommunications a un effet négatif sur l'intensité des échanges. Les résultats empiriques sur l'impact de la législation de protection de l'emploi sur l'intensité des échanges sont quelque peu mitigés.

Ce Document de travail a trait à l'Étude économique de l'OCDE de l'Union européenne, 2014 ([www.oecd.org/fr/eco/etudes/etude-economique-union-europeenne.htm](http://www.oecd.org/fr/eco/etudes/etude-economique-union-europeenne.htm)).

*Classification JEL :* F10, F14, F15, K20

*Mots clefs :* Commerce, modèle de gravité, marché unique de l'UE, réglementation des marchés de produits

## TABLE OF CONTENTS

IMPLICIT REGULATORY BARRIERS IN THE EU SINGLE MARKET: NEW EMPIRICAL EVIDENCE FROM GRAVITY MODELS .....	5
The gravity model .....	6
Theoretical foundation .....	6
Econometric specifications and data used .....	6
Factor endowments .....	7
The EU Single Market has a large effect on trade .....	8
Compared trade patterns .....	8
Estimations of the effect of the Single Market on trade .....	8
Policy effects: empirical findings .....	10
Product market regulations .....	10
Employment protection legislation .....	15
Conclusion .....	16
BIBLIOGRAPHY .....	17
ANNEX A1. DETAILED REGRESSION RESULTS .....	19

### Tables

1. OECD-wide estimation results .....	9
2. FDI determinants .....	10
3. The effect of the overall stance of regulation on trade .....	12
4. The effect of energy, transport and communications regulation on trade .....	13
5. The effect of product market regulation on trade: subcomponents .....	14
6. The effect of the heterogeneity of product market regulation on trade .....	15
7. The effect of employment protection legislation on trade .....	16
A1.1. OECD-wide estimation results with additional control variables .....	19
A1.2. OECD-wide estimation results .....	20
A1.3. The effect of the overall stance of regulation: regression results .....	21
A1.4. ETCR subcomponents regression results .....	22
A1.5. PMR subcomponents regression results .....	23
A1.6. Heterogeneity of PMR regression results .....	24
A1.7. Heterogeneity of Doing Business regression results .....	25
A1.8. Employment protection legislation regression results .....	26

### Figures

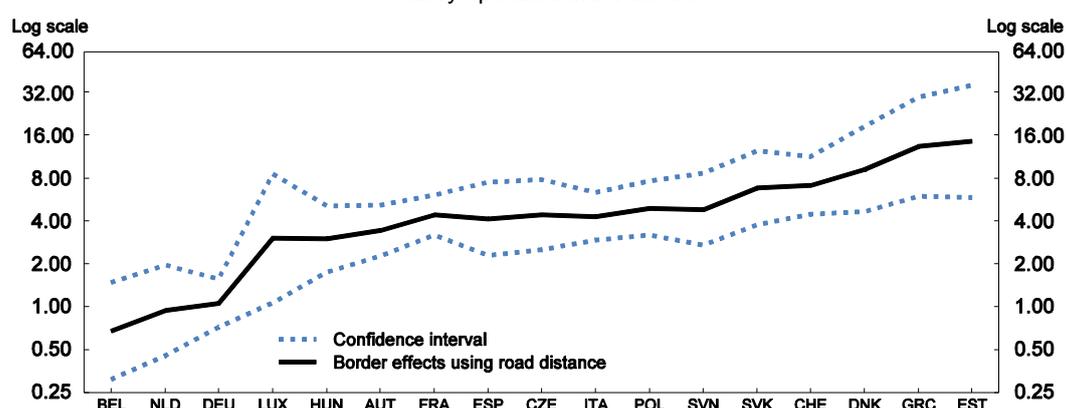
1. Trade between EU member states .....	5
2. Trade patterns in the EU .....	8
3. The tree structure of the PMR indicator set .....	11
4. Restrictiveness of economy-wide product market regulation .....	11
5. Indicators of regulation in energy, transport and communications .....	12
6. Employment protection is relatively high in the EU .....	15

## IMPLICIT REGULATORY BARRIERS IN THE EU SINGLE MARKET: NEW EMPIRICAL EVIDENCE FROM GRAVITY MODELS

By Jean-Marc Fournier, Aurore Domsps, Yaëlle Gorin, Xavier Guillet and Délia Morchoisne<sup>1</sup>

Over decades, EU policies have lowered trade barriers to strengthen trade integration. European Union members have been essentially free of tariffs and quotas since 1968, although as discussed in EC (1985), non-tariff barriers remained, such as differences in technical standards, burdens caused by frontier controls and national bias in government procurement. The Single European Act was designed to complete Europe's internal market by 1992. The Single Market was broadened to Iceland and Norway in 1994 with the creation of the European Economic Area. Still, Head and Mayer (2000) argued that the Single Market remained fragmented after this initiative. Further reforms have been passed since then, but recent evidence shows both that the Single Market has a positive impact on trade (e.g. Bussière *et al.*, 2008), and that barriers remain (Braconier and Pisu, 2013; Figure 1).

Figure 1. Trade between EU member states  
Country specific border effects<sup>1</sup>



1. The border effect is a measure of the reduction of trade due to a border. For instance, in Estonia trade within the country is almost 15 times larger than trade across the border, everything else (e.g. road distance) equal. For further detail, see *Source*.

*Source:* Braconier, H. and M. Pisu (2013), "Road Connectivity and the Border Effect: Evidence from Europe", *OECD Economics Department Working Papers*, No. 1073, OECD Publishing.

Reforms to remove trade barriers are motivated by both theoretical and empirical evidence that trade integration can boost growth. The trade theory shows that stronger trade integration can improve the allocation of factors across countries, building on Ricardo's seminal theory of comparative advantages (Heckscher, 1919; Ohlin, 1933). Trade is beneficial even with similar countries as it allows to reap benefits of economies of scale and to better meet consumers' preference for diversity (Krugman, 1979). In addition, trade integration can spur efficiency gains and innovation as import competition is strengthened. Empirical evidence points to a significant and robust impact of trade on growth (Frankel and Romer, 1999), so that countries that liberalise their trade regime grow faster (Wacziarg and Welch, 2008).

<sup>1</sup> Jean-Marc Fournier works in the OECD Economics Department. Aurore Domsps, Yaëlle Gorin, Xavier Guillet and Délia Morchoisne were in the final stage of a graduate program at the ENSAE when they contributed to this work. This paper was originally prepared for the OECD Economic Survey of the European Union published in April 2014 under the authority of the Economic and Development Review Committee. The authors are grateful to Hildegunn Nordås, Andrew Dean, Robert Ford, Piritta Sorsa, Eckhard Wurzel and all participants of an internal OECD seminar for their comments on earlier drafts. Special thanks go to Isabelle Duong for statistical assistance and Dierdre Claassen and Anthony Bolton for general administrative support.

This paper investigates the effect of the EU Single Market and the effect of regulations on trade intensity (*i.e.* the trade to GDP ratio). The first section of this paper presents the gravity model used in the empirical analysis. The second section shows that the Single Market has a large and significant impact on economic integration. The third section shows that the stringency of regulations and the heterogeneity of regulations across countries reduce trade intensity; there is little evidence that employment protection legislation affects trade intensity.

## The gravity model

### *Theoretical foundation*

This paper uses gravity models to estimate the effect of policies on trade, building on the theoretical foundation of Anderson and Van Wincoop (2003). In gravity models, bilateral trade is positively correlated with the size of each partner's economy and negatively correlated with distance (see Anderson, 2011, for an overview). Anderson and Van Wincoop argue that omitting the so-called "multilateral resistance", namely the average trade barrier between a given country and all its trade partners, leads to biased results. Thus, nominal exports  $X_{ij}$  from a country  $i$  to another country  $j$  can be related to the nominal output  $Y$  of each country, the nominal output of the world  $Y_w$ , a trade cost factor  $t_{ij}$ , a multilateral resistance term  $P$  of each country and the elasticity of substitution between goods  $\sigma$ :

$$(1) \quad X_{ij} = \frac{Y_i Y_j}{Y_w} \left( \frac{t_{ij}}{P_i P_j} \right)^{1-\sigma}$$

This relationship can be estimated with a traditional gravity model linking bilateral trade to the GDP of the two countries and their distance, augmented with exporters and importers' fixed effects that capture multilateral resistance terms. Time varying country specific policy variables also capture multilateral resistance terms that vary over time. In this paper, time fixed effects are added to capture the world output and hence control for common macroeconomic cycles. In gravity models, trade costs are partially captured by bilateral geographical distances, common border and common language dummies.

The multilateral resistance term can also be captured by the time varying remoteness,  $R_{it}$ , defined as the GDP-weighted average of distance between a given country and its partners. Remoteness is expected to have, *ceteris paribus*, a positive effect on trade: for instance trade between New Zealand and Australia can be larger than trade between two European countries separated by the same distance because of the lack of alternative trade partners.

In gravity models, coefficients can be interpreted as effects of trade determinants on trade intensity, rather than effects on trade levels. In particular, a policy that has a similar impact on GDP and on trade, and hence has no impact on trade intensity, would be associated with a null coefficient.

### *Econometric specifications and data used*

The econometric analysis uses the linear stochastic version of equation (1):

$$(2) \quad \ln \left( \frac{X_{ijt}}{Y_{it} Y_{jt}} \right) = \sum_k \beta_{1,k} d_{ij}^k + \beta_2 R_{it} + \beta_3 R_{jt} + \beta_4 FTA_{ijt} + u_i + v_j + \alpha_t + \varepsilon_{ijt}$$

where  $d_{ij}^k$  refers to a set of three variables: the geographical distance, the contiguity and the existence of a common language.<sup>2</sup>  $FTA_{ijt}$  refers to a combination of dummy variables to capture either the fact that a

---

2. The set of explanatory variables does not feature the real exchange rate since it is jointly determined with trade.

country belongs to a free trade area (European Economic Area, EEA; or North American Free Trade Agreement, NAFTA) or that a pair of countries belongs to the same free trade area.  $u_i$ ,  $v_j$  and  $\alpha_t$  denote exporting country, importing country and year fixed effects respectively.  $\varepsilon_{ijt}$  denotes a zero-mean remainder error.

In the presence of country and year fixed effects, it is worth noting that estimated coefficients are only driven by the dispersion of variation of explanatory variables over time across countries. By contrast, stable differences in levels (*e.g.* a country where regulation is persistently more restrictive than its peers) do not drive the results. As stable differences cannot be disentangled from other unobserved country specific characteristics, fixed effects substantially reduce the risk of omitted variable bias.

Bilateral export data are from the Structural Analysis (STAN) Bilateral Trade Database (see Zhu *et al.*, 2011, for details on the compilation of trade data). Luxembourg trade data are aggregated with Belgium. The aggregate bilateral trade in goods between countries in US dollars is observed on a yearly basis between 1990 for a majority of countries (mid-90s for ten countries, including Eastern European ones) and 2011. Macroeconomic variables are provided by the OECD Analytical DataBase (ADB). These data exhibit only two cases of zero trade flow, which are dropped in log-linear specifications. The average number of years of schooling is measured by Barro and Lee (2013). Trade costs are proxied by geographical determinants. The average distance between the main cities of each country pairs weighted by population, as well as language and contiguity data, are taken from the CEPII's GeoDist database.

To investigate robustness of results, both a linear regression with  $\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$  as dependent variable, a second one with  $\ln(X_{ijt})$  as dependent variable and the log of exporters and importers' GDPs in the list of explanatory variables are considered. The first specification is in line with the unitary GDP elasticity predicted by theory. The second specification relaxes this assumption, as this elasticity varies across estimates in the literature (the meta-analysis carried out by Head and Mayer, 2014, points to a standard deviation of GDP elasticity estimates across papers of about 0.4). In practice, most policy variable results shown in this paper are very close in the first and in the second case.

Santos Silva and Teneyro (2006) show that the validity of a linear estimation of the log-linearised gravity equation relies on a specific assumption on the distribution of the residuals that does not necessarily hold in practice. In particular, estimates can be biased under the presence of heteroskedasticity. For this reason, results are also investigated with a Poisson pseudo-maximum likelihood (PPML) model, in which exporting country, importing country and year fixed effects are also systematically included. Santos Silva and Teneyro (2006) reveal that the coefficients on importer's and exporter's GDPs are not necessarily close to 1, and hence these coefficients are never constrained in PPML estimates.

### ***Factor endowments***

As discussed in Nicoletti *et al.* (2003), differences in endowments can positively affect trade, as would be expected from comparative advantage considerations, and can be proxied by the factor dissimilarity  $FD$  and the human capital dissimilarity  $HCD$ :

$$FD_{ijt} = \left| \ln\left(\frac{Y_{jt}}{pop_{jt}}\right) - \ln\left(\frac{Y_{it}}{pop_{it}}\right) \right|$$

$$HCD_{ijt} = |\ln(educ_j) - \ln(educ_i)|$$

where the dissimilarity in GDP per capita is regarded as a proxy for dissimilarity in capital stock per worker and the education variable (*educ*) refers to the average number of years of schooling.

Following Nicoletti *et al.* (2003), size similarity can also be added as a control variable. It can have an ambiguous effect on trade: countries of different size may trade more because of more important complementarities, while size similarity stimulates intra-industry trade and favours firm-level economies of scale of horizontal MNEs. Empirical evidence suggests that in most cases, the second effect dominates (Anderson, 2011). Size similarity's definition follows Nicoletti *et al.* (2003):

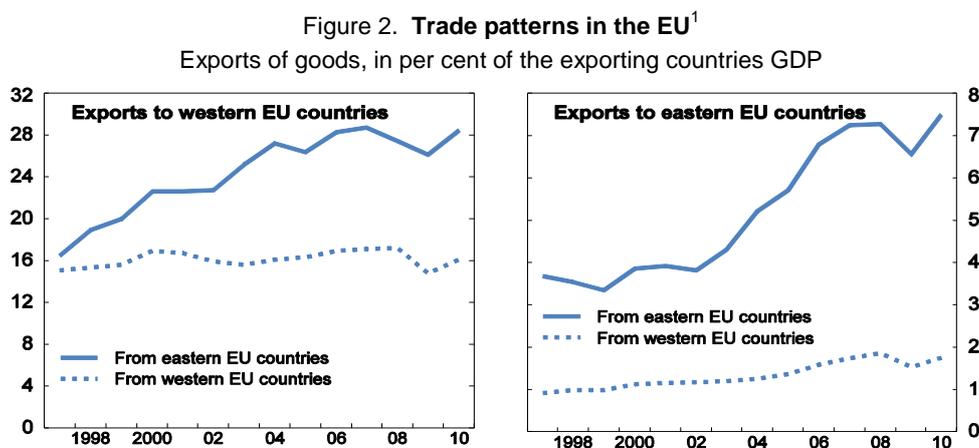
$$SS_{ijt} = \ln \left( 1 - \left( \frac{Y_{it}}{Y_{it} + Y_{jt}} \right)^2 - \left( \frac{Y_{jt}}{Y_{it} + Y_{jt}} \right)^2 \right)$$

If endowment factors and size similarity vary only slowly over time, they may be well controlled with countries' fixed effects. These variables have thus been considered for robustness checks only, and adding these variables does not change the conclusions of this paper.

## The EU Single Market has a large effect on trade

### Compared trade patterns

The accession of Eastern European Countries in the European Union has been associated with a sharp rise of trade intensity, providing tentative evidence of the large positive impact of the Single Market on trade. At the same time, trade intensity within western EU was quite stable, and trade from Eastern to Western EU was expanding sharply (Figure 2, left panel), as was trade within Eastern EU (Figure 2, right panel): trade has been growing much faster than GDP in these catching-up countries. While these patterns may also be driven by other changes of structure of Eastern European Economy around mid-2000s, this is suggesting a strong impact of EU membership on trade.



1. Western EU countries are OECD countries that were members of the EU before 2004. Eastern EU countries are OECD countries that became member of the EU in 2004 or later. Exports from Western (respectively Eastern) EU countries are computed as a share of Western (respectively Eastern) EU countries GDP.

Source: OECD, *Structural Analysis (STAN)* and *OECD Economic Outlook* databases.

### Estimations of the effect of the Single Market on trade

Estimation results show a robust, large and significant impact of free trade areas, including the Single Market, on trade intensity (Table 1 and Table A1.1 in the annex). In linear models estimates, the accession to the Single Market is found to have a large impact on trade with all OECD partners, but without any specific impact on trade within EEA members on top of the overall impact. Such a result suggests that accession to the EEA mainly consists in removing common behind-the-border barriers, benefiting all trade partners. This result has to be taken with care as alternative estimates with the Poisson

model show that the positive impact is concentrated on trade within the EEA. All in all, various specifications converge to show an overall impact of EEA accession of roughly 60% gains in trade intensity; albeit it is not clear whether this is mainly a trade gain within the area or with all partners. These estimates do not take into account the fact that the full effect of the Single Market can take time to materialise, and hence can be regarded as a lower bound of the long-run effect.

Table 1. OECD-wide estimation results

Dependent variable	Linear			Linear			PPML		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$			$\ln(X_{ijt})$			$X_{ijt}$	
$\ln(Y_{it})$				1.08*** (0.064)	0.87*** (0.057)	0.87*** (0.058)	0.62*** (0.076)	0.62*** (0.087)	0.65*** (0.087)
$\ln(Y_{jt})$				1.14*** (0.073)	1.06*** (0.067)	1.06*** (0.069)	0.65*** (0.053)	0.70*** (0.060)	0.72*** (0.060)
$\ln(dist_{ij})$	-1.29*** (0.019)	-1.32*** (0.018)	-1.32*** (0.018)	-1.29*** (0.019)	-1.32*** (0.018)	-1.32*** (0.018)	-0.72*** (0.052)	-0.71*** (0.055)	-0.72*** (0.055)
$Cont_{ij}$	-0.019 (0.015)	-0.032** (0.013)	-0.030** (0.014)	-0.020 (0.015)	-0.032** (0.013)	-0.030** (0.014)	0.33*** (0.079)	0.33*** (0.080)	0.32*** (0.079)
$CL_{ij}$	0.31*** (0.019)	0.30*** (0.020)	0.30*** (0.020)	0.31*** (0.019)	0.30*** (0.020)	0.30*** (0.020)	0.22*** (0.083)	0.23*** (0.084)	0.22*** (0.083)
$R_{it}$	0.45*** (0.069)	0.97*** (0.18)	0.96*** (0.18)	0.65*** (0.19)	0.66*** (0.20)	0.63*** (0.20)	-0.28 (0.37)	0.075 (0.35)	0.16 (0.35)
$R_{jt}$	0.93*** (0.082)	1.18*** (0.17)	1.17*** (0.18)	1.28*** (0.23)	1.29*** (0.25)	1.27*** (0.26)	-0.31** (0.14)	-0.30* (0.16)	-0.25 (0.16)
$EEA_{it}$		0.40*** (0.067)	0.38*** (0.069)		0.43*** (0.072)	0.41*** (0.072)		-0.068 (0.095)	-0.027 (0.090)
$EEA_{jt}$		0.24*** (0.036)	0.22*** (0.040)		0.22*** (0.035)	0.21*** (0.038)		-0.20** (0.10)	-0.17* (0.099)
$EEA_{ijt}$	0.051 (0.067)	-0.13* (0.070)	-0.094 (0.074)	0.037 (0.066)	-0.13* (0.069)	-0.094 (0.073)	0.54*** (0.097)	0.61*** (0.13)	0.56*** (0.13)
$EA_{ijt}$			-0.12*** (0.035)			-0.12*** (0.036)			0.12*** (0.045)
$NAFTA_{it}$		0.57** (0.21)	0.55** (0.21)		0.59** (0.21)	0.58** (0.21)		0.44* (0.24)	0.44* (0.23)
$NAFTA_{jt}$		0.29* (0.15)	0.28* (0.15)		0.23** (0.096)	0.23** (0.097)		-0.094 (0.19)	-0.11 (0.18)
$NAFTA_{ijt}$	0.46*** (0.024)	0.42*** (0.034)	0.41*** (0.033)	0.46*** (0.024)	0.42*** (0.033)	0.41*** (0.033)	0.68*** (0.15)	0.65*** (0.15)	0.66*** (0.15)
Constant	-8.79*** (0.57)	-13.3*** (1.04)	-13.2*** (1.05)	-15.0*** (3.22)	-11.2*** (3.15)	-10.7*** (3.25)	7.98*** (2.77)	5.02 (3.09)	3.58 (3.16)
$N$	21,277	21,277	21,277	21,277	21,277	21,277	21,279	21,279	21,279
$R^2$	0.752	0.755	0.755	0.892	0.894	0.894	0.949	0.949	0.950

Note: Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient.  $i$  denotes the exporting country and  $j$  the importing country. Standard errors adjusted for clusters are in parentheses.  $Dist_{ij}$  = geographical distance,  $Cont_{ij}$  = contiguity dummy,  $CL_{ij}$  = common official language dummy.  $R_{it}$  = remoteness. PPML = Poisson pseudo-maximum likelihood.

A similar gravity model in which the trade variable is replaced by inward Foreign Direct Investments (FDIs) as measured in the OECD FDI database illustrates that trade and FDIs can be substitute or complementary. The sign of effect of euro area membership on trade intensity depends on the specification, and its size is much less large than for EEA accession (Table 1, column 3, 6 and 9). By contrast, euro area membership has a large effect on FDIs (Table 2), in line with Baldwin *et al.* (2008). The absence of sharp results of the euro area effect on trade intensity may thus be due to a substitution effect from trade to FDIs, which may offset gains derived from the lower transaction cost in a common currency area. The negative effect of the NAFTA area on FDIs may also reflect a substitution effect, which is in favour of trade. By contrast, the EEA membership has a positive effect on both trade and FDIs: this area facilitates flows of both goods and capital.

Table 2. FDI determinants

Dependent variable	(1)	Linear (2) $\ln\left(\frac{FDI_{ijt}}{Y_{it}Y_{jt}}\right)$	(3)	(4)	Linear (5) $\ln(FDI_{ijt})$	(6)	(7)	PPML (8) $FDI_{ijt}$	(9)
$\ln(Y_{it})$				0.89*** (0.11)	0.71*** (0.11)	0.76*** (0.13)	0.66*** (0.14)	0.57*** (0.14)	0.65*** (0.13)
$\ln(Y_{jt})$				1.07*** (0.061)	1.00*** (0.075)	1.00*** (0.076)	0.76*** (0.16)	0.74*** (0.17)	0.76*** (0.16)
$\ln(dist_{ij})$	-1.03*** (0.037)	-1.06*** (0.038)	-1.06*** (0.038)	-1.03*** (0.036)	-1.06*** (0.037)	-1.06*** (0.037)	-0.45*** (0.098)	-0.47*** (0.10)	-0.51*** (0.100)
$Cont_{ij}$	0.29*** (0.045)	0.28*** (0.047)	0.28*** (0.046)	0.29*** (0.044)	0.28*** (0.046)	0.28*** (0.046)	0.19 (0.14)	0.19 (0.14)	0.13 (0.14)
$CL_{ij}$	0.89*** (0.043)	0.87*** (0.041)	0.87*** (0.040)	0.89*** (0.043)	0.87*** (0.041)	0.87*** (0.040)	0.61*** (0.11)	0.60*** (0.11)	0.53*** (0.11)
$R_{it}$	1.03*** (0.045)	1.18*** (0.14)	1.22*** (0.14)	0.74** (0.29)	0.46 (0.35)	0.63 (0.38)	-0.42 (0.38)	-0.15 (0.43)	0.051 (0.42)
$R_{jt}$	-0.81*** (0.069)	-0.54** (0.24)	-0.48** (0.23)	-0.64*** (0.15)	-0.55* (0.28)	-0.49* (0.26)	-0.77 (0.50)	0.14 (0.52)	0.13 (0.46)
$EEA_{it}$		0.26*** (0.057)	0.38*** (0.056)		0.34*** (0.056)	0.45*** (0.053)		0.24 (0.16)	0.39** (0.16)
$EEA_{jt}$		0.30*** (0.064)	0.39*** (0.061)		0.29*** (0.071)	0.39*** (0.068)		0.33* (0.19)	0.46** (0.18)
$EEA_{ijt}$	0.23*** (0.050)	0.069 (0.054)	-0.11 (0.065)	0.24*** (0.053)	0.066 (0.053)	-0.11 (0.064)	0.45** (0.19)	0.41* (0.23)	0.18 (0.22)
$EA_{ijt}$			0.55*** (0.068)			0.54*** (0.067)			0.43*** (0.11)
$NAFTA_{it}$		0.16 (0.15)	0.20 (0.15)		0.21 (0.15)	0.25 (0.15)		0.54* (0.29)	0.49* (0.28)
$NAFTA_{jt}$		0.29 (0.24)	0.35 (0.23)		0.28 (0.24)	0.34 (0.23)		1.08* (0.62)	0.98* (0.56)
$NAFTA_{ijt}$	-0.65*** (0.11)	-0.67*** (0.11)	-0.67*** (0.10)	-0.65*** (0.11)	-0.67*** (0.10)	-0.67*** (0.10)	-0.31 (0.24)	-0.37 (0.26)	-0.36 (0.25)
Constant	-10.9*** (0.45)	-13.3*** (1.58)	-13.9*** (1.56)	-9.70*** (3.33)	-4.92 (3.80)	-7.00 (4.19)	0.045 (6.02)	-5.82 (6.15)	-7.66 (5.84)
N	10,847	10,847	10,847	10,847	10,847	10,847	11,764	11,764	11,764
R <sup>2</sup>	0.673	0.674	0.676	0.796	0.796	0.798	0.891	0.892	0.897

Note: Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient.  $i$  denotes the receiving country and  $j$  the investing country. Standard errors adjusted for clusters are in parentheses.  $Dist_{ij}$  = geographical distance,  $Cont_{ij}$  = contiguity dummy,  $CL_{ij}$  = common official language dummy. PPML = Poisson pseudo-maximum likelihood.

## Policy effects: empirical findings

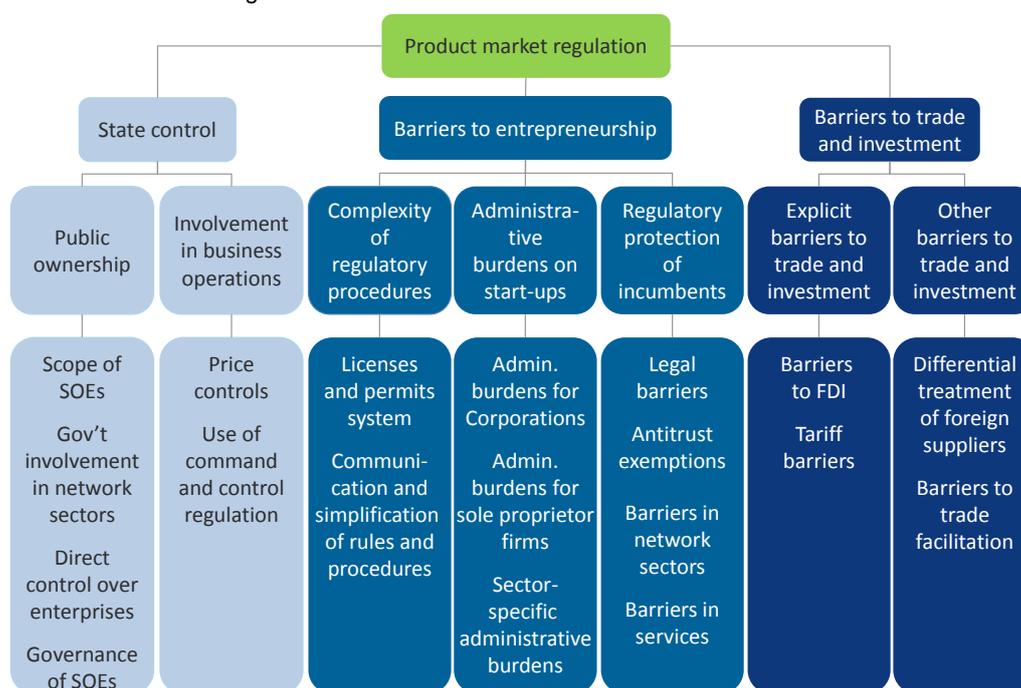
The effect of policies is estimated by adding policy variables on top of gravity model baselines for the OECD and for the EU countries that are member of the OECD (columns 3, 6 and 9 of table 1 for the OECD; table A1.2 for the EU-OECD). Policy variables could not be included in the baseline estimates simultaneously without substantially reducing the sample coverage. Remoteness is a second order issue for estimates restricted to EU countries as these countries are less remote than most non EU's OECD countries and hence is not included. This choice does not matter much in practice here: the inclusion of these variables has a negligible impact on policy variable estimates.

### Product market regulations

#### Overall effect

The OECD product market regulation (PMR) indicator was developed in 1998 (Nicoletti *et al.*, 1999), is available every five years, and was last updated in 2013 (Koske *et al.*, 2015). The PMR indicator set comprises three high-level components: state control, barriers to entrepreneurship, and barriers to foreign trade and investment, and several subcomponents (Figure 3). The economy-wide indicator shows less regulation between 1998 and 2008, and broad stabilisation since then (Figure 4).

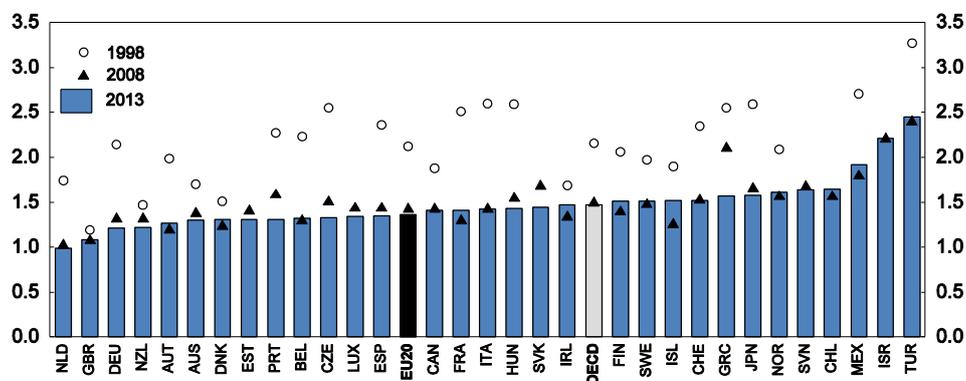
Figure 3. The tree structure of the PMR indicator set



Source: Koske, I. *et al.* (2015), "The 2013 up-date of the OECD Product Market Regulation Indicators: Policy Insights for OECD and non-OECD Countries", *OECD Economics Department Working Paper*, OECD Publishing, forthcoming.

Figure 4. Restrictiveness of economy-wide product market regulation

Index scale from 0 (least restrictive) to 6 (most restrictive)



1. The set of PMR indicators is calculated with a revised methodology. For more details, see *Source*.

Source: Koske, I. *et al.* (2015), "The 2013 Update of the OECD Product Market Regulation Indicators: Policy Insights for OECD and non-OECD Countries", *OECD Economics Department Working Paper*, OECD Publishing, forthcoming.

A larger PMR (more stringent regulation) for the whole economy has quite a robust negative impact on exports in the EU, and could have some small adverse effects on imports (Table 3). The effect is economically as well as statistically significant. For example, estimates considering EU countries only suggest that if EU countries were to align their PMR indicator to the average of the top half of the best performers, trade intensity within the EU would rise by about 10%. Linear estimates using the whole OECD suggest that the effect could be even twice as large, but this finding is less robust.

Table 3. The effect of the overall stance of regulation on trade

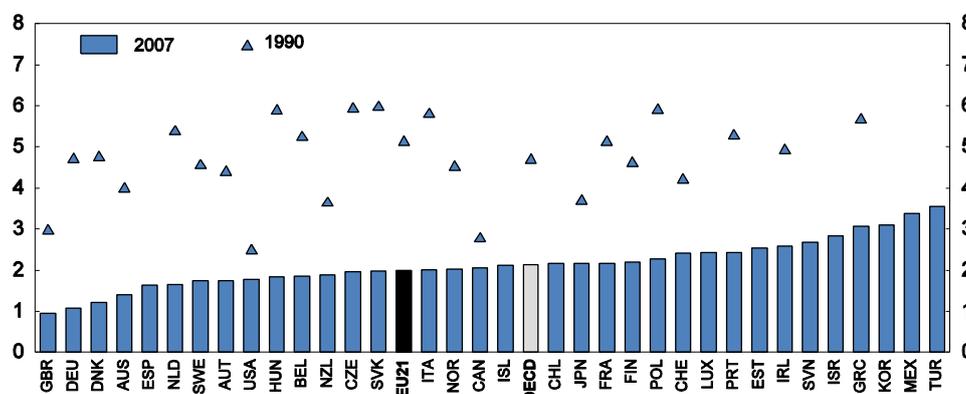
Dependent variable	EU-OECD sample			OECD sample		
	Linear (1)	Linear (2)	PPML (3)	Linear (4)	Linear (5)	PPML (6)
	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$
$PMR_{it}$	-0.42* (0.11)	-0.41* (0.11)	-0.47*** (0.074)	-0.70*** (0.069)	-0.65*** (0.046)	-0.29*** (0.064)
$PMR_{jt}$	-0.060 (0.080)	-0.054 (0.044)	-0.19** (0.076)	-0.31 (0.13)	-0.26 (0.11)	-0.10 (0.074)
$N$	744	744	744	2,566	2,566	2,566
$R^2$	0.860	0.957	0.959	0.790	0.902	0.958

Note: PMR indicators are added on top of gravity models. Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient.  $i$  denotes the exporting country and  $j$  the importing country. Standard errors adjusted for clusters are in parentheses. EU-OECD refers to EU Member Countries that are member of the OECD. PPML = Poisson pseudo-maximum likelihood. Estimations are making use of PMR data in 1998, 2003 and 2008. Detailed regression results are reported in table A1.3.

### Specific effects

The effect of product market regulation on trade can be investigated more in detail with the use of indicators of energy, transport and communications regulation (ETCR) for seven non-manufacturing sectors (airlines, telecoms, electricity, gas, post, rail, road freight). These indicators are available on annual basis from 1990 to 2007 for a substantial share of OECD countries. Estimations may not be fully comparable with results drawn from the PMR indicator, as it is available for substantially more years. This indicator shows a strong trend toward lower regulation in these sectors since 1990 (Figure 5).

Figure 5. Indicators of regulation in energy, transport and communications (ETCR)  
Index scale from 0 (least restrictive) to 6 (most restrictive)



Source: OECD (2011), *Product Market Regulation database*, [www.oecd.org/economy/pmr](http://www.oecd.org/economy/pmr).

Results show that even regulations impinging on specific sectors can have a visible effect on trade intensity of the whole economy. In particular, the stringency of telecom regulation has an adverse effect on trade intensity that is significant in most specifications; and significant negative effects of airline regulations are identified in various specifications (Table 4). Evidence is mixed for some sectors (e.g. rail), potentially revealing that effects on domestic activity may dominate effects on trade. However, most sector-specific findings are not robust, which is not surprising as each sector taken individually has an impact that is too small to be identified in most cases.

Table 4. The effect of energy, transport and communications regulation on trade

Dependent variable	EU-OECD sample			OECD sample		
	Linear (1)	Linear (2)	PPML (3)	Linear (4)	Linear (5)	PPML (6)
	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$
<i>Airlines<sub>it</sub></i>	-0.044** (0.019)	-0.011 (0.015)	0.0082 (0.013)	-0.052*** (0.013)	-0.029** (0.012)	-0.0087 (0.011)
<i>Airlines<sub>jt</sub></i>	-0.033*** (0.011)	-0.013 (0.014)	-0.0014 (0.0093)	-0.019*** (0.0059)	-0.0095 (0.0081)	0.0055 (0.011)
<i>Telecom<sub>it</sub></i>	-0.018* (0.0092)	-0.039*** (0.011)	-0.038*** (0.015)	-0.054*** (0.011)	-0.081*** (0.0091)	-0.059*** (0.013)
<i>Telecom<sub>jt</sub></i>	-0.010 (0.0090)	-0.024** (0.010)	-0.030*** (0.011)	-0.036*** (0.011)	-0.050*** (0.011)	-0.026** (0.011)
<i>gas<sub>it</sub></i>	0.017 (0.024)	-0.013 (0.024)	0.040*** (0.0100)	-0.0086 (0.024)	-0.039* (0.022)	0.038*** (0.013)
<i>gas<sub>jt</sub></i>	0.0099 (0.016)	-0.0090 (0.016)	-0.00052 (0.013)	0.014 (0.012)	0.0027 (0.0093)	0.034** (0.015)
<i>road<sub>it</sub></i>	-0.024** (0.0094)	-0.030*** (0.0064)	-0.0034 (0.0080)	-0.028** (0.010)	-0.020** (0.0093)	-0.0019 (0.0077)
<i>road<sub>jt</sub></i>	-0.0037 (0.0069)	-0.0069 (0.0068)	-0.0020 (0.0070)	-0.030*** (0.0093)	-0.029** (0.013)	-0.0042 (0.0075)
<i>rail<sub>it</sub></i>	-0.064*** (0.021)	-0.028 (0.017)	-0.018 (0.013)	0.027*** (0.0072)	0.040*** (0.0068)	-0.017 (0.010)
<i>rail<sub>jt</sub></i>	-0.023* (0.012)	0.000054 (0.0094)	-0.016 (0.014)	0.034*** (0.0051)	0.038*** (0.0061)	0.016 (0.013)
<i>electricity<sub>it</sub></i>	-0.023 (0.015)	-0.0065 (0.014)	-0.016 (0.011)	-0.034** (0.015)	-0.029* (0.014)	-0.017 (0.010)
<i>electricity<sub>jt</sub></i>	0.013 (0.0082)	0.023** (0.0090)	0.010 (0.011)	-0.018 (0.010)	-0.015 (0.010)	-0.024* (0.012)
<i>post<sub>it</sub></i>	-0.018 (0.029)	0.0036 (0.022)	-0.058*** (0.011)	-0.020 (0.021)	0.023 (0.016)	-0.0073 (0.017)
<i>post<sub>jt</sub></i>	-0.021 (0.015)	-0.0071 (0.014)	-0.024** (0.011)	0.00027 (0.014)	0.019 (0.011)	0.026* (0.014)
<i>N</i>	3,060	3,060	3,060	9,818	9,818	9,818
<i>R</i> <sup>2</sup>	0.856	0.953	0.957	0.839	0.908	0.959

Note: ETCR indicators are added simultaneously on top of gravity models. Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient. *i* denotes the exporting country and *j* the importing country. Standard errors adjusted for clusters are in parentheses. EU-OECD refers to EU Member Countries that are member of the OECD. PPML = Poisson pseudo-maximum likelihood. Detailed regression results are reported in table A1.4.

Investigation of the impact of specific areas of regulation on trade can also be investigated with subcomponents of the PMR indicator. Some aspects have a significant negative impact in some specifications, such as the complexity of regulatory procedures, administrative burdens on start-ups and, as one could expect, both explicit barriers to trade and investment and other barriers to trade and investment (Table 5). However, these findings are not robust as each area taken individually has a small impact, similarly to the sector-specific ETCR indicators results.

Table 5. The effect of product market regulation on trade: subcomponents

Dependent variable		EU-OECD sample			OECD sample		
		Linear (1)	Linear (2)	PPML (3)	Linear (4)	Linear (5)	PPML (6)
		$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$
$PMR_{it}$	Public ownership	0.0022 (0.022)	-0.10 (0.046)	-0.12*** (0.030)	-0.073 (0.027)	-0.13* (0.036)	-0.052* (0.027)
$PMR_{jt}$		0.086** (0.011)	0.039 (0.015)	0.038* (0.023)	-0.014 (0.041)	-0.054 (0.047)	0.036 (0.023)
$PMR_{it}$	Public involvement	0.030 (0.044)	-0.054 (0.087)	-0.00012 (0.033)	-0.0035 (0.027)	0.019 (0.040)	-0.034 (0.028)
$PMR_{jt}$	in business operations	0.036 (0.036)	-0.0036 (0.044)	-0.054 (0.033)	-0.0034 (0.031)	0.012 (0.048)	-0.013 (0.027)
$PMR_{it}$	Complexity of regulatory procedures	-0.085 (0.058)	-0.020 (0.044)	0.0044 (0.021)	-0.075 (0.043)	-0.022 (0.034)	0.011 (0.016)
$PMR_{jt}$		-0.085 (0.038)	-0.055 (0.025)	-0.048*** (0.014)	-0.10* (0.029)	-0.066** (0.011)	-0.016 (0.015)
$PMR_{it}$	Administrative burdens	-0.27** (0.039)	-0.19* (0.058)	-0.022 (0.043)	-0.087 (0.064)	-0.067 (0.061)	-0.025 (0.029)
$PMR_{jt}$	on start-ups	-0.14** (0.033)	-0.10** (0.023)	-0.050 (0.031)	-0.0022 (0.043)	0.012 (0.041)	0.0014 (0.026)
$PMR_{it}$	Regulatory protection of incumbents	-0.092* (0.024)	0.022 (0.062)	0.060* (0.036)	-0.25** (0.038)	-0.17* (0.056)	0.015 (0.031)
$PMR_{jt}$		-0.024 (0.014)	0.028 (0.035)	-0.038 (0.031)	-0.072 (0.028)	-0.017 (0.042)	-0.060** (0.027)
$PMR_{it}$	Explicit barriers to trade and investment	-0.071 (0.32)	-0.055 (0.22)	-0.26 (0.18)	-0.23 (0.080)	-0.26* (0.075)	-0.057* (0.029)
$PMR_{jt}$		-0.23 (0.27)	-0.22 (0.23)	-0.19 (0.16)	-0.15 (0.067)	-0.17 (0.071)	-0.080** (0.040)
$PMR_{it}$	Other barriers to trade and investment	-0.11** (0.016)	0.0030 (0.037)	-0.25*** (0.051)	-0.069* (0.021)	-0.056 (0.028)	-0.14*** (0.018)
$PMR_{jt}$		-0.052 (0.047)	-0.00049 (0.049)	-0.069 (0.043)	-0.018 (0.032)	-0.0090 (0.040)	-0.035* (0.019)
$N$		744	744	744	2,623	2,623	2,623
$R^2$		0.865	0.957	0.961	0.792	0.903	0.959

Note: PMR indicators are added simultaneously on top of gravity models. Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient.  $i$  denotes the exporting country and  $j$  the importing country. Standard errors adjusted for clusters are in parentheses. EU-OECD refers to EU Member Countries that are member of the OECD. PPML = Poisson pseudo-maximum likelihood. Estimations are making use of PMR data in 1998, 2003 and 2008. Detailed regression results are reported in table A1.5.

### Regulatory heterogeneity

The heterogeneity of regulation is found to have a strong negative impact on trade intensity in OECD countries (Table 6). These findings build on heterogeneity indicators that compare regulatory stance at a detailed level for each country pair, as described in Kox (2008) with the World Bank's Doing Business database and Fournier (2014) with the Product Market Regulation database. Both indicators show a negative impact of regulatory heterogeneity on trade, which is particularly robust when one considers the full OECD sample. Estimates considering EU countries only suggest that if EU countries were to align their PMR indicator to the average of the top half of the best performers, and if heterogeneity were cut by one fifth trade intensity within the EU would rise by about 13%. This magnitude is indicative given the standard errors surrounding estimates, but it is noticeable that it does not vary so much across various specifications. Estimates using the OECD sample suggest a larger effect.

Table 6. The effect of the heterogeneity of product market regulation on trade

Dependent variable	EU-OECD sample			OECD sample		
	Linear (1)	Linear (2)	PPML (3)	Linear (4)	Linear (5)	PPML (6)
	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$
$PMR_{it}$	-0.38* (0.10)	-0.39* (0.11)	-0.45*** (0.070)	-0.67** (0.083)	-0.62*** (0.061)	-0.25*** (0.070)
$PMR_{jt}$	-0.022 (0.075)	-0.033 (0.037)	-0.18** (0.072)	-0.27 (0.14)	-0.23 (0.12)	-0.071 (0.075)
$PMR_{ijt}^h$	-0.81 (0.30)	-0.44 (0.26)	-0.34 (0.31)	-1.58*** (0.11)	-1.48*** (0.12)	-1.64*** (0.27)
$N$	744	744	744	2,569	2,569	2,569
$R^2$	0.861	0.957	0.958	0.792	0.903	0.959
$DB_{ijt}^h$	-0.87*** (0.12)	-0.87*** (0.11)	-0.69*** (0.16)	-0.98*** (0.14)	-1.00*** (0.14)	-0.86*** (0.16)
$N$	1,702	1,702	1,702	5,090	5,090	5,090
$R^2$	0.867	0.956	0.962	0.801	0.903	0.964

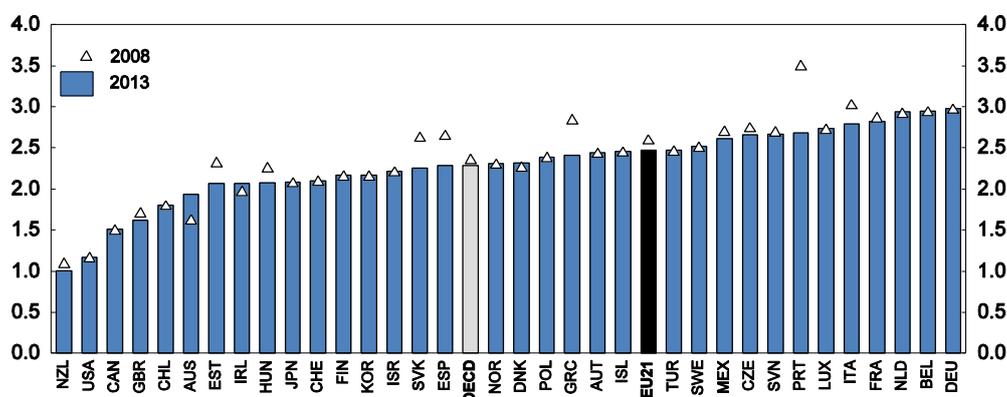
Note: Policy indicators are added on top of gravity models. Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient.  $i$  denotes the exporting country and  $j$  the importing country. Standard errors adjusted for clusters are in parentheses. EU-OECD refers to EU Member Countries that are member of the OECD. PPML = Poisson pseudo-maximum likelihood.  $PMR_{ijt}^h$  and  $DB_{ijt}^h$  denote bilateral economy-wide heterogeneity indicators of Product Market Regulation and Doing Business indicators respectively. Effects of product market regulation indicator and doing business indicator changes are estimated in two distinct regressions. Estimations are making use of PMR data in 1998, 2003 and 2008. Detailed regression results are reported in tables A1.6 and A1.7.

### Employment protection legislation

The effect of labour market regulations on trade intensity is ambiguous. Strict employment protection legislation may sometimes affect the labour market in the home country in ways that curb its exports, for instance by making the reallocation of labour across firms, industries and occupations difficult (Nicoletti *et al.*, 2003). However, if FDIs and trade are substitutes and if lower EPL facilitates FDIs, lowering EPL may also reduce trade intensity. EPL data shows little variation over time (Figure 6). This reduces the scope to identify the effect of employment protection changes on trade intensity, and hence results need to be considered with care.

Figure 6. Employment protection is relatively high in the EU

Index scale from 0 (least restrictive) to 6 (most restrictive)



Source: OECD, *Employment Protection Legislation database*.

Empirical findings on the impact of employment protection legislation on trade intensity are mixed. Estimates run with the EU countries sample show that more stringent EPL can boost import intensity (Table 7). By contrast, estimates run on the whole OECD sample with linear models show that more stringent EPL may reduce both import and export intensities. All these effects on trade intensity are small and not very robust; also, they do not hold with the Poisson model estimate.

Table 7. The effect of employment protection legislation on trade

Dependent variable	EU-OECD sample			OECD sample		
	Linear (1)	Linear (2)	PPML (3)	Linear (4)	Linear (5)	PPML (6)
	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$
$EPL_{it}$	0.030 (0.042)	0.018 (0.045)	0.12 (0.092)	-0.12* (0.061)	-0.14** (0.057)	0.087 (0.072)
$EPL_{jt}$	0.11*** (0.027)	0.10*** (0.027)	0.12 (0.11)	-0.063* (0.033)	-0.077** (0.034)	0.021 (0.074)
$N$	2,492	2,492	2,492	8,098	8,098	8,098
$R^2$	0.863	0.950	0.954	0.835	0.902	0.961

Note: Policy indicators are added on top of gravity models. Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient.  $i$  denotes the exporting country and  $j$  the importing country. Standard errors adjusted for clusters are in parentheses. EU-OECD refers to EU Member Countries that are member of the OECD. PPML = Poisson pseudo-maximum likelihood. Detailed regression results are reported in table A1.8.

## Conclusion

This paper provides new empirical evidence that the Single Market has had a positive impact on trade, and that trade could be further increased by removing implicit regulatory barriers. According to trade gravity models, product market regulations are major implicit barriers to trade. Both the stringency of product market regulations within each country and the heterogeneity of regulations affect trade. In addition, results suggest that reducing product market regulation can have a stronger impact on exports, and hence can help to reduce trade deficits. By contrast, there is no evidence that employment protection legislation would represent a substantial barrier to trade.

## Bibliography

- Anderson, J. E. (2011), “The Gravity Model”, *Annual Review of Economics*, Vol. 3, pp. 133-160.
- Anderson, J. E. and Van Wincoop (2003), “Gravity with Gravitas: A Solution to the Border Puzzle”, *American Economic Review*, Vol. 93, pp. 170-192.
- Baldwin, R., E., *et al.* “Study on the impact of the euro on trade and foreign direct investment”, *European Economic and Monetary Union Working Paper*, No. 321 (2008).
- Barro, R., J. and J., W. Lee (2013), “A new data set of educational attainment in the world, 1950–2010”, *Journal of Development Economics*, Vol. 104, pp. 184–198.
- Bussière, M., Fidrmuc, J. and Schnatz, B. (2008), “EU Enlargement and Trade Integration: Lessons from a Gravity Model”. *Review of Development Economics*, No. 12, pp. 562–576.
- European Commission (EC) (1985), “Completing the internal market”, White paper from the Commission to the European Council.
- Fournier, J-M. (2014), “The Heterogeneity of Product Market Regulations”, *OECD Economics Department Working Papers*, No. 1182, OECD Publishing.
- Frankel, J., A. and D. Romer (1999), “Does Trade Cause Growth?” *The American Economic Review*, Vol. 89, No. 3, pp. 379-399.
- Head, K., and T. Mayer (2000), “Non-Europe: The Magnitude and Causes of Market Fragmentation in the EU”, *Review of World Economics*, Vol. 136(2), pp. 284-314.
- Head, K., and T. Mayer (2014), “Gravity Equations: Workhorse, Toolkit, and Cookbook”, chapter 3 in Gopinath, G., E. Helpman and K. Rogoff (eds), Vol. 4 of the *Handbook of International Economics*, Elsevier, pp. 131-195.
- Heckscher, E. (1919), “The effect of foreign trade on the distribution of income.”, *Ekonomisk Tidskrift*, 497–512. Translated as chapter 13 in American Economic Association, *Readings in the Theory of international Trade*, Philadelphia: Blakiston, 1949, pp. 272–300,
- Koske, I., I. Wanner, R. Bitetti and O. Barbiero (2015), “The 2013 up-date of the OECD Product Market Regulation Indicators: Policy Insights for OECD and non-OECD Countries”, *OECD Economics Department Working Paper*, OECD Publishing, Forthcoming.
- Kox, H. (2008), “Measuring economic policy heterogeneity as a source of sunk trade costs”, *CPB Discussion Paper*, CPB Netherlands Bureau for Economic Policy Analysis, The Hague.
- Krugman, P. (1979), “Increasing returns, monopolistic competition, and international trade”, *Journal of International Economics*, Vol. 9(4), pp. 469-479.

Nicoletti, G. *et al.*, (2003), “The Influence of Policies on Trade and Foreign Direct Investment”, *OECD Economic Studies* No. 36, pp. 7-83.

Ohlin, B. (1933), *Interregional and International Trade*, Cambridge, Mass.: Harvard University Press.

Santos Silva, J.M.C., and S. Tenreyro (2006), “The Log of Gravity”, *The review of Economics and statistics*, Vol. 88(4), pp. 641–658.

Wacziarg, R. and K. H. Welch (2008), “Trade Liberalization and Growth: New Evidence”, *World Bank Economic Review*, 22 (2), pp. 187-23.

Zhu, S., N. Yamano and A. Cimper (2011), “Compilation of Bilateral Trade Database by Industry and End-Use Category”, *OECD Science, Technology and Industry Working Papers*, 2011/06, OECD Publishing.

## ANNEX A1.

## DETAILED REGRESSION RESULTS

Table A1.1. OECD-wide estimation results with additional control variables

Dependent variable	Linear			Linear			PPML		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$			$\ln(X_{ijt})$			$X_{ijt}$	
$\ln(Y_{it})$				0.90*** (0.098)	0.72*** (0.073)	0.72*** (0.073)	0.49*** (0.070)	0.50*** (0.076)	0.53*** (0.077)
$\ln(Y_{jt})$				0.99*** (0.030)	0.90*** (0.033)	0.89*** (0.036)	0.52*** (0.061)	0.58*** (0.064)	0.61*** (0.064)
$\ln(dist_{ij})$	-1.27*** (0.020)	-1.30*** (0.020)	-1.30*** (0.020)	-1.27*** (0.020)	-1.30*** (0.020)	-1.30*** (0.020)	-0.72*** (0.050)	-0.70*** (0.052)	-0.71*** (0.052)
$Cont_{ij}$	-0.037** (0.016)	-0.050*** (0.014)	-0.048*** (0.014)	-0.036** (0.016)	-0.049*** (0.013)	-0.047*** (0.014)	0.33*** (0.078)	0.34*** (0.078)	0.33*** (0.078)
$CL_{ij}$	0.31*** (0.021)	0.30*** (0.023)	0.30*** (0.023)	0.31*** (0.021)	0.30*** (0.022)	0.30*** (0.022)	0.24*** (0.082)	0.25*** (0.083)	0.24*** (0.083)
$R_{it}$	0.46*** (0.062)	0.90*** (0.19)	0.89*** (0.19)	0.19 (0.28)	0.22 (0.26)	0.19 (0.26)	-0.71* (0.36)	-0.35 (0.34)	-0.28 (0.34)
$R_{jt}$	0.86*** (0.021)	0.89*** (0.086)	0.88*** (0.087)	0.83*** (0.091)	0.65*** (0.15)	0.62*** (0.16)	-0.74*** (0.19)	-0.78*** (0.23)	-0.71*** (0.22)
$HCD_{ijt}$	-0.19*** (0.036)	-0.23*** (0.042)	-0.23*** (0.040)	-0.20*** (0.036)	-0.24*** (0.039)	-0.25*** (0.037)	-0.048 (0.15)	-0.018 (0.15)	-0.057 (0.15)
$SS_{ijt}$	-0.014** (0.0056)	-0.019*** (0.0054)	-0.019*** (0.0053)	-0.014** (0.0054)	-0.017*** (0.0052)	-0.017*** (0.0052)	0.14*** (0.038)	0.14*** (0.037)	0.14*** (0.037)
$EEA_{it}$		0.36*** (0.075)	0.34*** (0.075)		0.41*** (0.075)	0.39*** (0.075)		-0.13 (0.087)	-0.086 (0.083)
$EEA_{jt}$		0.25*** (0.037)	0.23*** (0.040)		0.27*** (0.035)	0.26*** (0.038)		-0.24** (0.098)	-0.20** (0.097)
$EEA_{ijt}$	0.042 (0.068)	-0.13 (0.075)	-0.10 (0.079)	0.047 (0.069)	-0.13* (0.074)	-0.10 (0.078)	0.52*** (0.090)	0.61*** (0.12)	0.56*** (0.12)
$EA_{ijt}$			-0.10** (0.038)			-0.11*** (0.037)			0.11*** (0.042)
$NAFTA_{it}$		0.46** (0.21)	0.45** (0.21)		0.52** (0.21)	0.50** (0.21)		0.40 (0.25)	0.41* (0.24)
$NAFTA_{jt}$		0.015 (0.094)	0.0022 (0.094)		0.034 (0.090)	0.022 (0.091)		-0.20 (0.19)	-0.20 (0.18)
$NAFTA_{ijt}$	0.55*** (0.021)	0.53*** (0.022)	0.53*** (0.022)	0.55*** (0.021)	0.53*** (0.022)	0.53*** (0.022)	0.73*** (0.14)	0.71*** (0.14)	0.72*** (0.14)
Constant	-8.69*** (0.29)	-11.3*** (1.05)	-11.2*** (1.05)	-5.35 (3.24)	-0.71 (2.55)	-0.19 (2.61)	16.8*** (2.91)	13.8*** (2.94)	12.3*** (3.01)
N	19,654	19,654	19,654	19,654	19,654	19,654	19,656	19,656	19,656
R <sup>2</sup>	0.757	0.759	0.759	0.894	0.895	0.895	0.954	0.955	0.955

Note: Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient.  $i$  denotes the exporting country and  $j$  the importing country. Standard errors adjusted for clusters are in parentheses.  $Dist_{ij}$  = geographical distance,  $Cont_{ij}$  = contiguity dummy,  $CL_{ij}$  = common official language dummy. PPML = Poisson pseudo-maximum likelihood. The coefficient on factor dissimilarity is not significant in both linear and PPML estimates and hence is not included in the explanatory list.

Table A1.2. OECD-EU Baseline estimates used in the estimation of policy effects

Dependent variable	Linear	Linear	PPML
	(1)	(2)	(3)
	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$
$\ln(Y_{it})$		0.25** (0.10)	0.25** (0.10)
$\ln(Y_{jt})$		0.55*** (0.075)	0.48*** (0.096)
$\ln(dist_{ij})$	-1.22*** (0.041)	-1.21*** (0.043)	-0.95*** (0.055)
$Cont_{ij}$	0.092*** (0.013)	0.10*** (0.013)	0.11* (0.056)
$CL_{ij}$	0.034 (0.033)	0.037 (0.032)	0.34*** (0.13)
Constant	-2.08*** (0.28)	10.1*** (1.47)	12.3*** (1.69)
$N$	5,209	5,209	5,209
$R^2$	0.837	0.950	0.952

Note: Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient.  $i$  denotes the exporting country and  $j$  the importing country. Standard errors adjusted for clusters are in parentheses.  $Dist_{ij}$  = geographical distance,  $Cont_{ij}$  = contiguity dummy,  $CL_{ij}$  = common official language dummy. PPML = Poisson pseudo-maximum likelihood.

Table A1.3. The effect of the overall stance of regulation: regression results

Dependent variable	Linear (1)	Linear (2)	PPML (3)	Linear (4)	Linear (5)	PPML (6)
	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$
$\ln(Y_{it})$		-0.12 (0.17)	-0.053 (0.14)		0.53** (0.083)	0.70*** (0.11)
$\ln(Y_{jt})$		0.21 (0.17)	0.19 (0.18)		0.60*** (0.026)	0.59*** (0.099)
$\ln(dist_{ij})$	-1.21** (0.13)	-1.21** (0.14)	-0.95*** (0.058)	-1.20*** (0.025)	-1.20*** (0.026)	-0.71*** (0.057)
$Cont_{ij}$	0.095 (0.036)	0.093 (0.036)	0.10* (0.058)	0.048 (0.024)	0.047 (0.026)	0.31*** (0.080)
$CL_{ij}$	0.028 (0.087)	0.039 (0.083)	0.34** (0.13)	0.27* (0.086)	0.27* (0.087)	0.23*** (0.087)
$R_{it}$				2.53 (1.54)	2.09 (1.38)	0.89** (0.39)
$R_{jt}$				2.13** (0.44)	1.76* (0.51)	-0.36 (0.43)
$EEA_{it}$				0.066 (0.13)	0.27 (0.17)	-0.19 (0.12)
$EEA_{jt}$				-0.091 (0.17)	0.083 (0.16)	-0.20 (0.14)
$EEA_{ijt}$				0.092 (0.25)	0.089 (0.24)	0.55*** (0.14)
$EA_{ijt}$				-0.15 (0.072)	-0.16 (0.066)	0.066 (0.054)
$NAFTA_{it}$				2.12 (1.82)	2.99 (1.54)	0.96 (0.63)
$NAFTA_{jt}$				1.34 (0.48)	2.07** (0.48)	0.052 (0.44)
$NAFTA_{ijt}$				0.63* (0.18)	0.63* (0.18)	0.78*** (0.17)
$PMR_{it}$	-0.42* (0.11)	-0.41* (0.11)	-0.47*** (0.074)	-0.70*** (0.069)	-0.65*** (0.046)	-0.29*** (0.064)
$PMR_{jt}$	-0.060 (0.080)	-0.054 (0.044)	-0.19** (0.076)	-0.31 (0.13)	-0.26 (0.11)	-0.10 (0.074)
<i>Constant</i>	-3.14* (0.90)	24.6** (5.59)	16.4*** (2.31)	-28.4* (8.25)	-12.0 (7.01)	1.68 (4.09)
<i>N</i>	744	744	744	2,623	2,623	2,623
<i>R</i> <sup>2</sup>	0.860	0.957	0.959	0.790	0.902	0.958

Note: Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient. *i* denotes the exporting country and *j* the importing country. Standard errors adjusted for clusters are in parentheses.  $Dist_{ij}$  = geographical distance,  $Cont_{ij}$  = contiguity dummy,  $CL_{ij}$  = common official language dummy. PPML = Poisson pseudo-maximum likelihood.

Table A1.4. ETCR subcomponents regression results

Dependent variable	Linear (1)	Linear (2)	PPML (3)	Linear (4)	Linear (5)	PPML (6)
	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$
$\ln(Y_{it})$		0.24*** (0.081)	0.35** (0.14)		0.32*** (0.055)	0.53*** (0.082)
$\ln(Y_{jt})$		0.51*** (0.059)	0.42*** (0.093)		0.64*** (0.10)	0.54*** (0.084)
$\ln(dist_{ij})$	-1.05*** (0.058)	-1.04*** (0.058)	-0.91*** (0.057)	-1.14*** (0.019)	-1.13*** (0.019)	-0.73*** (0.059)
$Cont_{ij}$	0.24*** (0.043)	0.24*** (0.042)	0.12** (0.058)	0.079*** (0.025)	0.083*** (0.025)	0.30*** (0.081)
$CL_{ij}$	0.085 (0.053)	0.084 (0.052)	0.36*** (0.12)	0.21*** (0.018)	0.20*** (0.017)	0.20** (0.082)
$R_{it}$				0.80*** (0.14)	-0.35* (0.18)	-0.37 (0.34)
$R_{jt}$				-0.34 (0.23)	-0.95** (0.34)	-1.07*** (0.35)
$EEA_{it}$				0.092 (0.067)	0.16** (0.066)	-0.23** (0.095)
$EEA_{jt}$				0.024 (0.059)	0.044 (0.050)	-0.23** (0.100)
$EEA_{ijt}$				0.051 (0.097)	0.054 (0.097)	0.57*** (0.13)
$EA_{ijt}$				-0.15*** (0.027)	-0.17*** (0.029)	0.051 (0.062)
$NAFTA_{it}$				0.097 (0.14)	0.76*** (0.13)	0.15 (0.47)
$NAFTA_{jt}$				-1.55*** (0.25)	-1.19*** (0.25)	-0.50 (0.38)
$NAFTA_{ijt}$				0.64*** (0.051)	0.64*** (0.051)	0.67*** (0.17)
$Airlines_{it}$	-0.044** (0.019)	-0.011 (0.015)	0.0082 (0.013)	-0.052*** (0.013)	-0.029** (0.012)	-0.0087 (0.011)
$Airlines_{jt}$	-0.033*** (0.011)	-0.013 (0.014)	-0.0014 (0.0093)	-0.019*** (0.0059)	-0.0095 (0.0081)	0.0055 (0.011)
[...]	[...]	[...]	[...]	[...]	[...]	[...]
$post_{it}$	-0.018 (0.029)	0.0036 (0.022)	-0.058*** (0.011)	-0.020 (0.021)	0.023 (0.016)	-0.0073 (0.017)
$post_{jt}$	-0.021 (0.015)	-0.0071 (0.014)	-0.024** (0.011)	0.00027 (0.014)	0.019 (0.011)	0.026* (0.014)
<i>Constant</i>	-2.17*** (0.53)	9.81*** (1.35)	9.64*** (1.34)	-4.03** (1.60)	20.2*** (4.48)	16.3*** (3.39)
<i>N</i>	3,060	3,060	3,060	9,818	9,818	9,818
<i>R</i> <sup>2</sup>	0.856	0.953	0.957	0.839	0.908	0.959

Note: Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient. *i* denotes the exporting country and *j* the importing country. Standard errors adjusted for clusters are in parentheses.  $Dist_{ij}$  = geographical distance,  $Cont_{ij}$  = contiguity dummy,  $CL_{ij}$  = common official language dummy. PPML = Poisson pseudo-maximum likelihood. [...] denotes the other ETCR variables reported in table 4.

Table A1.5. PMR subcomponents regression results

Dependent variable	Linear	Linear	PPML	Linear	Linear	PPML
	(1)	(2)	(3)	(4)	(5)	(6)
	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$
$\ln(Y_{it})$		-0.23 (0.31)	0.19 (0.23)		0.37* (0.10)	0.70*** (0.12)
$\ln(Y_{jt})$		0.43 (0.16)	0.54*** (0.14)		0.56** (0.060)	0.68*** (0.10)
$\ln(dist_{ij})$	-1.20** (0.14)	-1.20** (0.14)	-0.95*** (0.057)	-1.19*** (0.025)	-1.19*** (0.026)	-0.71*** (0.057)
$Cont_{ij}$	0.11* (0.036)	0.098 (0.037)	0.097* (0.057)	0.049 (0.022)	0.047 (0.025)	0.31*** (0.080)
$CL_{ij}$	0.029 (0.090)	0.037 (0.088)	0.34** (0.13)	0.27* (0.086)	0.27* (0.086)	0.23*** (0.087)
$R_{it}$				1.77 (1.28)	1.41 (1.19)	0.81* (0.47)
$R_{jt}$				1.15* (0.34)	0.89 (0.53)	-0.71 (0.44)
$EEA_{it}$				0.019 (0.17)	0.23 (0.16)	-0.28** (0.12)
$EEA_{jt}$				-0.086 (0.18)	0.067 (0.15)	-0.27** (0.14)
$EEA_{ijt}$				0.093 (0.25)	0.090 (0.24)	0.53*** (0.14)
$EA_{ijt}$				-0.13 (0.068)	-0.14 (0.063)	0.090 (0.058)
$NAFTA_{it}$				1.20 (1.46)	2.56 (1.07)	0.98 (0.64)
$NAFTA_{jt}$				0.076 (0.34)	1.02 (0.67)	-0.57 (0.47)
$NAFTA_{ijt}$				0.64* (0.18)	0.64* (0.17)	0.78*** (0.17)
$Public. Own_{it}$	0.0022 (0.022)	-0.10 (0.046)	-0.12*** (0.030)	-0.073 (0.027)	-0.13* (0.036)	-0.052* (0.027)
$Public. Own_{jt}$	0.086** (0.011)	0.039 (0.015)	0.038* (0.023)	-0.014 (0.041)	-0.054 (0.047)	0.036 (0.023)
[...]	[...]	[...]	[...]	[...]	[...]	[...]
$Other\ barriers\ to\ trade\ and\ I_{it}$	-0.11** (0.016)	0.0030 (0.037)	-0.25*** (0.051)	-0.069* (0.021)	-0.056 (0.028)	-0.14*** (0.018)
$Other\ barriers\ to\ trade\ and\ I_{jt}$	-0.052 (0.047)	-0.00049 (0.049)	-0.069 (0.043)	-0.018 (0.032)	-0.0090 (0.040)	-0.035* (0.019)
<i>Constant</i>	-2.66 (1.15)	23.3* (6.57)	10.6*** (2.73)	-17.4 (6.43)	0.50 (8.01)	2.89 (4.86)
<i>N</i>	744	744	744	2,623	2,623	2,623
<i>R</i> <sup>2</sup>	0.865	0.957	0.961	0.792	0.903	0.959

Note: Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient. *i* denotes the exporting country and *j* the importing country. Standard errors adjusted for clusters are in parentheses.  $Dist_{ij}$  = geographical distance,  $Cont_{ij}$  = contiguity dummy,  $CL_{ij}$  = common official language dummy. PPML = Poisson pseudo-maximum likelihood. [...] denotes the other PMR variables reported in table 5.

Table A1.6. Heterogeneity of PMR regression results

Dependent variable	Linear (1)	Linear (2)	PPML (3)	Linear (4)	Linear (5)	PPML (6)
	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$
$\ln(Y_{it})$		-0.073 (0.17)	-0.0086 (0.16)		0.59** (0.086)	0.86*** (0.12)
$\ln(Y_{jt})$		0.26 (0.18)	0.23 (0.18)		0.66*** (0.026)	0.74*** (0.11)
$\ln(dist_{ij})$	-1.20** (0.14)	-1.20** (0.14)	-0.95*** (0.059)	-1.17*** (0.027)	-1.17*** (0.027)	-0.69*** (0.057)
$Cont_{ij}$	0.11 (0.050)	0.100 (0.046)	0.11* (0.059)	0.059 (0.029)	0.058 (0.031)	0.35*** (0.081)
$CL_{ij}$	0.0054 (0.083)	0.027 (0.077)	0.33** (0.14)	0.24 (0.096)	0.24 (0.096)	0.14 (0.088)
$R_{it}$				2.69 (1.68)	2.29 (1.55)	1.72*** (0.47)
$R_{jt}$				2.30** (0.28)	1.97** (0.33)	0.57 (0.48)
$EEA_{it}$				0.078 (0.12)	0.26 (0.16)	-0.22* (0.12)
$EEA_{jt}$				-0.077 (0.16)	0.074 (0.16)	-0.22 (0.13)
$EEA_{ijt}$				0.065 (0.24)	0.065 (0.23)	0.51*** (0.13)
$EA_{ijt}$				-0.18 (0.078)	-0.18 (0.071)	0.018 (0.056)
$NAFTA_{it}$				2.44 (1.99)	3.19 (1.72)	1.49** (0.71)
$NAFTA_{jt}$				1.67** (0.33)	2.28** (0.28)	0.75 (0.48)
$NAFTA_{ijt}$				0.52* (0.16)	0.53* (0.16)	0.66*** (0.16)
$PMR_{it}$	-0.38* (0.10)	-0.39* (0.11)	-0.45*** (0.070)	-0.67** (0.083)	-0.62*** (0.061)	-0.25*** (0.070)
$PMR_{jt}$	-0.022 (0.075)	-0.033 (0.037)	-0.18** (0.072)	-0.27 (0.14)	-0.23 (0.12)	-0.071 (0.075)
$PMR_{ijt}^h$	-0.81 (0.30)	-0.44 (0.26)	-0.34 (0.31)	-1.58*** (0.11)	-1.48*** (0.12)	-1.64*** (0.27)
<i>Constant</i>	-2.99* (0.96)	23.4* (5.71)	15.7*** (2.49)	-30.3* (9.82)	-15.9 (8.75)	-13.1*** (4.83)
<i>N</i>	744	744	744	2,623	2,623	2,623
$R^2$	0.861	0.957	0.958	0.792	0.903	0.959

Note: Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient. *i* denotes the exporting country and *j* the importing country. Standard errors adjusted for clusters are in parentheses.  $Dist_{ij}$  = geographical distance,  $Cont_{ij}$  = contiguity dummy,  $CL_{ij}$  = common official language dummy. PPML = Poisson pseudo-maximum likelihood.

Table A1.7. Heterogeneity of Doing Business regression results

Dependent variable	Linear (1)	Linear (2)	PPML (3)	Linear (4)	Linear (5)	PPML (6)
	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$
$\ln(Y_{it})$		0.82** (0.19)	0.40*** (0.12)		0.65** (0.14)	0.49*** (0.11)
$\ln(Y_{jt})$		1.09*** (0.16)	0.71*** (0.14)		0.70*** (0.11)	0.60*** (0.100)
$\ln(dist_{ij})$	-1.26*** (0.031)	-1.26*** (0.031)	-0.95*** (0.053)	-1.19*** (0.031)	-1.19*** (0.032)	-0.66*** (0.054)
$Cont_{ij}$	0.071*** (0.0064)	0.071*** (0.0066)	0.082 (0.057)	0.034* (0.015)	0.033 (0.016)	0.31*** (0.079)
$CL_{ij}$	-0.071** (0.020)	-0.071** (0.020)	0.31** (0.14)	0.29*** (0.025)	0.29*** (0.027)	0.19** (0.088)
$R_{it}$				1.76*** (0.22)	1.41*** (0.26)	0.039 (0.50)
$R_{jt}$				-0.095 (0.35)	-0.40 (0.41)	-0.90** (0.45)
$EEA_{it}$				0.084 (0.093)	0.12 (0.11)	-0.31*** (0.11)
$EEA_{jt}$				-0.14 (0.099)	-0.11 (0.11)	-0.39*** (0.11)
$EEA_{ijt}$				0.32 (0.17)	0.31 (0.17)	0.68*** (0.14)
$EA_{ijt}$				-0.34*** (0.028)	-0.34*** (0.029)	0.0055 (0.085)
$NAFTA_{it}$				1.64*** (0.19)	2.23*** (0.37)	0.84 (0.57)
$NAFTA_{jt}$				-0.95* (0.41)	-0.43 (0.34)	-0.46 (0.45)
$NAFTA_{ijt}$				0.57*** (0.030)	0.58*** (0.031)	0.87*** (0.16)
$DB_{ijt}^h$	-0.87*** (0.12)	-0.87*** (0.11)	-0.69*** (0.16)	-0.98*** (0.14)	-1.00*** (0.14)	-0.86*** (0.16)
<i>Constant</i>	-1.06*** (0.20)	-0.78 (4.81)	6.06*** (1.69)	-11.6** (3.22)	1.25 (6.41)	11.5** (5.23)
<i>N</i>	1,702	1,702	1,702	5,090	5,090	5,090
$R^2$	0.867	0.956	0.962	0.801	0.903	0.964

Note: Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient. *i* denotes the exporting country and *j* the importing country. Standard errors adjusted for clusters are in parentheses.  $Dist_{ij}$  = geographical distance,  $Cont_{ij}$  = contiguity dummy,  $CL_{ij}$  = common official language dummy. PPML = Poisson pseudo-maximum likelihood.

Table A1.8. Employment protection legislation regression results

Dependent variable	Linear	Linear	PPML	Linear	Linear	PPML
	(1)	(2)	(3)	(4)	(5)	(6)
	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$	$\ln\left(\frac{X_{ijt}}{Y_{it}Y_{jt}}\right)$	$\ln(X_{ijt})$	$X_{ijt}$
$\ln(Y_{it})$		0.35 (0.31)	0.17 (0.17)		0.50*** (0.097)	0.55*** (0.084)
$\ln(Y_{jt})$		0.51*** (0.15)	0.44*** (0.14)		0.64*** (0.043)	0.58*** (0.090)
$\ln(dist_{ij})$	-1.08*** (0.029)	-1.08*** (0.030)	-0.93*** (0.060)	-1.22*** (0.028)	-1.22*** (0.028)	-0.71*** (0.059)
$Cont_{ij}$	0.22*** (0.022)	0.22*** (0.023)	0.10* (0.058)	0.14*** (0.015)	0.14*** (0.016)	0.31*** (0.082)
$CL_{ij}$	0.047 (0.045)	0.052 (0.046)	0.35** (0.14)	0.13** (0.048)	0.13** (0.048)	0.21** (0.087)
$R_{it}$				1.58*** (0.30)	0.97** (0.33)	-0.22 (0.29)
$R_{jt}$				0.96*** (0.16)	0.52** (0.18)	-0.22 (0.30)
$EEA_{it}$				0.44*** (0.088)	0.58*** (0.12)	-0.016 (0.12)
$EEA_{jt}$				0.13 (0.085)	0.23** (0.093)	-0.15 (0.13)
$EEA_{ijt}$				-0.048 (0.12)	-0.054 (0.12)	0.51*** (0.15)
$EA_{ijt}$				-0.18*** (0.039)	-0.19*** (0.032)	0.085 (0.068)
$NAFTA_{it}$				0.99*** (0.30)	1.76*** (0.38)	0.39 (0.49)
$NAFTA_{jt}$				-0.049 (0.20)	0.48** (0.19)	0.35 (0.30)
$NAFTA_{ijt}$				0.60*** (0.030)	0.60*** (0.030)	0.80*** (0.17)
$EPL_{it}$	0.030 (0.042)	0.018 (0.045)	0.12 (0.092)	-0.12* (0.061)	-0.14** (0.057)	0.087 (0.072)
$EPL_{jt}$	0.11*** (0.027)	0.10*** (0.027)	0.12 (0.11)	-0.063* (0.033)	-0.077** (0.034)	0.021 (0.074)
<i>Constant</i>	-3.60*** (0.18)	9.34* (4.85)	14.1*** (3.03)	-16.3*** (1.69)	1.57 (3.23)	8.53** (3.41)
<i>N</i>	2,492	2,492	2,492	8,098	8,098	8,098
$R^2$	0.863	0.950	0.954	0.835	0.902	0.961

Note: Asterisks (\*, \*\*, \*\*\*) indicate the significance level (10%, 5%, 1%) of the coefficient. *i* denotes the exporting country and *j* the importing country. Standard errors adjusted for clusters are in parentheses.  $Dist_{ij}$  = geographical distance,  $Cont_{ij}$  = contiguity dummy,  $CL_{ij}$  = common official language dummy. The remoteness variable is less relevant for trade within the EU and hence is not included. The inclusion of these variables has a negligible impact on policy variable estimates. PPML = Poisson pseudo-maximum likelihood.

## WORKING PAPERS

The full series of Economics Department Working Papers can be consulted at [www.oecd.org/eco/workingpapers](http://www.oecd.org/eco/workingpapers)

1180. *Can pro-growth policies lift all boats? An analysis based on household disposable income*  
(December 2014) by Orsetta Causa, Alain de Serres and Nicolas Ruiz
1179. *Empirical evidence on the effects of environmental policy stringency on productivity growth*  
(December 2014) by Silvia Albrizio, Tomasz Koźluk and Vera Zipperer
1178. *The Indicators of the Economic Burdens of Environmental Policy Design – Results from the OECD Questionnaire*  
(December 2014) by Tomasz Koźluk
1177. *Measuring Environmental Policy Stringency in OECD Countries-A Composite Index Approach*  
(December 2014) by Enrico Botta and Tomasz Koźluk
1176. *Do Environmental Policies Matter for Productivity Growth? Insights from new Cross-Country Measures of Environmental Policies*  
(December 2014) by Silvia Albrizio, Enrico Botta, Tomasz Koźluk and Vera Zipperer
1175. *Making economic growth more socially inclusive*  
(December 2014) by Andrés Fuentes Hutfilter and Andreas Kappeler
1174. *New tax and expenditure elasticity estimates for EU budget surveillance*  
(December 2014) by Robert W.R. Price, Thai-Thanh Dang and Yvan Guillemette
1173. *Moving towards a more dynamic business sector in Spain*  
(November 2014) by Alberto Gonzalez Pandiella
1172. *Better harnessing talent and knowledge to boost sustainable medium-growth in Spain*  
(November 2014) by David Haugh and Ben Westmore
1171. *The internet economy – regulatory challenges and practices*  
(November 2014) by Isabell Koske, Rosamaria Bitetti, Isabelle Wanner and Ewan Sutherland
1170. *A revival of the private rental sector of the housing market? Lessons from Germany, Finland, the Czech Republic and the Netherlands*  
(October 2014) by Rik de Boer and Rosamaria Bitetti
1169. *Secular stagnation: evidence and implications for economic policy*  
(October 2014) by Łukasz Rawdanowicz, Romain Bouis, Kei-Ichiro Inaba and Ane Kathrine Christensen
1168. *Investment gaps after the crisis*  
(October 2014) by Christine Lewis, Nigel Pain, Jan Strasky and Fusako Menkyna
1167. *Factors behind the decline in real long-term government bond yield*

(October 2014) by Romain Bouis, Kei-Ichiro Inaba, Łukasz Rawdanowicz and Ane Kathrine Christensen

1166. *The effect of the global financial crisis on the OECD potential output*  
(October 2014) by Patrice Ollivaud and David Turner
1165. *Determinants of households' investment in energy efficiency and renewables – evidence from the OECD Survey on household environmental behaviour and attitudes*  
(October 2014) by Nadia Ameli and Nicola Brandt
1164. *Addressing high household debt in Korea*  
(September 2014) by Randall S. Jones and Myungkyoo Kim
1163. *Reducing the high rate of poverty among the elderly in Korea*  
(September 2014) by Randall S. Jones and Satoshi Urasawa
1162. *Promoting the financing of SMEs and start-ups in Korea*  
(September 2014) by Randall S. Jones and Myungkyoo Kim
1161. *Fostering inclusive growth by promoting structural change in the business sector*  
(September 2014) by Rauf Gönenç, Oliver Röhn, Vincent Koen and Fethi Ögünç
1160. *Reducing macroeconomic imbalances in Turkey*  
(September 2014) by Oliver Röhn, Rauf Gönenç, Vincent Koen and Evren Erdoğan Coşar
1159. *Reinvigorating the EU Single Market*  
(September 2014) by Jean-Marc Fournier.
1158. *An exploration of the determinants of the subjective well-being of Americans during the great recession*  
(August 2014) by Aida Caldera Sánchez and Caroline Tassot.
1157. *Boosting the development of efficient SMEs in the Netherlands*  
(September) by Rafał Kierzenkowski and Jochebed Kastaneer
1156. *Making the banking sector more resilient and reducing household debt in the Netherlands*  
(September 2014) by Rafał Kierzenkowski, Olena Havrylchyk and Pierre Beynet
1155. *US long term interest rates and capital flows to emerging economies*  
(July 2014) by Eduardo Olaberria
1154. *Productivity measurement with natural capital and bad outputs*  
(July 2014) by Nicola Brandt, Paul Schreyer and Vera Zipperer
1153. *Reducing income inequality and poverty and promoting social mobility in Korea*  
(July 2014) by Randall S. Jones and Satoshi Urasawa
1152. *Fostering a creative economy to drive Korean growth*  
(July 2014) by Randall S. Jones and Myungkyoo Kim