Redirecting International Trade:

Contracts, Conflicts, and Institutions

Ari Kokko [A]

Bengt Söderlund ([B])

Patrik Gustavsson Tingvall [C]

Abstract

The global financial crisis has accelerated the redirection of trade towards new markets, outside the OECD area, where both demand patterns and the institutional environment differ from those in the OECD. This study provides an empirical examination of the consequences of this shift. Results suggest that weak institutions hamper trade and reduces the length of trade relations, especially for small firms. Furthermore, trade in industries that are characterized by a high degree of trade conflicts and that requires extensive relationship specific investments for trade to occur are comparatively difficult to redirect towards markets with weak institutions.

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[A] Copenhagen Business School and Ratio. ako.int@cbs.dk
[B] Stockholm School of Economics and Ratio, bengt.soderlund@ratio.se
[C] Corresponding author. Ratio Institute, Sveavägen 59, Box 3203, 103 64 Stockholm, Sweden.
Ph: +46(0)73 6502030: E-mail: patrik.tingvall@ratio.se

1. Introduction

Starting with a collapse in the US subprime mortgage market, the global financial crisis has left few OECD countries untouched. In the trails of the financial crisis, severe unemployment, rising public debt and large current account deficits have followed. Not even countries that managed to avoid a crisis in their financial sector have been spared – the economic slump has been felt across the globe through large declines in trade.

The size of the trade collapse has surprised academic observers; even accounting for the contraction in economic activity, trade models have failed to predict the speed and magnitude of the reduction in global trade (Benassy-Quéré et al., 2009; Levchenko et al., 2010). During the last quarter of 2008 and first quarter 2009, world GDP fell by approximately three percent, while world trade declined by almost 30 percent. Several explanations for this magnification effect on trade have been investigated and a set of explanations ranging from financial constraints, globally linked production chains and increased protectionism have been proposed (Baldwin,2009; Chor and Manova, 2010; Evenett, 2009). While all these explanations add to the overall story, it seems that much of the decrease in trade can be attributed to falling demand (Behrens et al., 2013).

However, while markets in Western Europe and North America have lost speed, opposite trends could be found in several emerging markets that have managed to sustain stable growth figures throughout the recession. Apart from gaining a larger share of world GDP, emerging and developing markets have also come to take a more important role in international trade, both as exporters and export destinations. The shift in economic gravity towards non-traditional markets was not triggered by the crisis – the acronym BRIC was coined already in 2001 to describe some of the most important actors in this process (O'Neill 2001) – but it was strongly reinforced during this period.

It is not likely that the increasing importance of non-traditional markets is a temporary phenomenon – instead, most long-term projections suggest that their market shares will increase further in the future (Wilson et al. 2011). The continuing crisis in European public finances will limit European growth rates for a long time, reducing not only the level of economic activity but also the demand for imports. The fiscal imbalances in the US economy will probably have similar effects. Emerging markets, on the other hand, are expected to post significantly higher average growth rates for a long time, as their productivity and income levels converge towards those in the US and Europe. Although both Europe and the US may rebound, the long term trend seems clear – a more important role for emerging markets.

The shift from traditional Westerns markets to new markets largely outside the OECD poses many challenges for European firms. Operating in emerging markets is complex not only because demand patterns may be different than in the traditional export markets, but also because it often means dealing with an entirely new institutional environment. The institutional barriers that have to be overcome to successfully enter these markets range from gaining knowledge about formal rules and regulations to cultural aspects of business conduct. Yet, little is known about how the large institutional differences between Europe and emerging markets in general may come to influence European trade patterns as the significance of non-OECD markets increase.

This paper exploits Swedish micro data on firm-level trade to study some of the consequences for European firms of the increasing role of non-OECD countries in international trade. In particular, we will focus on two aspects that distinguish emerging markets from the traditional Western economies, the level of growth and the strength of the intuitional environment and how these factors influence affect international trade. Unlike earlier studies of trade and institutions, we include both exports and offshoring (imports of intermediate goods) in our analysis. In addition to examining the general impact of institutions and growth, we will explore how two types of sectoral asymmetries influence trade. These are related to the character of the relationship between buyers and sellers and the risk of trade conflicts. The reason for this are twofold.

First, because goods differ with respect to how important buyer-seller relations are for trade transactions – while some goods can be sold anonymously in standardized markets, personal contacts are necessary to agree about contracts for other types of goods. Institutional quality is one of the determinants of the costs of contracting for the more relationship-specific goods. Consequently, the relationship-specificity of industries influences trade, often in interaction with the quality of institution in the exporting and importing economies (Nunn 2007; Araujo et al. 2012; Söderlund and Tingvall, 2013). To analyze this dimension of trade, we will include a proxy for relationship-specificity from Nunn (2007) in our empirical analysis of firm-level trade.

Second, industries differ with respect to the risk for trade disputes. Although the global trade policy environment is relatively transparent and liberal thanks to the GATT and WTO agreements, there are still cases where countries disagree about the interpretation of trade rules or where firms or governments engage in practices that are considered unfair by their trade partners. These cases could concern allegations of dumping or actual dumping, disagreements about the value of public support, customs valuation, the definition and implementation of technical or health standards, or a number of other regulatory issues associated with international trade. Since industry structure,

competition, and performance differ across sectors, there are also differences in the likelihood of trade disputes – some sectors exhibit a higher conflict risk than others.

Most of the disputes are solved in bilateral negotiations between the governments and companies involved, but they still distort trade. The use of trade remedies like antidumping tariffs or other interventions by the government will interrupt trade flows. Even if the case is eventually resolved, there are costs in terms of lost trade, time, and financial resources spent negotiating with authorities, and uncertainty about the final outcome. The uncertainty is likely to be higher in countries with weaker institutions, where decision-making is less transparent and decision-makers are more sensitive to pressure from various domestic interest groups. Hence, a weak institutional environment can be expected to result in a larger reduction of trade in more conflict-intensive industries. To capture this relationship in our empirical analysis, we create a new measure of conflict risk at the industry level – to parallel Nunn's (2007) measure of relationship-specificity – using data on trade disputes from the WTO Dispute Settlement Body.

Focusing on the intensive margin of trade, the results from this study suggest that exports are strongly attracted to rapidly growing markets. There are no signs of any corresponding growth effect for offshoring. Following the crisis, trade in general and exports in particular have been diverted from the OECD region toward rapidly growing non-OECD economies that generally exhibit a lower institutional quality than the traditional OECD markets.

When trade shifts toward countries with relatively weak institutions, there is a reduction in the share of exports of goods exhibiting high relationship-specificity and high conflict-intensity. In addition, trade relations with countries that have weak institutions (non-OECD countries) are characterized by relatively short-lived trade spells. This is a particular problem for small firms, which are particularly sensitive to uncertainty and high trade costs. Hence, the reshaping of global trade patterns has asymmetric effects on exports and offshoring, and both trade flows and the duration of trade relations are hampered by weak institutions. A continued increase in the importance of non-OECD markets will be a challenge for exporters in industries that exhibit high relationship-specificity and conflict-intensity. This is particularly true for small firms that have limited resources to invest in learning about foreign institutional environments.

Although the study is based on Swedish data, results are generalizable to many other developed countries, since most OECD economies will face similar changes in their trade structure in the coming years.

The paper is structured as follows. Section 2 discusses the theoretical findings on the relations between institutions, contracts, and trade conflicts. Section 3 presents the empirical approach for the study, Section 4 focuses on data sources and descriptive statistics, and Section 5 presents and discusses the results from the empirical analysis. Section 6 summarizes and provides some policy conclusions.

2. Theory and Literature: Institutions, Contracts, and Conflicts

Emerging markets differ in many respects from the traditional export destinations of Western European firms. They have lower per capita income levels than the OECD countries, they are typically located far away from Western Europe, both in terms of geographic and cultural distance, and economic institutions are less developed (or at least different). All of these differences will pose significant challenges for European exporters as the importance of emerging markets as export destinations grows.

Some of these challenges have been discussed in detail in the international trade literature. Differences in per capita incomes do not only reflect differences in labor costs and comparative advantage, but also differences in consumer preferences. Linder (1961) provided an early analysis of how similarity in domestic demand – which is expected to be correlated with similarity in per capita incomes – influences trade patterns. Later contributions have noted that countries at different income levels will perhaps not demand different product categories, but rather different product varieties, with quality and price as important variables (Bernasconi 2009; Hallak 2010). This suggests an increasing need to adapt products to local market conditions.

Geographic distance remains an important determinant of bilateral trade, despite the reductions in transport costs achieved in the past decades (Disdier and Head, 2008). The *distance paradox* suggests that trade with far-away markets is not only burdened by high transport costs, but that there may also be other types of transaction costs that increase with distance. In the international business literature, it has been common to point to "cultural distance" as a determinant of transaction costs (Kokko and Tingvall, 2014), but international trade literature has instead emphasized the role of institutions. In fact, recent research has shown that the impact of institutions on international trade can be even greater than the impact of tariffs (Belloc 2006; Anderson and Marcoullier 2002; Márquez-Ramos et al. 2012; Levchenko 2007). Given our focus on institutions,

it is appropriate to take a closer look at how economic theory expects institutions to influence international trade.

Institutions and international trade

Stable rules and well-functioning institutions are important determinants of long-term trade relations.[1] The theoretical links between trade and institutions are highlighted in transaction cost economics (Williamson 1985, 1996) and the property rights view introduced by Grossman and Hart (1986) and Hart and Moore (1990). Both approaches address incomplete contracts and the make-or-buy decision, with the property rights view focusing on ownership as a determinant of trade, and the transaction cost perspective adopting a broader view based on contract execution.[2]

Contractual issues affect both parties in any trade agreement. As specified in the standard hold-up problem, the seller often needs to make contract-specific investments. However, a decision by the prospective seller to invest will shift bargaining power to the prospective buyer. Once the seller has made the necessary investment, the buyer may be tempted to request a renegotiation of the transaction terms, to the detriment of the seller. If this renegotiation fails, the buyer may be able to find an alternative supplier at little extra cost, whereas the seller risks losing all or part of the sunk investment cost. One way to minimize risks related to opportunistic behavior is to invest in complex contracts that carefully define the rights and obligations of all parties involved in the transaction. The problem is that complete contracts can neither be formulated nor enforced, which results in some degree of underinvestment. This is a particularly severe challenge for international trade, where enforcement possibilities are weaker because the parties are located in different countries with different jurisdictions (Ornelas and Turner 2008).

Institutions have an impact on international trade because they will influence the costs for administration and contracting and the risk of opportunistic behavior. Efficient institutions facilitate trade by offering stable rules that reduce uncertainty, secure property rights, enhance law enforcement, and facilitate interpersonal exchanges that allow more complex and efficient ways of organizing production and trade (North 1991; Williamson 2000; Massini et al. 2010). Institutions can also affect the costs of monitoring and control. Since contract costs can determine whether a cross-border relationship will be established, effective institutions are central to facilitating trade.

[1] There is no universally accepted definition of institutions. We follow North (1991), who states that, "*Institutions are the humanly devised constraints that structure political, economic and social interaction*".
[2] For a more detailed discussion, see Williamson (2000).

In line with these theoretical predictions, empirical evidence suggests that weak institutions increase the cost of doing business, hamper investment, and influence trade patterns. For instance, Anderson and Marcouiller (2002) and Ranjan and Lee (2007) use gravity models to assess how institutions affect bilateral trade flows, and find significant effects. Méon and Sekkat (2006) show that the level of corruption, rule of law, government effectiveness, and political violence all impact exports of manufactured goods. Awokuse and Yin (2010) show that in China, strengthened intellectual property rights have had a particularly strong impact on imports of knowledge-intensive products. Focusing on border effects, Turrini and van Ypersele (2010) conclude that differences in legal systems reduce trade flows.

Apart from reducing trade volumes, weak institutions may also affect the duration and the dynamics of trade (Aeberhardt et al. 2011; Araujo et al. 2012; Söderlund and Tingvall, 2013). Trade with countries with weak institutions is characterized by short-lived trade flows and small initial volumes. Subsequently, trade flows may increase as exporters become more familiar with their contractual partner and learn about the institutional environment in the target economy. These contributions constitute an important link between international trade and international business – in international business, it has long been hypothesized that internationalization is a gradual process, where firms enter distant markets cautiously and raise their level of commitment only after learning about their partners and the local market environment (Johanson and Wiedersheim-Paul 1975; Johanson and Vahlne, 1977).

Relationship-specificity and conflict-intensity

Institutional quality in the target economy is likely to have a composition effect on trade. When sensitive information is involved, the contracting process easily becomes complex, time consuming and expensive (Antràs, 2003). Trade in this type of goods will be intensive in seller-buyer interactions, and may therefore be especially sensitive to weak institutions. With this a point of departure, and drawing on Rausch (1999), Nunn (2007) developed an index that measures the industry-specific degree of relationship-specificity (RS). This index signals how frequent personal interactions between the buyer and the seller are for contract completion (for different industries or types of goods). A main finding by Nunn (2007) is that countries with well developed legal institutions have a comparative advantage in trade in RS-intensive goods.

Since Nunn (2007), several papers have studied how relationship-specific interactions influence various commercial decisions. For instance; Altomonte and Békés (2010) analyze trade and productivity, Casaburi and Gattai (2009) focus on intangible assets, Ferguson and Formai (2013) examine trade, firm choice and contractual institutions, Bartel, Lach and Sicherman (2005) study outsourcing and relationship-specific interactions; Kukenova and Strieborny (2009) look at finance and relationship-specific investments, Söderlund and Tingvall (2013) investigate the impact of institutions on trade dynamics. The general pattern emerging from these studies is that relationship-specificity matters, but that the effects on trade flows depend on the institutional environment in the partner countries. Trade in industries with a high RS-index is particularly likely to suffer when institutions are weak.

Aside from buyer-seller interactions, trade relations may also be influenced by public policy interventions. Although the general policy environment for world trade is relatively predictable, since most countries are members of WTO and have pledged to follow WTO principles and tariff schedules, there is some degree of uncertainty related to how various trade rules should be interpreted and this may result in trade conflicts. Disagreements and trade conflicts can focus on administrative procedures connected to technical standards, import licenses, and customs valuation, as well as the use of trade remedies like anti-dumping tariffs and countervailing duties.

Trade conflicts can severely hamper trade and are more likely to occur in some industries than in others, either because of their strategic value to either of the trade partners, or because of the influence of protectionist interest groups in the importing economy. Since trade in conflict-intensive sectors is associated with uncertainty and risk, and a key feature of institutions is to reduce uncertainty and risk, the role of institutions may be particularly important in sectors characterized by complex contacts and high conflict risk.

The framework for anti-dumping can be used to illustrate some of the issues involved in trade conflicts. Anti-dumping investigations are normally initiated by national governments at the request of domestic firms or industry associations asserting that foreign exporters are causing injury by selling goods at unnaturally low prices. The aim of the investigation is to determine whether this is the case – both domestic and foreign firms are expected to have an opportunity to present their views during this process. The introduction of specific tariffs is then determined by the national trade authorities. WTO defines the rules for when anti-dumping remedies can be used, and provides a dispute resolution mechanism where foreign exporters can challenge the decisions of the national authorities, but is otherwise not involved in anti-dumping cases.

Member countries reported a total of 4.230 anti-dumping investigations to the WTO between 1995 and 2012. Both developed and emerging markets appear among the reporters – India reported the most investigations, followed by the US and EU. Argentina, Brazil, Australia, South Africa, China, Canada, and Turkey completed the top-10 list. The anti-dumping investigations were not evenly distributed across industries, but instead concentrated to specific sectors, often with fierce price competition, substantial political influence, and/or strategic importance. According to the WTO, chemical products, plastics, metal products, textiles, and machinery accounted for the majority of the investigations.[3] The incidence of anti-dumping investigations at the sectoral level provides one indication of exposed different sectors are to trade conflicts.

The ratio of tariffs to investigations varies between countries. In the US, EU, Australia, and Canada, two-thirds of the investigations led to the introduction of tariffs, while one-third of cases were judged not to involve dumping or injury to local industry. In India, China, Argentina, and Turkey, 75-90% of investigations resulted in tariffs. This may reflect the weaker institutional environment in some of the emerging markets – the likelihood that foreign exporters will be able to influence the outcome is lower when legal and political institutions are weaker.

A drawback with anti-dumping investigations is that they only capture one type of trade conflicts. A more general indicator of conflict intensity can be derived from the WTO's Dispute Settlement Body (See, Horn et al. (2011)) for descriptive statistics on disputes taken to the WTO dispute settlement body).

Disagreements regarding trade are sometimes so severe that the exporters file a complaint at WTO's Dispute Settlement Body. By November 2013, 99 disputes concerning anti-dumping tariffs had been filed at the WTO. This is a small share of the anti-dumping tariffs imposed by the national authorities of WTO members, but they represent 28% of the cases related to specific products in the WTO dispute settlement system. Countervailing duties account for an equal share of cases, with technical standards, import licensing, and customs valuation covering most of the remaining goods-related disputes.[4] We extract the cross industry distribution of 479 disputes taken to the WTO dispute settlement body and construct a conflict-intensity (CI) index corresponding to Nunn's (2007) RS-index.[5]

[3]All the data on disputes are from http://www.wto.org/english/tratop_e/dispu_e/dispu_e.htm , retrieved in October 2013.
[4]The remainder of the 469 disputes in the WTO system refers to services or various general issues that are not limited to any specific product category.
[5]Due to data issues and to conform to the RS-index, the analysis is limited to the manufacturing sector. Out of 479 WTO trade disputes the manufacturing sector accounts for 325 disputes.

The CI-index is not only interesting *per se*, but in particular in interaction with measures of institutional quality. A well-functioning institutional framework provides stable and clear rules for trade and reduces the risk that political objectives or pressure from domestic interest groups will disturb trade relationships. These advantages are especially important in industries where trade conflicts are frequent. Hence, we expect the interaction between conflict intensity and institutional quality to be positively associated with trade. To be precise, the hypothesis is that the impact of weak institutions is magnified in conflict-intensive industries; this parallels the interaction between relationship-specificity and institutional quality suggested by Nunn (2007).

Summarizing, theory suggest that better contracting institutions favor trade and that the impact of weak institutions is stronger in industries requiring close interactions between sellers and buyers and in industries where conflicts are more frequent. To empirically explore how these theoretical findings may help predict the consequences of a shift in global trade towards emerging markets and developing economies, we will exploit the gravity model of trade, which is a commonly used tool in empirical trade analysis. The next section turns to a discussion of that model.

3. Empirical approach

3.1 Choosing estimator

Our empirical analysis is based on the gravity model, which has proven to explain trade remarkably well. The theoretical support for the gravity model was weak when it was originally introduced in the early 1960s (Tinbergen 1962), but after a series of theoretical contributions since the late 1970s, it is now widely recognized that it is consistent with several of the most common trade theories (Bergstrand 1990). However, Anderson and van Wincoop (2003) showed that the traditional specification of the gravity model suffers from an omitted variable bias by overlooking the effects of relative prices on trade patterns. They argue that the inclusion of a multilateral trade resistance term, in the form of importer and exporter fixed effects, would yield consistent parameter estimates. We estimate a one-sided gravity model and to overcome the omitted variables bias we include country dummies in all estimations.[6]

The literature does not provide any decisive guidance on which estimator to prefer in applied work. Different estimators have their own sets of advantages and disadvantages. For example, the OLS

[6]Other methods include a two-step approach that modelsthe multilateral trade resistance term as a function of observables (Anderson and van Wincoop 2003; Feenstra 2004).

estimator with country fixed effects is likely to avoid the multilateral trade resistance trap and it is probably the most commonly applied estimator in gravity model estimations. However, the log-linear OLS estimator does not naturally allow for the inclusion of zero value trade flow. An alternative to OLS that provides a natural way of including zero value observations is the Heckman model. The Heckman model, however, is sensitive to the use of multiple dummies and vulnerable to heteroscedasticity. Lately, the OLS and Heckman estimators have been challenged by count data models. The advantage of these estimators it that they naturally allow for the inclusion of zero values, are consistent in the presence of fixed effects, and are robust against heteroscedasticity. Moreover, these estimators do not rely on any specific exclusion restriction. On the other hand, the Heckman model allows for separate data generating processes for the zero and non-zero observations, whereas models such as the Poisson model assume that all observations are drawn from the same distribution. With this as a background, it is not surprising that the zero inflated beta distribution model (ZOIB) has received increasing attention. This model allows zero valued trade flows to be treated as if generated through a different process than non-zero valued observations. Hence, the zero inflation part of this model deals with the likelihood of zeros and the estimated coefficients for the inflation step is expected to be of the opposite sign as those of a logit model, which predicts the likelihood of entering a positive trade flow (Ferrari and Cribari-Neto, 2004; Paolino, 2001; Smithson and Verkuilen, 2006). It should also be noted that when estimating the ZOIB model, we are dealing with ratios, so that we must transform the dependent variable to represent export and offshoring ratios (share of total sales) rather than total trade flows. Hence, the estimated coefficients from the ZOIB model are not elasticities but rather semi-elasticities.

To tackle these estimator problems, we present models using a set of different estimators. The reason is that we want to ensure that results not are dependent on the use of a specific estimator. Moreover, to avoid extremely large datasets, we follow Koenig et al (2010) and drop permanently non-trading firms from the estimations. It may also be noted that the 2008/09 crisis almost entirely affected the intensive margin of trade. Hence, the inference is limited to firms participating in international exchange, or firm-country pairs that during the period of observation record at least one positive value. For exports, this leaves us with approximately 1,000,000 observations out of which approximately 500,000 or 50% consists of positive trade flows; for offshoring the corresponding numbers are 400,000 observations and 200,000 positive trade flows. For the extensive margin, i.e. the selection into positive firm-country trade, we use a dummy variable which takes the value 1 if the firm is trading at time (t) with country (j) and 0 otherwise. For the intensive margin, we use the volume of trade (exports or offshoring) at the firm-country level, except for the

ZOIB model where we use the export and offshoring ratios. Because of the hierarchical structure of data, all estimations are performed using robust standard errors clustered by country-year.

3.2 Variables

Institutions are at the center of our analysis and we have therefore used several different data sources to construct robust proxies for institutional quality. These proxies cover 12 measures of institutional quality related to various aspects of rule of law and business institutions. The underlying indices are drawn from sources such as the World Bank, the Heritage Foundation and the Fraser Institute (for details, see the data section). We normalize all the underlying indices to range between 0 and 10, with higher numbers indicating "better" institution. Thereafter, we define three separate proxies by calculating the unweighted average scores for each country and year for three sets of institution indices. The first proxy is based on six indices that reflect the *Business Environment*, the second proxy is based on the remaining six indices that measure *Rule of Law*, and the third proxy uses all data to provide a broader measure of overall institutional quality ($Inst_{ct}$).

The industry contract and conflict intensity are captured using Nunn's (2007) relationship-specificity measure (yielding a variable termed RS_j) and data on trade conflicts taken from the WTO dispute settlement system (resulting in the variable CI_j). Our focus is on the interaction effect between institutional quality and contract intensity ($RS_j Inst_{ct}$) as in Nunn (2007) and the interaction between institutional quality and industry conflict intensity ($CI_j Inst_{ct}$). This means that we will analyze heterogeneous effects of institutional quality in sectors with different degrees of conflict risk and relationship-specificity. A positive estimated coefficient for the interaction terms ($RS_j Inst_{ct}$) and ($CI_j Inst_{ct}$)implies that contract- and conflict intensive industries are particularly sensitive to institutional quality it target economies. With these concerns as a background, a representative selection model for the extensive margin takes the following form:

$$P\left(D_{ijt}^{x} = 1 \middle| observables\right) = \phi\left(\sum_k \delta_k F_{kijt} + \sum_l \delta_l C_{lijt}\right) \qquad (1)$$

where $D_{ijct}^{x} = 1$ is a dichotomous dependent variable that takes the value 1 if firm (i) active in industry (j) exports (offshore) to(from) country (c), and F_{kijt} is a set of K explanatory firm-level variables, C_{lct} is a set of L explanatory country-level variables and δ_k and δ_l are estimated coefficients. For the selection equation, we use variables specified in Eq. 2 below to which we add

data on the share of workers with tertiary education for the exclusion restriction.[7] Tests for the exclusion restriction indicate that the exclusion restriction is valid. The equation for the intensive margin is specified as follows:[8]

$$\begin{aligned} ln(Trade)_{ijct} &= \alpha + \beta_1 ln(Y)_{ct} + \beta_2 ln(q)_{ijt} + \beta_4 ln(Dist)_c + \beta_5 (Inst.)_{ct} + \beta_6 (RS)_j + \beta_7 (CI)_j \\ &+ \beta_8 \left[(Inst.)_{ct} (RS)_j \right] + \beta_9 \left[(Inst.)_{ct} (CI)_j \right] + \beta_{10} (Tariff)_{ijct} + \beta_{11} \Omega + \sum_c \beta_c D_c + \gamma_t + \varepsilon_{ijt} \end{aligned}, \quad (2)$$

where $Trade_{ijct}$ is exports(offshoring) by firm *i,* active in industry *j,*to(from) country *c*, *Y* is GDP of the target economy, firm-level gravity is captured by firm-sales, q , *Dist* is the geographical distance between countries, *Inst.* is a measure of the institutional quality of the target economy, *CI* is the industry specific measure of conflict intensity, *RS* is the Nunn (2007) measure of relationship specificity, *Tariff* is the trade-weighted tariff, D_c is country dummies, γ_t is period dummies and ε is the error term. When estimating Heckman models, Ω represents the inverse Mills ratio.

4. Data and descriptive statistics

The firm-level data originate from register-based data sets from Statistics Sweden covering the whole economy. The Business Statistics data base contains detailed firm-level information on firms' inputs and output. Examples of variables include value added, capital stock, investments, number of employees, total wages, the composition of the labor force with respect to educational level and demographics, ownership status, profits, sales, and industry affiliation

Data on firms' exports and imports of materials originate from the Swedish Foreign Trade Statistics, which provides information on trade at the product level tagged by country of origin (offshoring) and destination country (exports). For non-EU trade, all trade transactions are registered. Trade with EU countries are available for all firms with yearly imports above 1.5 million SEK (approx. 150 000 euros). According to figures from Statistics Sweden, the data incorporate 92 percent of the total trade within the EU. Material offshoring is identified by aggregating imports of intermediate inputs according to the MIG code classification.[9] This measure of offshoring is likely to be more precise than most other measures used in the literature (Hijzen, 2005). To make the

[7] Bernard and Jensen (2004) is an example in which skill intensity has been used to explain selection with respect to internationalization. The idea is that highly productive and skill-intensive firms are more internationalized than other firms. Similarly, exporters have overcome the internationalization barrier and are therefore more likely to engage in international exchange.

[8] This selection equation is similar to the export equation in Roberts and Tybout (1997) and Bernard and Jensen (2004).

[9] MIG is a European Community classification of products: Major Industrial Groupings (NACE rev1 aggregates).

sample of firms consistent across time and to reduce the impact of non-registered, within EU-transactions, we restrict our analysis to firms in the manufacturing sector with at least 30 employees.

GDP and population are collected from the World Bank database. GDP data are in constant 2000 USD prices. Data on distance are based on the CEPII population weighted measure.[10] Finally, tariff data are obtained from the UNCTAD/TRAINS database.

Institutional data originate from The World Bank Governance Indicators (WGI) developed by Kaufman et al. (1999) (*rule of law*), the Fraser Institute (*legal structure and property rights, freedom to trade, regulation of credit and business, access to sound money*) and the Heritage Foundation (*property rights, business freedom, economic freedom index, financial freedom, fiscal freedom, monetary freedom, investment freedom, freedom to trade*).Due to different time spans for the dataset we limit the analysis to the period 1997-2009.

Data for the relationship-specificity index, RS_j is taken from Nunn (2007) (available at http://scholar.harvard.edu/nunn/pages/data-0). Data for the conflict-intensity index, CI_j is based on WTO dispute statistics (http://www.wto.org/english/tratop_e/dispu_e/dispu_e.htm).

A trade conflict is recorded when a member country raises a complaint within the WTO dispute settlement system. Following Horn et al (2011), we define conflicts at the bilateral level, which means that when two countries file a complaint against a third member, it is counted as two bilateral complaints. However, only 9 out of the 469 disputes registered by October 2013 had more than one complainant. It is common that countries join complaints as third parties, but these are not counted as separate disputes. Moreover, the calculation of the conflict-intensity index only includes conflicts that are clearly focused on specific goods categories – complaints regarding general administrative practices and services are dropped from the calculations. The goods targeted by the disputes are identified by their HS-code at various levels of disaggregation. Each dispute also has a descriptive title that spells out what types of goods are involved. We have translated the HS-codes to the relevant Swedish industry codes (SNI92) at the 3-digit level. Although most disputes cover one or two 3-digit industries, there are also some cases where up to four industries are involved at the same time. In total, the calculation of the conflict-intensity index is based on 325 disputes in the manufacturing sector reported between 1995 and 2010,involving 57 industries. We limit the analysis to the manufacturing sector, partly because Nunn's (2007) RS-index is only defined for that sector.

[10] More information on CEPII's distance measure is found in Mayer and Zignago (2006).

To compensate for size differences across industries, we weight the number of disputes in each industry with the relative size of that industry. Hence, the CI-index is defined as the number or conflicts in each 3-digit SNI92 industry group weighted by the group's share of total Swedish exports.[11]

4.1 Descriptive statistics

Before moving to the analysis, Table 1 presents some descriptive statistics capturing the general trade patterns of Swedish firms. Table 1shows how Swedish trade has been distributed across OECD and non-OECD countries, and highlights the importance of OECD as a destination for exports as well as a source of imports of intermediate products. During the period of observation, approximately eighty percent of all Swedish manufacturing exports went to OECD countries, and ninety percent of all material offshoring was sourced from the OECD. The heavy concentration of offshoring to OECD countries may be somewhat surprising, since the academic literature on offshoring has had a significant focus on North/South trade. However, it is a stylized fact that most offshoring is North-North and Grossman and Rossi-Hansberg (2012) have recently provided theoretical contributions that seek to explain the occurrence of North-North offshoring.

[Table 1 about here]

The data in Table 1 also reveal large asymmetries in how trade flows have changed in connection with the global financial crisis. Comparing the years 2006 and 2009,exports to OECD countries fell by 17 percent at the same time as exports to non-OECD markets increase by 1.6 percent. The picture for offshoring is somewhat different. Offshoring from OCED countries remained almost unchanged during the crisis, registering a marginal drop of two percent. That is, while the crisis harmed exports to OECD markets offshoring was almost unaffected. It can also be noted that although OECD countries remain the main sources of Swedish imports of inputs, there has been a notable increase in offshoring from non-OECD countries. The overall picture suggests a shift of both offshoring and exports away from the traditional OECD markets toward non-OECD markets.

[11]It can be argued that trade volumes are not independent of conflict-intensity. To test the sensitivity of this measure, we have therefore run all estimations with an alternative index that is not normalized (non-weighted). The results are not reported separately, but conform to those discussed in the next section.

The relative resilience of the OECD as a source of intermediate imports is probably explained to some part by the favorable conditions for buyers in the current macroeconomic climate in the OECD region. Given the large reduction in demand brought about by the crisis, Swedish importers have probably been able to negotiate favorable agreements with OECD suppliers. The large share of offshoring from OECD may also indicate that offshoring to a large extent is about finding highly specialized suppliers.

Table 1 also illustrates some of the differences between OECD and non-OECD markets that may influence the restructuring of trade flows in the longer run. A first point to note is the large gap in per capita incomes and growth rates between the two regions. During the period 2006-2009, the average per capita income was 3.6 times larger in OECD than in non-OECD countries suggesting that there may be substantial differences in the product characteristics demanded by OECD and non-OECD countries. The gap in growth rates is also important. During the same period, the average growth rate in OECD countries was 35 percent of the average growth rate in non-OECD countries covered by our data. It is precisely this difference in growth rates that is expected to contribute to the shift in trade shares towards non-OECD countries.

The indicators for average institutional quality, relationship-specificity, and conflict-intensity are also interesting, because they highlight some other possible consequences of the shift of trade towards non-traditional markets. Average institutional quality in OECD markets is higher, as expected. The CI scores a higher value for exports to the OECD, which could be a response to the higher risk connected to weak institutions in non-OECD countries. Examples of goods that rank high in conflict intensity include pharmaceutical products, iron and steel and motor vehicles whereas there are no conflicts recorded to the WTO dispute settlement body in goods such as jewelry, toys, sports equipment and wood products. The difference in the RS-index between trade destined to OECD and non-OECD markets is marginal, which is perhaps somewhat surprising, given the theoretical prediction that weak institutional quality hampers trade in relationship-intensive products. This suggest that the mix of contract intensive goods and goods that do not require much seller-buyer interactions is rather similar between OECD and non-OECD countries. For offshoring, the average RS-index is higher than for exports, which is reasonable given that trade in intermediate products may require closer contacts between buyers and sellers than other types of trade. OECD countries record higher RS-index values, as expected. For the CI index, however, offshoring from non-OECD countries records a higher value. This may reflect some correlation between the competitiveness of emerging markets and the likelihood of trade conflicts – to some

extent, conflicts occur when new players enter the arena and capture market shares from incumbents.

5. Analysis

5.1 Basic results

With the descriptive results as a backdrop, Table 2 looks at the determinants of Swedish exports and offshoring, with the impact of institutional quality and the two indices measuring relationship-specificity and conflict-intensity as our main variables of interest. The table presents regressions using several different estimation techniques, to provide a robustness test of the results. Columns 1-3 focus on the intensive margin of trade for exports, columns 4-5 examine the extensive margin of trade for exports, while columns 6-8 and 9-10 repeat the exercise for offshoring.

Looking briefly at the control variables first, it can be noted that the standard gravity variables, firm size and GDP, have the expected positive signs and are statistically significant in the volume estimations for exports (the intensive margin). Given the use of country dummies, time-invariant variables like distance cannot be included in the model. The positive coefficients for total factor productivity and foreign ownership are also expected. They support the hypothesis of a selection of highly-productive firms into exports and suggest that foreign owned firms have an advantage in international trade thanks to their connections with affiliated firms outside the country. Unsurprisingly, exports are hampered by tariffs.

The selection equations for exports (examining the extensive margin) generally give similar results as the volume equations. It has been shown that that the slump in trade during the crisis almost entirely affected the intensive margin of trade. The number of traded goods has been remarkably stable throughout the crisis (Behrens et al., 2013). This is similar to the 1997 Asian crisis which also affected the intensive margin, leaving the extensive margin relatively unharmed. For this reason, we will focus on the estimation of the intensive margin in the following tables.

Turning to the variables of interest, the estimations show that institutional quality has a positive direct impact on the volume of exports to different countries, but that the amount of exports is not consistently linked to institutional quality – it is only the ZOIB estimation that yields a significant positive coefficient for institutional quality. Relationship-specificity (the RS-index) has the expected negative effect on both the choice of export destinations and the amount of exports, and

there is also some evidence that the interaction between the RS-index and institutions is important. Generally speaking, a high RS-index value reduces exports, but good institutions may moderate this negative effect. A similar pattern is seen for conflict-intensity (the CI-index). There is less exports in industries with a high risk of conflicts, but high institutional quality in the destination market may reduce this negative effect. It should be noted that the simple correlation between the RS-index and the CI-index is only 0.08, which means that they can be used simultaneous in the same model – they seem to absorb separate and distinct features of industries.

[Table 2 about here]

The results for the selection equation for exports are generally similar to those for the volume equation, although the CI-index returns a somewhat puzzling result. The inflation step in the ZOIB model estimates the likelihood of observing zero trade, which means that we would expect the opposite signs for the variables in the ZOIB and Heckman selection estimations. This is not the case: instead, the ZOIB and Heckman selection estimations suggest contradictory impacts of the CI-index.

The results for offshoring exhibit a somewhat different pattern. Higher institutional quality in the partner country has a positive impact on the volume of offshoring, but does not have any significant impact in the selection equations. The RS-index and the interaction between institutions and the RS-index have the expected effects on the volume of offshoring – a negative impact that is to some moderated by high institutional quality. The selection equation generates similar results but with an insignificant impact of the RS-index.

The results for conflict intensity are interesting. The CI-index have the expected negative impact on the extensive margin but a positive impact on the volume of offshoring. However, the interaction between institutional quality and conflict intensity has the expected positive sign.

As suggested by the interaction terms, the marginal impact of institutions on trade is not constant. Instead, it varies over the values of the CS- and RS-indices. In Figure 1, we show the marginal impact of institutional quality on exports and offshoring over the observed range of the RS and CI indices. The top row of Figure 1 shows exports and the bottom row depicts offshoring. The results indicate that the marginal impact of institutions is increasing in both the RS-index and the CI-index.

In most cases, the marginal effects vary over the RS and CI-indices in such a way as to include both insignificant and significant values. That is, the impact of institutional quality as a vehicle facilitating trade increases with the degree of seller-buyer interactions and conflict intensity in an industry. We also see that for high values of the CS- and RS-index, the marginal impact of institutional quality on trade is positive and significant in three cases out of four. We also note that the marginal impact of institutional quality on offshoring is positive over the whole range of the CI-index. The significance of the interaction terms highlight the possibility of misleading results when evaluating the effect of institutions at a specific value of the RS or CI-index. It should be noted that our regressions are performed using centered variables, so that the direct effects displayed in the regression tables are evaluated at the mean of the RS- and CI-index respectively.

[Figure 1 about here]

Comparing estimators, we find that the OLS model with fixed country effects and the Heckman model give very similar coefficient estimates, both regarding the size and the significance level of coefficients.[12] The coefficients from the ZOIB models are not directly comparable to those from the OLS and Heckman estimations, since the left hand side variables are not the same. Hence, for the estimations of the intensive margins, we conclude that even though the coefficient estimates may vary to some extent, results are not dependent on the use of any specific estimation technique. To simplify the presentation we therefore proceed and present models using OLS estimations with country fixed effects. In addition to its simplicity, this is also the most common estimation technique in gravity models, although most other models employ regional rather than country fixed effects.

In summary, the results from Table 2 show that institutions, relationship-specificity, and conflict risk have a systematic effect on exports and offshoring. A weak institutional environment hamper both exports and offshoring in general and exports and offshoring in conflict- and contract intensive goods in particular (though the impact of conflict risk on offshoring is less clear). Translating these findings into a context where the role of non-OECD economies is expected to increase suggests that many firms may find it difficult to restructure their export relationships. The institutional

[12]For the exclusion restriction, we follow Bernard and Jensen (2004) and apply the skill intensity of the firm to explain selection to internationalization. Tests indicate that the exclusion restriction is valid (p-val 0.000).

environment in many non-OECD countries is weaker, which suggest that there is a higher threshold for engaging in trade. In particular, there is reason to expect that industries recording high values for the RS- and CI-indices may find it hard to shift from exporting from OECD to non-OECD destinations. Some changes in the structure of trade could therefore be expected.

In Table 3 we continue and look at asymmetries. More specifically, we analyze how the effects of institutions and related variables vary across countries with different levels of economic growth and institutional quality. The first two columns for exports as well as for offshoring compare countries with different levels of institutional quality. Countries are defined in the "Good institutions" group if the value for $Inst_{cj}$ is above average, and in the "Weak institutions" group otherwise. As pointed out by e.g. Behrens et al. (2013), a distinct feature of the crisis is its magnification effect on trade. The last three columns therefore explore the link between economic growth, trade, and institutions.

A first point to note from columns 1-2 and 6-7 is that that the marginal impact of institutional quality (evaluated at the mean of the CS- and RS-index) is larger in countries with below-average institutional quality. This asymmetry holds both for exports and offshoring and the difference between countries with high and low institutional quality is significant. For exports, the marginal effect of institutional quality turns from negative to significantly positive as we go from countries with high institutional quality to low institutional quality. For offshoring, the marginal effect of institutional quality is approximately three times higher in countries with weak institutions.

[Table 3 about here]

A second notable point is that the inclusion of per capita income growth has a strong positive impact on exports (columns 8-10), and that it tends to erase the correlation between exports and institutional quality. For exports, we see a reduction in the significance of the marginal effect of institutional quality when per capita income is appended; for offshoring, the significance of the marginal effect of institutional quality vanishes when per capita income growth is included. However, despite the strong impact of economic growth on exports, there is no significant impact of per capita income growth on offshoring (columns 3-5). Exports are drawn to growing economies– even when the institutional environment is weak – while offshoring is less affected. This pattern of reallocations was also found in the descriptive statistics above. For offshoring, it should be noted that income growth has two opposite effects that may cancel each other. On the one hand, income

growth and development are expected to raise variety of products available for offshoring, suggesting a positive effect. On the other hand, high growth is associated with increasing wages and prices, which could have a negative impact on offshoring. However, the inclusion of per capita income growth does not destroy the significance of the interaction between institutional quality and the RS and CI indices. The result that a better institutional environment enhances trade in both contract intensive- and conflict intensive sectors is a robust finding.

Columns 4-5 and 9-10 explore the impact of growth further by appending interaction terms between income growth, institutional quality (*pci-growth*Inst*), and relationship-specificity (*pci-growth*Inst*RS*), and conflict-intensity(*pci-growth*Inst*CI*). It can be seen that there are no systematic asymmetric effects of income growth across countries with different levels of institutional quality, nor is there any evidence of significant interaction effects between growth, institutions and the RS-index. Only, the interaction between institutional quality, growth, and the CI-index records in the export equation records a significant negative coefficient.

Apart from the impact of institutions on the selection of trade partners and trade volumes, it is also possible that institutions may influence the duration of trade spells. In new and uncertain markets, we expect to see relatively short-lived trade flows (Aeberhardt et al., 2011; Araujo, et al., 2012; Söderlund and Tingvall, 2013). Figure 2 graph descriptive statistics on the survival probability of trade flows with respect to different firm and country characteristics. More precisely, Figure 2 shows that trade relations with countries with weak institutions are relatively short-lived, but that income growth in beneficial for trade survival. It can also be seen that the duration of trade spells is increasing with firm size. These patterns hold for exports as well as for offshoring.

[Figure 2 about here]

Table 4 presents the results of a duration analysis that allows us to explore trade survival in closer detail. Column 1 present a basic model for export survival, columns 2-3 explore non-linearities in the impact of institutional quality and columns 4-6 contain separate estimations for small, medium-sized, and large firms. Columns 7-9 repeat this exercise for offshoring. The impact of per capita income growth on spell length is included in all estimation in Table 4. The table presents the coefficients of the hazard rate. A coefficient larger (smaller) than unity suggests an increase (decrease) in hazard rates.

The estimation results in Table 4 confirm the patterns shown in Figure 2. First, a stronger institutional environment reduces the hazard of exit for both exports and offshoring. In all models, both the direct impact of institutions (row 1) and the marginal impact of institutions indicate that better institutions increase trade survival. The only exception is exports to countries with strong institutions. The impact of institutions on survival is particularly strong for countries with relatively weak institutions. Higher values for the RS- and CI-indices tend to raise the exit hazard for exports while the estimated effects are mostly insignificant for offshoring. The asymmetry imposed by industry differences in RS- and CI-intensity and their interaction with institutional quality is not as pronounced for trade survival as for the intensive margin of trade. For offshoring, the interaction between institutional quality and the RS- and CI- index is insignificant and does not appear to influence trade survival to any great extent. For exports there is a tendency for good institutions to have a particularly strong impact on trade survival in contract-intensive industries.

[Table 4 about here]

A clear result is that growth rates matter. The estimated coefficient for the direct impact of per capita income growth is well below zero and highly significant in most of the estimations. The same result is obtained from the marginal effect of per capita income growth on trade survival; higher growth rates reduce exit rates. For exports, the largest impact of growth is recorded for the sub-group of countries with low institutional quality suggesting that, in terms of trade survival, these countries not only benefits more from increased institutional quality but also more from growth than other countries with more developed institutions. It can also be noted that, the impact of growth seems to be rather homogenous across industries with respect to their degree of RS- and CI-intensity.

Another tendency found in Table 4 is that the effects of institutions and growth on trade survival are not identical across different firm size categories. Generalizing, the results suggest that smaller exporting firms are more sensitive to the effects of institutions and growth – the reduction in the exit hazard that follows from a good institutional environment and healthy economic growth is reduced more for the small firm category than for the larger firms. In the case of offshoring, we see the same strong effect of economic growth on smaller firms, but the impact of institutional quality does not differ much between the firm size categories.

The main conclusion from Table 6 is that institutions matter for the survival and duration of trade relationships, but that there is also a strong impact of economic growth, especially for smaller firms. Considering the expected shift in trade structure towards non-OECD markets, this suggests partly off-setting effects. The important non-OECD markets are characterized by relatively high growth rates as well as relatively weak institutional environments. An optimistic interpretation and projection is that the growth prospects in these countries provide the motives for Western firms to invest in learning about the institutional environment. As long as high growth rates and prospects for future increases in sales justify the necessary investments, it is possible that even relatively small firms will be able to expand their presence in the non-OECD region. However, a substantial reduction in non-OECD growth rates would change the picture dramatically.

6. Summary and conclusions

A signature of the 2008/09 crisis was the dramatic collapse in world trade. During the last quarter of 2008 and first quarter 2009, world GDP fell by approximately three percent, while world trade declined by almost 30 percent. Despite the fact that no theoretical model has been able to fully explain the collapse in trade, empirical studies indicate that falling demand seems to be a key factor.

While the crisis led to reduced demand from Western Europe and North America, opposite trends could be found in several emerging markets that managed to sustain stable growth figures throughout the crisis. That is, aggregate demand has swiftly shifted away from the traditional OECD markets toward new emerging non-OECD markets. It is not likely that the increasing importance of non-traditional markets is a temporary phenomenon – instead, most long-term projections suggest that their market shares will increase further in the future.

The shift from traditional Westerns markets to new markets largely outside the OECD poses many challenges for European companies. The maybe most challenging task is related to dealing with an entirely new institutional environment. The institutional barriers that have to be overcome to successfully enter new markets range from knowledge about rules and regulations to cultural aspects of business conduct. Yet, little is known about how the large institutional differences between Europe and emerging markets in general may come to influence the determinants and patterns of European trade.

Using Swedish firm-level data we explore the consequences of the increasing role of non-OECD countries in international trade. A main concern is how cross country differences in economic

growth and institutional quality affect exports and offshoring. In particular, we focus on the interaction between sectoral differences in trade conflicts and buyer-seller interactions and their interaction with institutional quality in target economies. For this we introduce a new index of conflict-intensity, which identifies sectors where the risk of trade disputes is particularly high. Industry differences in buyer-seller interactions are captured using the Nunn (2007) index of relationship-specificity.

The results from this study suggest that exports are strongly attracted to rapidly growing markets whereas there are no signs of any corresponding growth effect for offshoring. That is, trade in general and exports in particular have been diverted from the OECD region toward rapidly growing non-OECD economies that generally exhibit a lower institutional quality than the traditional OECD markets. It should also be noted that weaker institutional quality in non-OECD economies hampers the growth driven redirection of trade. In this vein, we found that countries with relatively weak institutions are the ones that benefit the most from increased institutional quality– this holds for both the volume of trade and the duration of trade flows.

When trade shifts toward countries with relatively weak institutions, the impact of institutional quality is not symmetric across goods and industries. Exports of goods exhibiting high relationship-specificity and high conflict-intensity are particularly challenged by weak institutions in target economies. For offshoring the importance of relationship-specificity seems to be even greater than for exports, while the opposite holds for conflict-intensity. Considering the seller-buyer engagement that offshoring often requires, the relatively high sensitivity of relationship-specificity is expected. Examples of goods that rank high in contract intensity and that will be the most difficult to redirect toward non-OECD markets include professional and scientific equipment and transport equipment, whereas goods that do not require much seller-buyer interactions, such as non-ferrous metals and petroleum refineries, are less affected by institutional quality. Looking at conflict intensity, we see that pharmaceutical products, iron and steel, and motor vehicles rank high in conflict intensity, whereas there are no conflicts recorded in the WTO dispute settlement body in goods such as jewelry, toys, sports equipment and wood products.

It is also found that trade relations with countries that have weak institutions are characterized by relatively short-lived trade spells. The problem of upholding long-lived trade relations with partners located in markets with weak institutions is largest for small firms, which are particularly sensitive to uncertainty and high trade costs. Hence, the reshaping of global trade patterns has asymmetric effects on exports and offshoring, and both trade flows and the duration of trade are hampered by

weak institutions. These findings suggest that shifting trade toward non-OECD countries will necessitate industrial restructuring and that small firms will face particular challenges related to the institutional environment in emerging markets. Considering that knowledge about foreign institutional environments to some extent is a public good, this may motivate coordinated investments in learning and information sharing among small firms. Although the analysis focuses on Sweden, the results are generalizable to many other developed countries. Most of the OECD economies will face similar changes in their trade structure in the coming years.

References

Aeberhaedt, R., Buono, I., & Fadinger, H. (2011). Learning Incomplete Contracts and Export Dynamics: Theory and Evidence from French Firms. Vienna Economics Papers 1006, University of Vienna, Department of Economics.

Altomonte, C. and Békés, G., (2010), "Trade Complexity and Productivity," CeFiG Working Papers 12, Center for Firms in the Global Economy, revised 25 Oct 2010

Anderson, J.E., & Marcouiller, D. (2002). Insecurity and the Pattern of Trade: An Empirical Investigation. Review of Economics and Statistics, 84(2), 342-352.

Anderson, J.E. & Wincoop, E. (2003). Gravity with Gravitas: A Solution to the Border Puzzle. American Economic Review, 93(1),170-192.

Antràs, P. (2003). Firms, Contracts, and Trade Structure. Quarterly Journal of Economics, 118(4), 1375-1418.

Araujo, L., Mion, G., & Orneals, E. (2012). Institutions and Export Dynamics. CEPR Discussion Paper 8809. London: Centre for Economic Policy Research.

Awokuse, T.O. & Yin, H. (2010). Does Stronger Intellectual Property Rights Protection Induce More Bilateral Trade? Evidence from China's Imports. World Development, 38(8), 1094-1104.

Baldwin, R. (2009). (ed.) "The Great Trade Collapse: Causes, Consequences and Prospects", CEPR. (available online at http://www.voxeu.org/index.php?q=node/4297).

Bartel, A., Lach, S and Sicherman, N., (2005), "Outsourcing and Technological Change", NBER WP. No. 11158.

Behrens, K., Corcos, G. & Mion, G., (2013) "Trade Crisis? What Trade Crisis?", Review of Economics and Statistics, 95(2), 702-09.

Belloc, M. (2006). Institutions and International Trade: A Reconsideration of Comparative Advantage. Journal of Economic Surveys, 20(1), 3-26.

Bénassy-Quéré, A., Decreux, Y., Fontagné, L., & Khoudour-Castéras, D. (2009). "Is Trade the Victim of Globalisation?," La Lettre du CEPII, CEPII research center, issue 291.

Bergstrand, J.H. (1990). The Heckscher-Ohlin-Samuelson Model, the Linder Hypothesis and the Determinants of Bilateral Intra-industry Trade. Economic Journal, 100(403), 1216-1229.

Bernard, A. and Jensen, J.B. (2004). Why some firms export. Review of Economics and Statistics, 86(2), 561-569.

Bernasconi, C. (2009) "New evidence for the Linder Hypothesis and the two extensive margins of trade", Mimeo, University of Zurich, February.

Casaburi, L. & Gattai, V., (2009), "Why FDI? An Empirical Assessment Based on Contractual Incompleteness and Dissipation of Intangible Assets," Working Papers 164, University of Milano-Bicocca, Department of Economics.

Chor, D. & Manova, K. (2010). On the cliff and back? credit conditions and international trade during the global financial crisis. Technical report, NBER Working Paper, 16174.

Disdier, A-C., & Head, K. (2008), "The Puzzling Persistence of the Distance Effect on Bilateral Trade," The Review of Economics and Statistics, 90(1), 37-48.

Evenett, S.J. (2009), Crisis-era protectionism one year after the Washington G20 meeting, in Baldwin,R. (ed.), The Great Trade Collapse: Causes, Consequences and Prospects, CEPR. available at http://www.voxeu.org/index.php?q=node/4297).

Feenstra, R.C. (2004). Advanced International Trade: Theory and Evidence. Princeton and Oxford: Princeton University Press.

Ferguson, S. & Formai, S., (2013), Institution-Driven Comparative Advantage, Complex Goods and Organizational Choice, Journal of International Economics, 90(1), 193-200.

Ferrari, S.L.P. & Cribari-Neto, F. 2004. Beta regression for modelling rates and proportions. Journal of Applied Statistics 31(7): 799-815.

Grossman, S.J. & Hart, O.D. (1986). The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration. Journal of Political Economy, 94(6), 691-719.

Grossman, G., Rossi-Hansberg, E., (2012). Task Trade Betweeen Similar Countries, Econometrica, 80(2), 593-629.

Hallak, J.C. (2010), "A product-quality view of the Linder hypothesis", The Review of Economics and Statistics, 92(3), 453-466.

Hart, O., & Moore, J. (1990). Property Rights and the Nature of the Firm. Journal of Political Economy, 98 (6), 1119-1158.

Hijzen, A. (2005), "A bird's eye view of international outsourcing: data, measurement and labour demand", Economie Internationale, 104, 45-63.

Horn, H., Johannesson, L. and Mavroidis, P.C. (2011), “The WTO Dispute Settlement System 1995-2010: Some Descriptive Statistics”, Journal of World Trade 45(6), 1107-1138.

Johanson, J. & Vahlne, J-E. (1977), “The internationalisation process of the firm - A model of knowledge development and increasing market commitment”, Journal of International Business Studies, 8(1), 23-32.

Johanson, J. & Wiedersheim-Paul, F. (1975) “The internationalization of the firm: Four Swedish cases”, Journal of Management Studies, 12(3), 305-322.

Kaufmann, D., Kraay, A., & Zoido-Lobatón, P. (1999). Aggregating Governance Indicators. World Bank Policy Research Working Paper Series 2195.

Koenig, P., Mayneris, F., & Poncet, S. (2010). "Local export spillovers in France," European Economic Review, Elsevier, vol. 54(4), pages 622-641.

Kokko, A. & Tingvall, Gustavsson, P. (2014), “Distance, Transaction Costs, and Preferences in European Trade,” Forthcoming, International Trade journal.

Kukenova, M. and Strieborny, M., (2009), "Investment in Relationship-Specific Assets: Does Finance Matter?," MPRA Paper 15229, University Library of Munich, Germany.

Levchenko, A. (2007). Institutional Quality and International Trade. Review of Economic Studies, 74(3), 791-819.

Levchenko, A.A., Lewis, L.T. and Tesar, L.L. (2010), The Collapse of International Trade During the 2008-2009 Crisis: In Search of the Smoking Gun. NBER Working Paper Series, No. 16006.

Linder, S. (1961). “An Essay on Trade and Transformation”, Stockholm: Almqvist & Wicksell.

Márquez-Ramos, L., Martínez-Zarzosa, I. and Suárez-Burguet, C. (2012). Trade Policy versus Institutional Trade Barriers: An Application Using "Good Old" OLS. Economics: The Open-Access, Open-Assessment E-Journal, 6(11), 1-38.

Massini, S., Pern-Ajchariyawong, N., & Lewin, A.Y. (2010). Role of corporate-wide offshoring strategy on offshoring drivers, risks and performance. Industry and Innovation, 17(4), 337-371.

Mayer, T., & Zignago, S. (2006). Notes on CEPII’s distance measures. MPRA Paper 26469.

Méon, P., & Sekkat, K. (2006). Institutional quality and trade: Which institutions? Which trade? DULBEA working paper 06-06.RS, Universite libre de Bruxelles.

North, D.C. (1991). Institutions. Journal of Economic Perspectives 5(1), 97-112.

Nunn, N. (2007). Relationship-Specificity, Incomplete Contracts, and the Pattern of Trade. Quarterly Journal of Economics, 122(2), 569-600.

O’Neill, J. (2001), ”Building Better Global Economic BRICs”, Global Economics Paper No. 66, Goldman Sachs, London.

Ornelas, E., & Turner, J.L. (2008). Trade Liberalization, Outsourcing, and the Hold-Up Problem. Journal of International Economics, 74(1), 225-241.

Paolino, P. (2001). Maximum likelihood estimation of models with beta-distributed dependent variables. Political Analysis 9(4): 325-346.

Ranjan, P., & Lee, J.Y. (2007). Contract Enforcement and International Trade. Economics and Politics, 19(2), 191-218.

Rauch, J.E. (1999). Networks versus markets in international trade. Journal of International Economics, 48(1), 7-35.

Roberts, M.J., & Tybout, J.R. (1997). The Decision to Export in Colombia: An Empirical Model of Entry with Sunk Costs, American Economic Review, 87(4), 545-64.

Smithson, M. & Verkuilen, J. (2006). A better lemon squeezer? Maximum likelihood regression with beta-distributed dependent variables. Psychological Methods 11(1): 54-71.

Söderlund, B., & Tingvall, P., (forthcoming) Dynamic Effects of Institutions on Firm-Level Exports, Review of World Economics.

Tinbergen, J. (1962). Shaping the World Economy: Suggestions for an International Economic Policy. New York: The Twentieth Century Fund. Not cited in the paper. Please insert citation or delete from list.

Turrini, A., & Ypersele, T. (2010). Traders, Courts, and the Border Effect Puzzle. Regional Science and Urban Economics, 40(2-3), 81-91.

Williamson, O.E. (1985). The Economic New Institutions of Capitalism. JNY: Free Press.

Williamson, O.E. (1996). The Mechanisms of Governance. Oxford: Oxford University Press.

Williamson, O.E. (2000). The New Institutional Economics: Taking Stock, Looking Ahead. Journal of Economic Literature, 38(3), 595-613.

Wilson, D., Trivedi, K., Carlson, S. & Ursúa J. (2011), "The BRICs 10 Years On: Halfway Through the Great Transformation", Global Economics Paper No. 208, Goldman Sachs Global Economics, Commodities and Strategy Research, New York: Goldman Sachs.

Tables and figures

Table 1. Comparison of trade patterns with OECD and non-OECD countries.

	Exports			**Offshoring**		
	All	*OECD*	*non-OECD*	*All*	*OECD*	*non-OECD*
Relative change in trade volume, 2006-2009	-13 %	-17 %	1.6%	-0.9%	-2%	7%
Avg. CI-index	3.30	3.39	3.18	3.88	3.89	3.81
Avg. RS-index	0.52	0.52	0.52	0.52	0.52	0.54
Avg. inst	7.21	7.69	6.518	7.58	7.77	6.70

Share of total trade to OECD countries for different types of firms

	Exports	Offshoring
- **Small size firms**	86%	89%
- **Medium size firms**	85%	89%
- **Large firm**	79%	91%

Ratios, 2006-2009	OECD/non-OECD
Per capita income	3.59
Income growth	0.35

Figure 1. Marginal effect of institutional quality over the observed range of the CI- and RS-index.

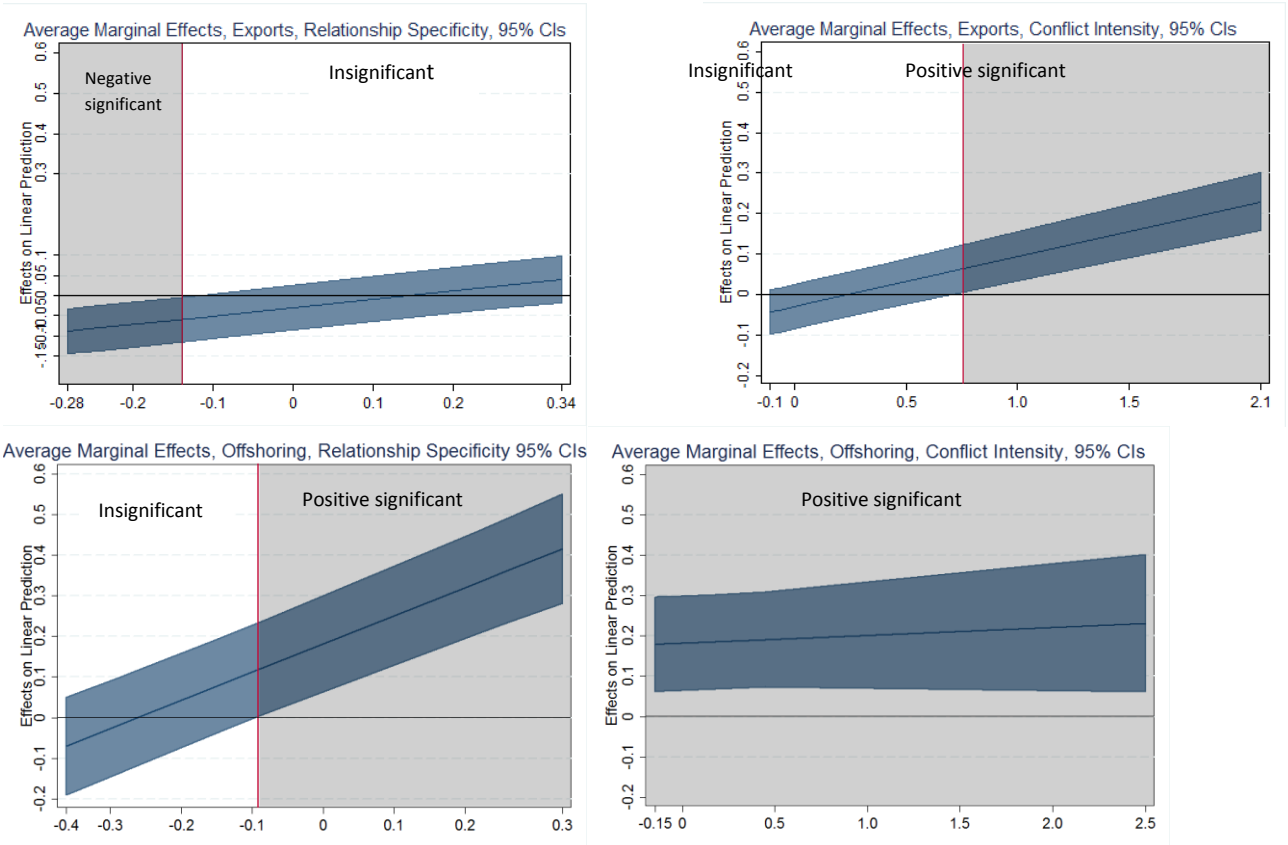


Table 2. Exports and Offshoring. Different estimators

	Exports					Offshoring				
	Intensive margin					Intensive margin				
	1. OLS	**2.Heckman Target**	**3.ZOIB Proportio**	**4.ZOIB Inflate**	**5.Heckman Selection**	**6.OLS**	**7.Heckman Target**	**8.ZOIB Proportio**	**9.ZOIB Inflate**	**10.Heckman Selection**
TFP_{ijt}	2.00e-05	1.98e-05	2.20e-06	1.05e-05	-4.07e-06	1.35e-05	1.35e-05	2.59e-06	-7.46e-06	5.67e-07
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.225)
***ln*(sales)$_{ijt}$**	0.7721	0.8001	-0.0155	-0.0598	0.1781	0.4987	0.5792	-0.1025	-0.1931	0.1632
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
$Foreign_{ijt}$	0.0960	0.1055	0.0071	-0.1873	0.0460	0.2043	0.2482	0.0418	-0.1936	0.0935
	(0.000)***	(0.000)***	(0.051)*	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
$Tariff_{ijct}$	-0.0263	-0.0262	-0.0076	0.0064	0.0072	0.0228	0.0359	0.0037	-0.0260	0.0249
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.074)*	(0.036)**	(0.467)	(0.146)	(0.016)**
***ln*(GDP)$_{ct}$**	1.5380	1.6287	0.0023	0.0130	0.5572	1.2500	1.9476	0.0152	0.0285	1.1696
	(0.000)***	(0.000)***	(0.952)	(0.905)	(0.000)***	(0.000)***	(0.000)***	(0.800)	(0.946)	(0.000)***
$Skillshare_{ijt}$				-1.4762	0.7285				-0.0794	0.0978
				(0.000)***	(0.000)***				(0.167)	(0.004)***
$Inst_{ct}$	-0.0301	-0.0119	0.0507	-0.1590	0.1164	0.1811	0.1760	0.1103	0.0903	-0.0130
	(0.279)	(0.672)	(0.000)***	(0.000)***	(0.000)***	(0.002)***	(0.007)***	(0.000)***	(0.171)	(0.661)
RS_j	-0.9881	-0.9917	-0.2628	0.2685	-0.1256	-1.7335	-1.7035	-0.3967	-0.1139	0.0416
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.008)***	(0.115)
CI_j	-0.1041	-0.1144	-0.0417	-0.1169	-0.0613	0.2137	0.2036	0.0470	0.0132	-0.0261
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.339)	(0.002)***
RS_j *$Inst_{ct}$	0.2091	0.2158	0.0029	-0.0918	0.0523	0.6960	0.7147	0.0927	-0.0829	0.0569
	(0.000)***	(0.000)***	(0.757)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.015)**	(0.007)***
CI_j*$Inst_{ct}$	0.1236	0.1212	0.0260	0.0248	0.0003	0.0198	0.0177	0.0051	-0.0198	0.0133
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.939)	(0.448)	(0.520)	(0.477)	(0.048)**	(0.033)**
Marginal eff [(a)]	-0.0299	-0.0121	0.0063			0.1822	0.1769	0.0024		
Inst quality	(0.284)	(0.666)	(0.000)***			(0.002)***	(0.007)***	(0.120)		
Obs	517039	517039	979190	979190	979190	184666	184666	405763	405763	405763
Countrydum	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Period-dum	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Notes: Permanent non-trading firms excluded. p-value within parenthesis (.) p-values based on robust standard errors clustered by country-year.

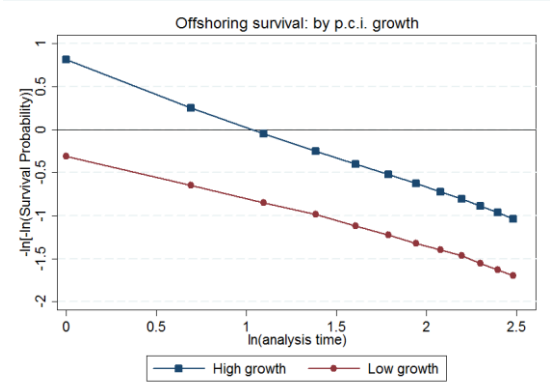
***,**,* indicate significance at the 10, 5, and 1 percent level, respectively.[(a)] Marginal effect of institutional quality evaluated at the mean of the *RS*- and *CS*-index.

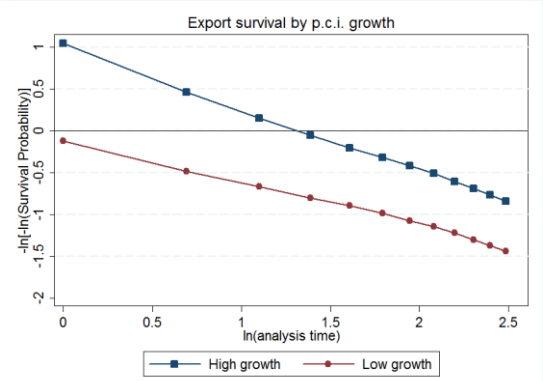
Table 3.Asymmetric effects

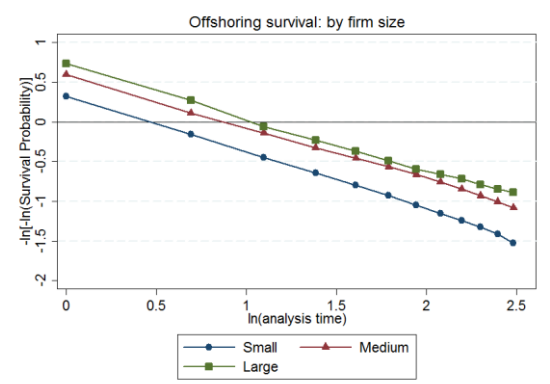
	Offshoring - Intensive margin					Exports - Intensive margin				
	1.Good inst	**2.Weak inst**	**3.Pci-growth**	**4.pci-interac.**	**5. pci-interac.**	**6.Good inst**	**7.Weak inst**	**8.Pci-growth**	**9.pci-interac.**	**10.pci-interac.**
$Inst_{ct}$	0.1376	0.4277	0.1097	0.0951	0.1098	-0.0955	0.1362	-0.0228	-0.0318	-0.0296
	(0.054)*	(0.011)**	(0.090)*	(0.143)	(0.090)*	(0.019)**	(0.003)***	(0.430)	(0.287)	(0.320)
RS-$index_j$	-1.6255	-0.8560	-1.7206	-1.7201	-1.7220	-1.0437	-0.9824	-0.9896	-0.9898	-0.9857
	(0.000)***	(0.008)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
CI-$index_j$	0.1122	0.2841	0.1972	0.1977	0.1966	-0.0911	-0.1132	-0.0954	-0.0952	-0.0997
	(0.037)**	(0.023)**	(0.000)***	(0.000)***	(0.000)***	(0.001)***	(0.008)***	(0.000)***	(0.000)***	(0.000)***
RS_j *$Inst_{ct}$	0.6279	1.4757	0.6970	0.6966	0.6997	0.2536	0.2028	0.2114	0.2116	0.1994
	(0.000)***	(0.001)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.037)**	(0.000)***	(0.000)***	(0.000)***
CI_j*$Inst_{ct}$	0.0638	-0.3663	0.0280	0.0276	0.0294	0.0915	-0.0455	0.1190	0.1188	0.1367
	(0.000)***	(0.007)***	(0.304)	(0.311)	(0.000)***	(0.000)***	(0.354)	(0.000)***	(0.000)***	(0.000)***
Pci-$growth_{ct}$*			-0.3311	-0.7740	-0.3294			1.1282	0.9911	1.0122
			(0.589)	(0.272)	(0.591)			(0.000)***	(0.000)***	(0.000)***
Pci-$growth_{ct}$* $Inst_{ct}$				0.4457					0.2755	
				(0.269)					(0.196)	
Pci-$growth_{ct}$* $Inst_{ct}$*RS_j					-0.1166					0.5510
					(0.939)					(0.127)
Pci-$growth_{ct}$* $Inst_{ct}$*CI_j					-0.0517					-0.7003
					(0.923)					(0.009)***
Marginal eff [(a)]	0.1384	0.4278	0.1109	0.1047	0.1109	-0.0960	0.1338	-0.0226	-0.0253	-0.0248
Inst quality	(0.052)*	(0.010)**	(0.086)***	(0.104)	(0.086)***	(0.018)**	(0.003)***	(0.435)	(0.383)	(0.393)
Country dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Period dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Full set of controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	171507	13159	162035	162035	162035	419875	97164	450763	450763	450763

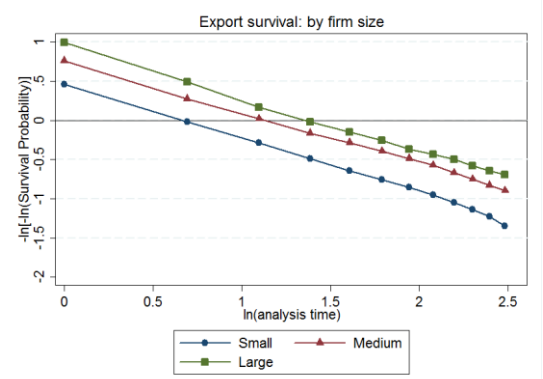
Note: OLS with country fixed effects, robust standard errors clustered by country-year, p-value within parenthesis (.). See Table 2 for full variable specification.
***,**,* indicate significance at the 10, 5, and 1 percent level, respectively.[(a)] Marginal effect of institutional quality evaluated at the mean of the *RS*- and *CS*-index.

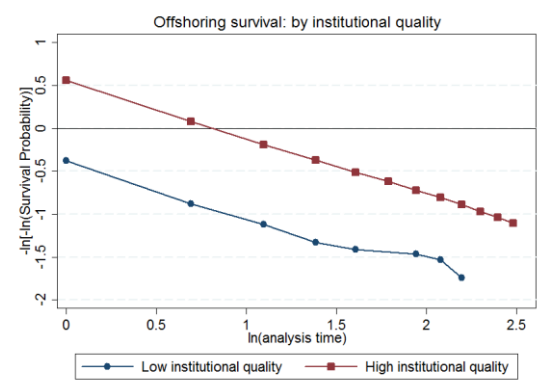
Figure 2. Trade survival. By firm size, institutional quality, and income growth











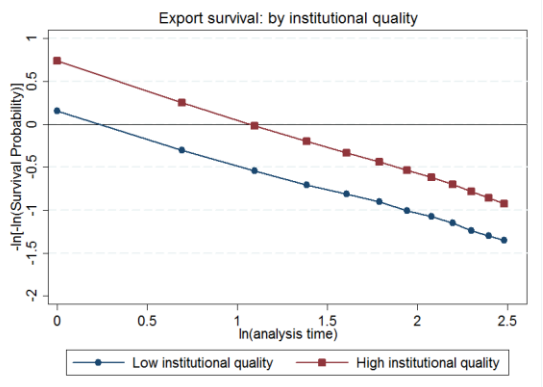


Table 4. Duration Models

	Offshoring						Exports					
Variable	**1. Base model**	**2. Low inst. quality**	**3.High inst. quality**	**4. Small firms**	**5. Md size firms**	**6. Large firms**	**7 . Base model**	**8. Low inst. quality**	**9. High inst. quality**	**10. Small firms**	**11. Md size firms**	**12. Large firms**
$Inst_{ct}$	0.9025	0.9052	0.9440	0.9302	0.9084	0.8728	0.8900	0.9047	0.9424	0.8875	0.8864	0.9047
	(0.000)***	(0.003)***	(0.210)	(0.004)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.184)	(0.000)***	(0.000)***	(0.000)***
$RS\text{-}index_j$	1.0532	0.9509	1.4722	1.1023	1.0537	0.9429	1.1011	1.1172	1.1467	1.0964	1.0451	1.6618
	(0.412)	(0.281)	(0.004)***	(0.340)	(0.428)	(0.454)	(0.000)***	(0.000)***	(0.000)***	(0.002)***	(0.021)***	(0.000)***
$CI\text{-}index_j$	0.9932	0.9750	0.9903	0.9897	0.9625	0.9681	1.0339	1.0362	1.0312	1.0056	1.0311	1.0041
	(0.722)	(0.120)	(0.837)	(0.825)	(0.179)	(0.167)	(0.000)***	(0.012)**	(0.044)**	(0.834)	(0.040)**	(0.623)
$Pci\text{-}growth_{ct}$	0.2156	0.2178	0.0848	0.1519	0.2699	0.4645	0.3579	0.6707	0.0525	0.2059	0.3859	0.6326
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.134)	(0.002)***	(0.383)	(0.000)***	(0.000)***	(0.009)***	(0.302)
CI_j*$Pci\text{-}growth_{ct}$				0.6262	0.4368	0.7666				0.3740	0.5224	0.5001
				(0.577)	(0.005)***	(0.572)				(0.157)	(0.150)	(0.047)**
RS_j *Pci-growth				0.2885	0.5723	0.5006				0.8390	1.5401	9.1369
				(0.469)	(0.672)	(0.573)				(0.822)	(0.398)	(0.058)
CI_j*$Inst_{ct}$	0.9890	1.0509	0.9971	0.9769	1.0168	1.0023	1.0089	1.0112	1.0149	0.9766	1.0250	0.9902
	(0.416)	(0.087)*	(0.923)	(0.498)	(0.487)	(0.883)	(0.193)	(0.412)	(0.310)	(0.429)	(0.084)*	(0.247)
RS_j *$Inst_{ct}$	0.9541	0.9551	0.7725	0.9419	0.9562	0.9701	0.9667	0.9885	0.9240	0.9422	0.9945	1.0261
	(0.346)	(0.518)	(0.005)***	(0.409)	(0.460)	(0.578)	(0.033)**	(0.645)	(0.041)**	(0.046)**	(0.779)	(0.353)
Marginal eff [(a)]	-0.0030	-0.0082	-0.0009	-0.0033	-0.0049	-0.0016	-0.0038	-0.0019	-0.0018	-0.0055	-0.0067	-0.0009
Inst quality	(0.001)***	(0.002)***	(0.213)	(0.057)*	(0.002)***	(0.004)***	(0.000)***	(0.002)***	(0.260)	(0.002)***	(0.001)***	(0.002)***
Marginal eff [(b)]	-0.0441	-0.1250	-0.0391	-0.0866	-0.0702	-0.0095	-0.0332	-0.0076	-0.0857	-0.0706	-0.0506	-0.0043
Pci growth	(0.002)***	(0.003)***	(0.001)***	(0.021)**	(0.006)***	(0.160)	(0.007)***	(0.347)	(0.012)**	(0.004)***	(0.013)**	(0.263)
Control vars.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Obs.	49 130	11 308	37 822	9 505	31 302	8 311	121 222	51 344	69 878	24 497	77 644	19 067

Note: Robust standard errors clustered by country-year, p-value within parenthesis (.). ***,**,* indicate significance at the 10, 5, and 1 percent level, respectively. Control variables not displayed include: *ln*(distance). TFP, firm size, *ln*(GDP) and Tariff. Firm size groups corresponds 30-49, 50-499, 500+ employees respectively. [(a)] Marginal effect of institutional quality evaluated at the mean of the *RS*- and *CS*-index, not Hazard rate. [(b)] Marginal effect of per capita income evaluated at the mean of the *RS*- and *CS*-index, not Hazard rate.