

# Grin and Bear It: Producer-financed Exports from an Emerging Market

Banu Demir  
Bilkent University

Beata Javorcik  
University of Oxford and CEPR

May 2014

## **Abstract**

This study uses a unique dataset to provide the first comprehensive test of the theory of export financing. We extend the existing literature by drawing attention to the theoretical and empirical relationship between the extent of competition in the export market and the choice of financing terms. Our dataset covers the universe of Turkey's exports disaggregated by product, destination, and financing terms for the period 2004-2012. The results support theoretical predictions. The prevalence of exporter-financed exports (relative to importer or bank-financed exports) increases with the institutional quality in the importing country, with this effect being stronger for differentiated products. Exporter-financed exports are more likely to be destined for countries with a less efficient banking sector and increase with the competition level in the destination country. Our identification strategy takes advantage of two exogenous shocks: the end of the Multi-fiber Arrangement (MFA) and the Great Recession. Using a difference-in-differences approach, we find that exporter-financed exports to the European Union disproportionately increased relative to exports on other financing terms in the post-MFA period in products where Turkish competitors initially faced binding quotas. As Turkey was not bound by EU quotas before the end of the MFA, these results are consistent with an increase in competition pushing Turkish exporters to offer trade financing. We also find that exporter-financed exports increased relative to other exports when destined for countries afflicted by the recent financial crisis.

*JEL Codes:* FXX.

*Keywords:* trade financing, competition, Multi-fiber Arrangement, Great Recession.

# 1 Introduction

This study provides the first comprehensive empirical test of the theory of financing terms in international trade. In addition to considering the standard determinants of export financing terms, it examines the link between competition in the export market and the choice of financing terms, an issue that has not been explored in the existing literature. Our exercise is motivated with a simple model in the spirit of Antràs and Foley (2013) and Schmidt-Eisenlohr (2013) and tested using Turkish export data disaggregated by financing terms, destination country and the 10-digit Harmonized System (HS) product, available for the period 2004-2012.

We consider three broad payment methods (financing terms): open account (OA), cash in advance (CIA), and letter of credit (LC). In transactions financed with OA, the importer pays after the arrival of the goods in the destination. In CIA-financed transactions, the importer pays before the exporter ships the goods to the destination. In LC-financed transactions, the importer's bank promises to pay for the goods on behalf of the importer provided the exporter meets all requirements specified in the contract.

The model yields several predictions. First, the attractiveness of exporter financing (OA) relative to other financing terms increases with the institutional quality in the importing country, and the magnitude of the effect rises as the degree of product differentiation increases. The intuition is simple. The more differentiated the product the more tailored its specifications are to the buyer's needs, and hence the lower the price it commands outside the relationship. Therefore, for highly differentiated products, an improvement in the quality of institutions in the importing country exerts a greater positive marginal effect on the exporter's expected profits in exporter-financed (OA) transactions. Second, the model suggests that trade destined for countries with higher financing costs is more likely to be financed by exporters. This is because higher costs of financing in the destination country make importer financing less attractive. Third, the model predicts that an increase in the importers bargaining power will make exporter financing more likely because it is more advantageous to the importer. As higher competition is associated with a greater bargaining power of the importer, exporter-financed exports are predicted to increase with the level of competition in the destination country.<sup>1</sup>

Our empirical analysis proceeds in three steps. We start by testing the first two theoretical predictions, both of which find support in the data. The results suggest that a one-standard-deviation increase in the importer's institutional quality is associated with a 18 percent increase in exporter-financed (OA) trade relative to importer-financed (CIA) or bank-financed (LC) trade. The effect differs between differentiated and non-differentiated goods: the estimate is 9 percentage points larger for differentiated products. Our results are robust to using several measures of institutional quality, alternative specifications and various robustness checks. Further, we find that exports to countries with less efficient banking sectors are more likely to place on OA terms.

In the second part of our analysis, we focus on the prediction related to competition. We follow the earlier literature and proxy for competition using (i) the total GDP, (ii) a measure

---

<sup>1</sup>This prediction echoes the advice given by the US Department of Commerce to American exporters: "Open account terms may help win customers in competitive markets."

of foreign supplier access developed by Redding and Venables 2004 and used recently by Mayer, Melitz and Ottaviano 2014; (iii) the number of countries supplying a given 6-digit HS product to a given destination country. As the last two measures are potentially endogenous we lag them by three periods. In all three cases, the data indicate that exports to more competitive markets are more likely to be financed by Turkish exporters. In an alternative exercise, we argue that when Turkish producers are disadvantaged by higher tariffs relative to their competitors, more of their exports will be financed through open account. The data confirm that this is indeed the case.

In the third part of our analysis, the identification strategy takes advantage of two exogenous shocks: the end of the Multi-Fiber Arrangement (MFA) and the Great Recession of 2009. Until January 1, 2005, exports of clothing and textiles from developing countries to the United States, the European Union and Canada were subject to bilateral quotas under the global Agreement on Textile and Clothing, previously known (and referred to in this article) as the Multi-Fiber Arrangement. After forming a customs union with the EU in 1996, Turkey was not subject to any quota restrictions in the EU market. Thus removal of the MFA quotas on large textile and clothing producers such as China, India and Bangladesh, constituted a large shock to the competitive pressures faced by Turkish suppliers of these products to the EU market. Our identification strategy takes advantage of the fact that quotas were binding in some, but not other, products. The estimation focuses on exports of products covered by the MFA destined for the EU market. The results from this difference-in-differences approach suggest that in the post-MFA period Turkish exporter-financed exports increased relative to exports on other financing terms in products where quota were binding in 2004, as compared to products where the quotas were not filled at that time. These findings are consistent with the view that an increase in competitive pressures pushed Turkish exporters to offer trade financing.

The second exercise explores the implications of the Great Recession for the choice of financing terms. The Great Recession can be viewed as a negative shock to the supply of trade financing and a negative demand shock in some destination markets. Unlike many of its crisis-afflicted trading partners, Turkey and its banking sector have weathered the crisis quite well. Here again a difference-in-difference approach is employed, relating the volume of exports financed by Turkish exporters relative to exports financed through other means in the pre- versus post-crisis period to whether or not a destination country was afflicted by the crisis. The results suggest that exports financed by Turkish producers expanded in relative terms to crisis affected countries. This is consistent with Turkish producers being able to offer financing when their trading partners were less able to do so and with Turkish producers using export financing to become more competitive suppliers in the face of a negative demand shock.

The contribution of our study is threefold. First, it is the first comprehensive empirical test of the theory of financing terms in international trade. In contrast to the earlier work, which relied either on aggregate data (Schmidt-Eisenlohr 2013), could not distinguish between the type of financing used in domestic and international trade transaction (Hoefele, Schmidt-Eisenlohr and Yu 2013) or used information on exports of a single firm (Antràs and Foley 2013), we rely on the universe of Turkish exports. Second, we document that the extent of competition in the export market matters for export financing, which is a question that has not been explored in the existing literature. Third, by focusing on exogenous shocks

and employing a difference-in-differences approach we are able to employ a more reliable identification strategy. Our focus on an emerging market is also an interesting question in itself due to its less developed financial sector. It allows us to shed light on how credit squeeze in crisis-affected countries impacted exporters in emerging markets.

Breaking into foreign markets is difficult and costly, even more so for firms wishing to supply differentiated products where greater trust is needed between trading partners (Rauch and Trindade 2002, Ranjan and Lee 2007). Our results suggest that producers of differentiated products may face an additional obstacle in the form of more limited access to importer or bank financing. This may be one of the reasons why export diversification may be difficult in countries with underdeveloped financial markets.

Our paper is related to several strands of the existing literature. First, we contribute to the work on the role of institutional quality for the choice of financing terms in international trade transactions (Antràs and Foley 2013, Schmidt-Eisenlohr 2013, Glady and Potin 2011, Hoefele, Schmidt-Eisenlohr and Yu 2013). Second, we add to a broader literature which documents a link between access to credit and exporting (Chaney 2013, Greenaway et al. 2007; Manova 2013, Amiti and Weinstein 2011).

The rest of the paper is organized as follows. The next section presents the model and its main predictions. Section 2 discusses the data and presents some stylized facts. Section 3 reports the empirical results. In Section 4, we describe the exercises based on the MFA end and the Great Recession. Section 5 concludes.

## 2 Theoretical Framework

We present a simple Nash bargaining model in which a Turkish seller and a foreign buyer share the surplus generated by an international trade transaction. In terms of the general framework the model presented here is similar to the static version of the model of Antràs and Foley 2013 who extend the model developed by Schmidt-Eisenlohr 2013. Here, we are not interested in the bargaining process itself. Instead, we try to understand the properties of possible outcomes that are mutually beneficial to both sides.

In the model, a given Turkish exporter sells product  $p$  to a given importer in destination country  $c$ . Both firms are risk-neutral. The exporter incurs a constant marginal cost that is normalized to one.<sup>2</sup>  $S$  denotes the price at which the importer sells product  $p$  in destination country  $c$ . When the transaction takes place between the two partners, their payoffs are equal to their expected profits as the bargaining takes place before the transaction takes place.

In the case where both parties fulfill their contractual obligations the timing of the events under different payment terms is as follows. Under CIA terms the importer makes the payment before the exporter produces and ships the goods which arrive at the destination after  $t$  periods. Under OA terms the exporter first produces and ships the goods, and the importer makes the payment upon their arrival. Under LC terms the importer's bank guarantees payment to the exporter after the arrival of goods at the destination. Regardless

---

<sup>2</sup>One can also add an iceberg-type trade cost to the model. Such modification does not change any of the results.

of the method of payment, there is a time lag ( $t$  periods) between the time goods are produced/shipped and their arrival at the destination.

We assume limited commitment. When the transaction is on cash in advance terms the exporter may have an incentive to deviate from the specifications set in the contract. Imperfect enforcement on the exporter's side implies that contracts in Turkey are enforced with probability  $\lambda$ . So, with probability  $(1 - \lambda)$  the contract is not enforced, and the exporter avoids a small effort cost.<sup>3</sup> Thus the value of the transaction falls to a fraction  $\delta(e) \in (0, 1)$  of the initial value. The fraction is an increasing function of product differentiation as buyer-specific features and quality considerations should exist for differentiated rather than non-differentiated products i.e.  $\delta(e)' > 0$ . The following gives the expected profits of the exporter and the importer, respectively, under CIA terms:

$$\begin{aligned} E[\Pi_E^{CIA}] &= Q(P^{CIA} - 1), \\ E[\Pi_I^{CIA}] &= Q \left\{ \frac{\lambda + (1 - \lambda)(1 - \delta(e))}{(1 + r_c)^t} S - P^{CIA} \right\}, \end{aligned}$$

where  $Q$  denotes the volume of the transaction,  $P^{CIA}$  the price agreed when the contract was concluded, and  $r_c$  the cost of financing in the importer's country.

For transactions on open account terms, the contract is enforced with probability  $\lambda_c \in (0, 1)$ , which depends positively on the quality of institutions in country  $c$ .<sup>4</sup> If the contract is not enforced, and the importer does not accept the goods and pay, the exporter can sell the goods to a third party. If the goods are tailored to the importer's requirements, reselling them may be difficult as they do not command the same value outside the importer-exporter relationship. We assume that the loss the exporter incurs when selling the goods to a third party is increasing in the degree of product differentiation. The new price is a fraction  $(1 - \gamma(e))$  of the price set in the initial contract, where  $e$  denotes the degree of product differentiation, and  $\gamma(e) \in (0, 1)$ ,  $\gamma(e)' > 0$ .<sup>5</sup> Given limited commitment expected profits of the trade partners are given by:

$$\begin{aligned} E[\Pi_E^{OA}] &= Q \left\{ \frac{\lambda_c + (1 - \lambda_c)(1 - \gamma(e))}{(1 + r)^t} P^{OA} - 1 \right\}, \\ E[\Pi_I^{OA}] &= Q(S - P^{OA}), \end{aligned}$$

where  $r$  denotes the cost at which the exporter finances the transaction.

Under LC terms, it is assumed that the exporter receives payment with certainty, and the exporter's incentive not to comply with the contract terms is negligible. While bank financing (almost) eliminates the moral hazard problem on both sides, it is costly. The importer's bank charges a processing fee  $f^{LC} > 1$ , which is assumed to increase the cost of

---

<sup>3</sup>Following Antràs and Foley (2013), we do not model the effort cost explicitly.

<sup>4</sup>In this case the exporter has no incentive to shave the quality of the product,  $\delta(e) = 0$ .

<sup>5</sup>Nunn (2007) relies on a similar idea when classifying inputs according to their contract intensity. He argues that for inputs that are sold on organized exchange (low differentiation), there are potential buyers outside of the buyer-seller relationship, therefore the value of such inputs outside of the relationship is close to the value specified in the initial contract. This is not the case for differentiated products.

financing. Expected profits of the exporter and the importer are

$$\begin{aligned} E[\Pi_E^{LC}] &= Q \left\{ \frac{1}{(1+r)^t} P^{LC} - 1 \right\}, \\ E[\Pi_I^{LC}] &= Q \left\{ \frac{1}{f^{LC}(1+r_c)^t} S - P^{LC} \right\}. \end{aligned}$$

Under LC terms, there is pre-financing on both sides because the exporter needs to procure working capital.

The price set in the contract under each financing term is determined by Nash bargaining solution. We consider a general Nash bargaining solution where the transaction price is chosen to maximize a geometric average of the importer's and the exporter's surpluses. The weights are assumed to represent the bargaining power of the two parties. For simplicity, we assume that the payoff of the outside option for each party is zero. Given a financing term, trade partners first determine the price that maximizes their joint surplus (transaction surplus). Then they choose the financing term that generates the largest joint surplus. So the bargaining problem we consider is as follows

$$\max_{P^f} \Omega_f = \{E[\Pi_I^f]\}^\alpha \{E[\Pi_E^f]\}^{1-\alpha},$$

where  $\alpha \in (0, 1)$  is positively related to the bargaining power of the importer, and  $f = \{CIA, OA, LC\}$ . Setting the first-order condition with respect to  $P^f$  to zero under each financing term, we obtain the following expressions for the transaction prices

$$\begin{aligned} P^{CIA} &= (1-\alpha) \frac{\lambda + (1-\lambda)(1-\delta(e))}{(1+r_c)^t} S + \alpha, \\ P^{OA} &= (1-\alpha)S + \alpha \frac{(1+r)^t}{\lambda_c + (1-\lambda_c)(1-\gamma(e))}, \\ P^{LC} &= (1-\alpha) \frac{1}{f^{LC}(1+r_c)^t} S + \alpha(1+r)^t. \end{aligned}$$

Substituting these prices into the respective expressions for expected profits yields the following joint surpluses

$$\begin{aligned} \Omega_{CIA}^* &= Q(1-\alpha)^{1-\alpha} \alpha^\alpha \left( \frac{\lambda + (1-\lambda)(1-\delta(e))}{(1+r_c)^t} S - 1 \right), \\ \Omega_{OA}^* &= Q(1-\alpha)^{1-\alpha} \alpha^\alpha \left( \frac{(1+r)^t}{\lambda_c + (1-\lambda_c)(1-\gamma(e))} \right)^\alpha \left( \frac{\lambda_c + (1-\lambda_c)(1-\gamma(e))}{(1+r)^t} S - 1 \right), \\ \Omega_{LC}^* &= Q(1-\alpha)^{1-\alpha} \alpha^\alpha (1+r)^{t\alpha} \left( \frac{1}{(1+r_c)^t(1+r)^t f^{LC}} S - 1 \right). \end{aligned}$$

We use these expressions to do comparative statics with respect to the main parameters in the model. Our first result is already well-known from Schmidt-Eisenlohr 2013 and Antràs and Foley 2013, but we state it for completeness.

**Result 1** Consider the expected joint surplus under OA terms relative to CIA and LC terms:  $\Omega_{OA}^*/\Omega_{CIA}^*$ ,  $\Omega_{OA}^*/\Omega_{LC}^*$ . Both ratios are increasing functions of  $\lambda_c$  and  $r_c$ . In words, OA becomes more attractive relative to CIA and LC terms as the quality of institutions improves, or cost of financing increases in the importing country.

The dependence of the choice between OA and non-OA terms on the quality of institutions and cost of financing in the importing country vary with the degree of differentiation of the product shipped:

$$\begin{aligned} \frac{\partial^2(\Omega_{OA}^*/\Omega_{CIA}^*)}{\partial e \partial \lambda_c}, \frac{\partial^2(\Omega_{OA}^*/\Omega_{LC}^*)}{\partial e \partial \lambda_c} &> 0, \\ \frac{\partial^2(\Omega_{OA}^*/\Omega_{CIA}^*)}{\partial e \partial r_c}, \frac{\partial^2(\Omega_{OA}^*/\Omega_{LC}^*)}{\partial e \partial r_c} &< 0. \end{aligned}$$

**Result 2** Product differentiation reinforces (weakens) the positive effect of the quality of institutions (cost of financing) in the importing country on the use of OA relative to other financing terms (CIA and LC).

Product differentiation decreases the expected joint surplus generated by the transaction for two reasons. First, if the importer does not make the payment, and the product is highly differentiated, the exporter is less likely to find another buyer for the product as the product is tailored to the initial buyer's requirements. Thus the expected loss of the exporter is increasing, or the value of the joint surplus generated by the transaction is decreasing, in the degree of product differentiation. Second, product differentiation also increases the loss in the value of the product in case the exporter deviates from the specifications set in the contract. So, when the product is highly differentiated, an improvement in contract enforcement in the importing country exerts a greater marginal effect on the expected profits of the exporter under OA terms. In short, product differentiation increases the sensitivity of the choice between OA and other financing terms on the quality of institutions in the importing country.

The attractiveness of OA terms relative to the other two terms also depends on the bargaining power of the importer in an intuitive way.

**Result 3** The relative surplus generated under OA terms increases in the bargaining power of the importer.

$$\frac{\partial(\Omega_{OA}^*/\Omega_{CIA}^*)}{\partial \alpha}, \frac{\partial(\Omega_{OA}^*/\Omega_{LC}^*)}{\partial \alpha} > 0.$$

As the bargaining power of the importer increases at the expense of the exporter's, the joint expected surplus depends more on the surplus obtained by the importer. Under CIA terms the importer pre-finances the transaction. Under LC terms, there is an extra cost, bank fee, born by the importer. So, under both cases, the expected profit of the importer is smaller relative to OA terms. Therefore, OA becomes more likely as the bargaining power of the importer increases.

### 3 Data and Stylized Facts

The lack of data has hindered extensive empirical validation of the theory of financing terms. An ideal dataset should provide a break-down of trade flows by financing terms and contain information on destination and origin countries. So far such information has been available only for a single exporter (see Antràs and Foley 2013). Our unique dataset, provided by the Turkish Statistical Institute, contains all such information for the universe of Turkish manufacturing exports during the period 2004-2012.<sup>6</sup> The information is broken down into three main financing terms (OA, CIA, and LC), the destination country and the 10-digit HS product code. We have information on both value (free-on-board) and quantity of exports.

In addition to being unique in terms of the data availability, Turkey is an appropriate setting for our exercise for other reasons. It is a fast-growing economy, a member of OECD, ranking among the top twenty largest economies in the world. Over the past ten years, Turkey has become increasingly integrated into global markets; its exports increased three-fold since 2003 to reach USD152.6 billion in 2012. In 1996, Turkey has signed a customs union for manufactured goods with the EU. Exports to the EU, on average, accounted for 43 percent of total exports during 2004-2012. The country is the 5<sup>th</sup> largest exporter to the region. During the period under consideration, a total of 12,480 manufacturing products were exported to 249 destination countries, thus giving us a lot of variation to be exploit in our analysis.<sup>7</sup>

Figure 1 shows the share of each financing term in total exports over the period 2004-2012. Exporter-financed exports (OA) account for about 80 percent of the total. This pattern is in line with the theoretical prediction: OA becomes attractive when institutional quality is better in the importing than in the exporting country. In the Turkish context, the extensive use of OA can be justified by the fact that OECD countries, which tend to have better institutions than Turkey, receive more than half of Turkey's exports.

The data, presented in Figure 1, are aggregated across all export markets and thus hide a lot of variation across destination countries. While OA is the dominant form of financing exports to Germany, only about half of trade going to China is financed in this way (see Figure 2). Greece is somewhere in between, and it registers an increase in OA exports at the height of the financial crisis.

Figure 3 presents evidence supporting the hypothesis that the use of OA increases with the quality of institutions in the importing country. The figure groups destination countries according to the degree of contract enforcement, measured by payment timeliness. Payment timeliness (PT) is an index published by International Country Risk Guide (ICRG) that measures the risk associated with receiving and exporting payments from the country. Higher values of the index are associated with lower risks.<sup>8</sup> The figure presents the share of exports on OA terms to countries that have below- and above-mean PT over the sample period. The share of OA-based exports is consistently higher to countries that rank highly in payment timeliness. The average difference between the two groups over the sample period is 9 percentage points and is statistically significant at the one percent level.

---

<sup>6</sup>Manufacturing exports account for about 94% of total exports. Data are based on customs declarations and cover transactions of at least USD100.

<sup>7</sup>Aggregating the data to 6-digit HS codes leaves us with 4,822 products.

<sup>8</sup>ICRG names the index "payment delays". We change the name to make it consistent with its definition.



Next we categorize 10-digit HS products into differentiated and non-differentiated using the classification suggested by Rauch 1999. Rauch classifies goods that are not traded on an organized exchange and do not have a reference price as differentiated goods. Characteristics and quality of a differentiated product may vary across different buyer-seller pairs and thus such products are considered more sensitive to contract enforcement. Result 2 suggests that the choice among different financing terms depends on the degree of product differentiation. Figure 4 presents the share of OA-based exports in total exports for differentiated and non-differentiated products. There is a clear difference in the share of OA-financed exports across two product types. The share of OA-financed exports is 20 percentage points higher for differentiated compared to non-differentiated products, and the difference is statistically significant at the one percent level. Therefore, compared to exports of reference-priced or homogeneous products, exporters of differentiated products rely less on importer or bank financing.

The distance between trade partners can also affect the choice of financing terms. The longer the time to ship, the riskier the transaction (Antràs and Foley 2013). In that case, which party bears the risk becomes more important. To see the effect of distance, we first calculate the mean distance between Turkey and all of its trading partners and then split countries into those with the distance above and below the mean. As evident from Figure 5, the use of OA is less common when Turkish exporters ship to countries located farther away. The difference in the share of exports on OA terms between the two groups of trading partners is 14.5 percentage points and statistically significant at the one percent level.<sup>9</sup>

## 4 Empirical Strategy and Results

### 4.1 Empirical specification

Stylized facts discussed in the previous section are broadly consistent with the predictions of the simple model presented in Section 2. The following specification provides a more formal test of the first two theoretical predictions:

$$X_{cpft} = \beta_0 OA_{cpft} + \beta_1 OA_{cpft} * IQ_{ct} + \beta_2 OA_{cpft} * NIM_{ct} + \theta OA_{cpft} * Z_{ct} + \delta_{ft} + \gamma_{ct} + \alpha_{cp} + \varepsilon_{cpft}, \quad (1)$$

where  $X_{cpft}$  denotes the log of Turkey's exports, measured in physical units, of 10-digit HS product  $p$  destined for country  $c$  on financing term  $f$  at time  $t$ . We consider two types of financing terms: (i) open account, and (ii) letter of credit and cash in advance. We lump together the latter two modes because they are much less prevalent and because the model's predictions, on which we focus, do not differentiate between the two.  $IQ_{ct}$  is a measure of institutional quality in country  $c$  at time  $t$ .  $NIM_{ct}$  is a proxy for the costs of financing in country  $c$  at time  $t$ .  $Z_{ct}$  is a vector of additional destination-level controls.

---

<sup>9</sup>A similar exercise for LC-based exports reveals that exports on LC terms account for a larger share of exports to more distant countries. Over the sample period the share of LC-based exports to distant countries is 12 percentage points higher than the corresponding share for close countries, and the difference is significant at the one percent level. This may suggest that trade partners choose to transfer the risk associated with longer shipments to their banks. High risk associated with longer shipments may justify the cost of bank financing.

The main variable of interest in (1) is the interaction term between the OA dummy and the institutional quality. In the baseline regressions, we use two alternative measures of institutional quality. These are payment timeliness (PT) and contract viability (CV). PT captures the risk associated with receiving and exporting payments from the country, while CV measures the risk of unilateral contract modification or cancellation. For both measures, higher values are associated with lower risks (or better institutional quality). Both measures come from the International Country Risk Guide and are expressed in terms of deviations from the sample mean. Our preferred measure is PT since it is most directly related to the effect we want to capture.

The second variable of interest is the interaction term between the OA dummy and the costs of financing in the destination country, the net interest margin (NIM). NIM is defined as a difference between a bank’s interest income and interest expense expressed as a percentage of interest-earning assets. According to Demirguc-Kunt and Huizinga 1999, it is a proxy for the inefficiency of financial intermediation. A higher value of the variable corresponds to less efficient financial system and thus higher costs of financing in the destination country.

To address the concern that contract enforcement variables may be capturing the effect of economic development in the destination country, we also include interactions between financing terms and GDP per capita. Finally, we include interactions between financing terms and destination countries’ distance to Turkey to control for varying degree of riskiness of shipments. We cluster standard errors at the country-year level. All control variables are measured as deviations from their respective means. Table 1 presents the summary statistics and descriptions of the variables used in the analysis.

We include various sets of fixed effects to control for the factors that might affect the volume of exports to a destination regardless of the choice of financing term. Aggregate conditions (e.g., stage of the business cycle) in the destination country are captured by importer-time fixed effects  $\gamma_{ct}$ . Time-invariant determinants of export volume of a given product to a given destination is captured by product-destination fixed effects  $\alpha_{cp}$ . These fixed effects also control for differences in units across HS10-destination pairs. In the most stringent specification, we will include HS6-destination-year fixed effects to account for product group-specific-time-varying demand factors in the destination country. Finally, in all specification we control for the financing-term-time fixed effects to take into account shocks to the availability of trade financing in Turkey.

Our parameter of interest  $\beta_1$  captures the differential effect of institutional quality on OA-based export values relative to CIA- and LC-based exports. Its identification comes from cross-country variation in institutional quality and the use of different financing terms within a product-destination.<sup>10</sup> According to Result 1 the model predicts  $\beta_1 > 0$ . In other words, countries with institutional quality above the mean should receive more exporter than importer or bank-financed exports.<sup>11</sup> We expect to find a positive estimate of  $\beta_2$ , as the higher costs of financing in the destination country should make exporter-financing more attractive.

---

<sup>10</sup>The share of HS10 product-destination-year groups that use both OA and non-OA financing terms in the data is 45 percent.

<sup>11</sup>The model predicts that the institutional quality in the importing country should not matter for the level of LC-based relative to CIA-based exports. When we separate exports on LC and CIA terms, the results we obtain are in line with the model’s predictions. Results are available upon request.

## 4.2 Baseline results

The results obtained from estimating (1), presented in the first two columns of Table 2 suggest that both exporter-financed exports are higher relative to importer- or bank-financed exports when destined for countries with institutional quality (proxied by payment timeliness PT) above the mean. This finding is in line with the model’s predictions: the use of OA terms is more likely in export destined for countries with better institutions.

In the third column, we add interaction between OA dummy and GDP per capita as our institutional quality measure may pick up the effect of the importer’s economic development. Although the magnitude of the coefficient of interest is lower, the coefficient retains its statistical significance. In column (4), we add HS6-destination-time fixed effects to account for product-group-specific demand factors in the importing country. The estimates do not appear to be affected much by this modification.

The magnitude of the effect is economically meaningful: a one-standard-deviation increase in the importer’s payment timeliness is associated with a 26 percent increase in OA-based exports relative to exports on other financing terms.<sup>12</sup> Another way of thinking of this magnitude is to engage in the following thought experiment. An increase in the PT measure from the level observed in China to the level observed in Germany in 2012 would result in a 34% increase in exporter-financed exports relative to exports on other financing terms.

In the next four columns, we use contract viability as an alternative measure of institutional quality in the importing country. Our conclusions remain unchanged. As shown in columns 7 of Table 2 the volume of OA-based exports relative to CIA or LC-based exports is 14 percent higher to a country with contract viability one standard deviation above the mean.

The estimates are less supportive of our second hypothesis related to the costs of financing in the destination country. The interaction between OA and NIM is (as expected) positive but it is statistically significant only in 3 of the 8 specifications estimated.

Another robust finding across different specifications presented in Table 2 is related to the bilateral distance. Relative to exports financed otherwise, OA-based exports decrease with the importer’s distance from Turkey. This is intuitive, as in the case of a contract breach, the costs of intervention (i.e., the cost of shipping the goods back or traveling to the partner country to deal with a dispute) increase in the distance which captures both the physical and cultural distance.

Some products are exported to a given destination only under one type of financing terms. To make sure that our findings are not driven by these cases we restrict our attention to product-destination-year combinations with non-zero exports on both OA and non-OA terms. As can be seen in the top panel of Table 3 doing so leads to a large drop in the number of observations but has little effect on our conclusions. The interaction term between the OA dummy and the institutional quality remains statistically significant in all specifications and its magnitude is not affected. The results for destination-country costs of financing find support in the restricted sample. The estimates of other coefficients are in line with the baseline table.

In Table 3, we measure the importer’s institutional quality using proxies related to the performance of the judicial system. These are: an index of confidence in the legal system

---

<sup>12</sup>This calculation is based on the estimate presented in the third column of Table 2.

(CLS) and the total duration of a legal procedure (DLP). Confidence in legal system is derived from the World Business Environment Survey that was conducted by the World Bank across 80 countries in 1999-2000. The survey includes responses from over 10,000 firms. CLS measure is derived from the question that asks the managers the degree to which they believe the judicial system will defend their rights in a business dispute. A higher score implies a higher confidence, and we use a country-average of individual scores. The measure of the total duration of a legal procedure is taken from Djankov et al (2003), and it is the estimated sum of calendar days from the original filing of a complaint to the ultimate enforcement of judgment. Thus higher values of this variable are associated with worse performance of the legal system. We expect to find a positive coefficient on the interaction term between the OA exports and the institutional quality when the first proxy is used and a negative coefficient when the second proxy is employed. The results, based on these alternative measures, confirm our earlier conclusions. The estimated coefficients have the expected signs and are highly significant. The interaction term between OA and NIM does not appear to be statistically significant in any of the specifications.

In additional specifications, reported in the Appendix Table

9, we show that alternative measures of business environment, which are not directly related to contract enforcement and receiving payments, do not produce similar results. For instance, exporter-financed exports do not increase relative to the other exports in countries with higher overall regulatory quality and government effectiveness.<sup>13</sup>

One could argue that it would be more appropriate to estimate a specification where the dependent variable is expressed as the share of exports financed on OA terms. Given that shares are bounded between zero and one, the appropriate empirical strategy would involve estimating a fractional response model for the panel data as described by Papke and Wooldridge 2008. As illustrated in Appendix Table 10 our conclusions are robust to this alternative strategy. We find that the share of trade financed by Turkish exporters is positively related to the institutional quality in the destination market. The effect is statistically significant for three of four proxies we have used (it is not robust when institutional quality is proxied by the duration of the legal procedure). As this model does not lend itself well to including a large number of fixed effects, we employ it only in this robustness check.

### 4.3 Does product differentiation matter?

According to our theoretical predictions, product differentiation matters for the trade financing decision. The intuition is simple. The more differentiated the product is the more tailored its specifications are to the relationship between the trading partners, and the lower the price it commands outside the relationship. Therefore, when the product is highly differentiated, an improvement in the quality of institutions in the importing country exerts a greater positive marginal effect on the expected profits of the exporter under OA terms.

Our results confirm this theoretical prediction. This can be seen in Table 4

---

<sup>13</sup>Both measures are published in the Worldwide Governance Indicators Database of the World Bank. Government effectiveness measures people's perceptions of the quality of public/civil services, the quality of policy formulation and implementation, and the credibility of the government's commitment to implement its policies. Regulatory quality measures people's perceptions of the government's ability to formulate and implement sound policies and regulations that promote private sector development.

where we allow the estimated coefficients to differ for differentiated products. We find that product differentiation increases the sensitivity of the choice between OA and other financing terms to the quality of institutions in the importing country. This effect is statistically significant in all four specifications, and its magnitude is economically meaningful. A one-standard-deviation increase in institutional quality, as measured by payment timeliness, is associated with 18 percent higher exports on OA terms relative to others. The corresponding magnitude for differentiated goods equals 27 percent.

We find that in the case of differentiated products the choice of financing terms is less sensitive to financing costs in the destination country, which confirms another prediction of the model. The intuition is simple. If it is expensive to obtain financing abroad, the benefits of financing at home are mitigated by the risk posed of trading in differentiated products.

To further test the robustness of our conclusions, we go deeper into product classification proposed by Rauch (1999). In the first two columns of Appendix Table ?? , we compare the determinants of export financing for differentiated versus reference-priced goods, in the next two columns we do so for differentiated versus homogenous goods, and in the final two columns we repeat the exercise for reference-priced versus homogenous goods. We find that the prevalence of exporter-financing is more sensitive to the importer's institutional quality when differentiated products are compared to reference-priced and to homogenous goods, but, as expected, the magnitude of the effect is larger in the latter case. We also find that OA exports are more sensitive to the institutional quality in the case of reference-priced goods than homogenous goods, though the difference is statistically significant only in one specification. All these results are in line with the view that less differentiated products are much easier to resell should the importer fail to make a payment.

#### **4.4 Does the level of competition in the export market matter for the choice of financing?**

Our theoretical framework suggests that exporter-financing (which is more advantageous to the importer) becomes more likely as the bargaining power of the importer increases. This observation is in line with anecdotal evidence. For instance, the Trade Finance Guide prepared by the US Department of Commerce International Trade Administration to assist American companies in conducting export transactions warns: "Insisting on cash-in-advance could, ultimately, cause exporters to lose customers to competitors who are willing offer more favorable payment terms to foreign buyers" (p. 5). It suggests that "Open account terms may help win customers in competitive markets" (p. 11).

Next we test the hypothesis that exporter-financing is more prevalent in more competitive markets. We proxy for the level of competition in the destination market in several ways. We follow Mayer, Melitz and Ottaviano (2014) by employing either the total GDP or a foreign supply potential. The latter measure was first introduced by Redding and Venables (2004). It captures the aggregate predicted exports of the destination country  $c$  based on a bilateral trade gravity equation (in logs) with exporter fixed effects and the standard bilateral measures of trade barriers/enhancers such as contiguity and distance. As an alternative measure, we use the number of trading partners from which country  $c$  imports a given HS6 product in a given year. To mitigate endogeneity concerns related to the latter two measures, we lag them by

three periods.

The results, presented in Table 5, are in line with our hypothesis. They indicate that while Turkey exports a lower quantity of goods to more competitive markets (as measured by the number of alternative suppliers), it is more likely to do so on open account terms. The latter finding is true for all three competition proxies. The magnitudes of the estimated effects are economically meaningful. The foreign supplier potential of Germany was in 2011 0.75 standard deviation higher than the corresponding figure for China. This difference in the toughness of competition corresponds to a 50% higher OA exports (relative to CIA and LC exports) in Germany than in China. Similarly, the number of countries exporting to Germany (averaged over all HS6 products) was in 2011 0.55 standard deviation higher than the number of countries exporting to China, which corresponds to a 30% difference in OA relative to non-OA exports between the two countries.

Next, we pose that if Turkish producers are disadvantaged in destination country  $c$  because they face higher tariffs than their competitors, they may be under greater pressure to offer export financing. To test this conjecture we calculate the relative tariff applied to Turkish and to Chinese exports of a given 6-digit HS product in country  $c$  at time  $t$ . We use either a continuous measure or a dummy variable taking on the value of one if Turkey faces higher tariffs than China, and 0 otherwise. Again to mitigate potential endogeneity concerns, we lag both measures by three periods. We exclude from the sample textiles and clothing as they were subject to quota under the MFA. The estimated results, presented in Table 6, conform to our expectations. They indicate that being disadvantaged in terms of market access gives Turkish producers incentive to provide financing. Again the magnitude of the estimated effects are meaningful. Being disadvantaged in terms of tariff treatment is associated with a 19% increase in exporter-financed trade relative to trade on other terms.<sup>14</sup>

## 5 Identification Strategy Relying on Exogenous Shocks

In the final part of our paper, we exploit in our identification strategy two exogenous shocks taking place during our sample period. The shocks in question are the end of the Multi-fiber Arrangement and the Great Recession of 2009.

### 5.1 The end of the Multi-fiber Arrangement

As explained earlier, the Multi-fiber Arrangement governed global trade in textiles and clothing by means of bilateral quotas until January 1, 2005. In our analysis, we exploit the fact that Turkey was not subject to any quotas in the European Union after forming a customs union with the EU in 1996. Thus the end of the MFA constituted a large shock to the competition level experienced by Turkey in the EU market. Moreover, what is useful for our analysis is the fact that the competitive shock was not the same for all products, as the MFA quotas were not binding in all products.

Our exercise follows a difference-in-differences strategy. We ask whether in products where the MFA quotas were initially binding (treated products), Turkey experienced a greater shift

---

<sup>14</sup>This calculation is based on the results from the last column which includes HS6 product-country-year fixed effects.



towards exported-financed exports in the post-MFA period. We narrow our attention to the products falling under the MFA rules and to Turkish exports destined for the EU market. More specifically, we estimate the following model:

$$\ln(X_{cpt,OA}) - \ln(X_{cpt,nonOA}) = \gamma_0 + \gamma_1 Post_t * Treated_{HS6} + \gamma_2 Post_t + \alpha_p + \alpha_c + \Theta Z_{ct} + \epsilon_{cpt}$$

where  $Treated = \{Quota\ filled_{HS6}, Max\_fill\_rate_{HS6}\}$  and  $t = 2004, 2008$

When defining treated products we focus on the three largest suppliers of textiles and clothing to the EU: China, India and Bangladesh. We use the standard definition of a quota being binding if its fill rate exceeded 90 percent. More precisely, we define a treated product as a 6-digit HS product in which the quota faced by at least one of the three suppliers mentioned was binding:

$$\begin{aligned} Quota\ filled_{HS6} &= 1 \text{ if } \exists i \in \{CHN, BGD, IND\} \text{ s.t. } fill\_rate_{i,HS6,2004} > 0.9 \\ Quota\ filled_{HS6} &= 0 \text{ if } \forall fill\_rate_{i,HS6,2004} < 0.9 \end{aligned}$$

In the analysis, we use a dummy for treated 6-digit HS products or a continuous variable capturing the highest quota fill rate in a given 6-digit HS product in 2004 relevant to the three countries mentioned. The data on quota fill rates come from Système Intégré de Gestion de Licenses which publishes quota levels for EU imports of all textile and clothing categories by source country.<sup>15</sup>

Even though the MFA formally ended in 2005, China continued to face quotas in the EU until 2007. Therefore, in our analysis we compare trade in 2004 (last year under the MFA) to trade in 2008 (first year with no quota faced by the three countries considered).

The model includes the other determinants of financing terms used in our earlier specifications as well as country fixed effects and 10-digit HS product fixed effects.<sup>16</sup> Note that we do not need to include a dummy for treated products, as our specification includes product fixed effects.

The estimation results, based on the treatment dummy and presented in the first column of Table 7, confirm our theoretical predictions. Turkish exporters disproportionately increased their OA exports (relative to exports financed in other ways) in products in which they experienced a competitive shock. Our post-MFA year, 2008, coincides with the beginning of the financial crisis. To ensure that our results capture the shock we intend to capture rather than the effects of the crisis, we exclude from the sample countries affected by the crisis.<sup>17</sup> Our results are robust to this modification. In column 3 we include country-year fixed effects, and in column 4 we additionally include country-product fixed effects. Our results remain unchanged. In the subsequent four columns, we replicate the same estimation

---

<sup>15</sup>We would like to thank Amit Khandelwal, Peter Schott, and Shang-Jin Wei for kindly sharing additional data they used in Khandelwal et al. 2013

<sup>16</sup>We exclude distance which does not vary over time and institutional quality which varies very little between 2004 and 2008.

<sup>17</sup>We identify crisis-affected countries based on the database constructed by Laeven and Valencia (2013).

but use the maximum fill rate (instead of the treatment dummy). The results again support our theoretical prediction by suggesting that increase in competition is associated with a shift towards exporter-financed trade.

## 5.2 What happened during the recent crisis?

In the final exercise, we investigate how financing of Turkish exports changed during the recent financial crisis. In contrast to many of its trading partners, the Turkish economy recovered relatively quickly from the Great Recession with its banking sector weathering the crisis times unscathed (Uygur 2010).

In our view, the crisis had two implications for Turkish exporters. The negative demand shock taking place in crisis-afflicted countries meant tougher competitive environment for Turkish suppliers. The crisis also meant more restricted access to credit (or even credit drying out) for many of Turkey’s trading partners. We would expect both shocks to move Turkish exports toward being financed by Turkish producers.

To examine the above hypothesis we again engage in a difference-in-differences estimation. We examine whether Turkish exports on OA terms increased relative to non-OA exports when destined to crisis-affected countries in the post-crisis period:

$$\ln(X_{cpt,OA}) - \ln(X_{cpt,nonOA}) = \delta_0 + \delta_1 Post_t * In\_crisis_c + \delta_2 Post_t + \alpha_{c,HS6} + \alpha_{HS10} + \Pi Z_{ct} + \epsilon_{cpt}$$

where  $t = 2006, 2009$

Our pre-crisis period is defined as 2006, while 2009 is denoted as the crisis time. The model includes country-HS6-product and HS10-product fixed effects. The indicator *In\_crisis* takes on the value one if country  $c$  is affected by a financial crisis at time  $t$ , and zero otherwise, where crises are identified as in Laeven and Valencia (2013).

Laeven and Valencia 2013 focus on systemic banking sector crises that are characterized by (i) noticeable signs of financial distress (such as bank runs, losses suffered by the banking sector, and bank liquidations), and (ii) significant banking sector intervention measures taken as a response to realized losses in the banking system. Such interventions include at least three out of the following: six deposit freezes and/or bank holidays, significant bank nationalizations, bank restructuring gross costs, extensive liquidity support, significant guarantees put in place, and significant asset purchases. Laeven and Valencia 2013 consider the second criterion, if significant, as a sufficient condition for identifying a banking crisis. The results, presented in Table 8, are in line with our expectations. While we find that in 2009 OA exports declined relative to exports on other financing terms, OA exports increased in relative terms to countries afflicted by the financial crisis (see column 1).

In the subsequent columns, we control for the depths of the crisis by multiplying the *In\_crisis* indicator with the variables capturing the depth of the crisis in terms output loss, liquidity support, and peak non-performing loans (NPLs), all obtained from Laeven and Valencia (2013). Output loss is defined as the cumulative sum of the differences between the actual and the trend real GDP over the period  $[T; T + 3]$ , expressed as a percentage of the trend real GDP, where  $T$  denotes the starting year of the crisis. Liquidity support is defined



as the ratio of central bank claims on deposit money banks and liquidity support from the Treasury to total deposits and liabilities to non-residents. NPLs measure the share of non-performing loans to total loans. All of these time-invariant variables are expressed in mean deviation form. During the non-crisis years (as defined by Laeven and Valencia), they are set to zero. As expected, we find that severity of the crisis affecting the importer increases the prevalence of exporter financing. The estimated effects are statistically significant in two of three specifications.

In an attempt to shed light on which of the channels pushed Turkish exports towards OA terms, we estimate specifications including: (i) both output loss and liquidity support, and (ii) both output loss and NPL. We view output loss as a proxy for the negative demand shock and the two other variables as proxies for the trading partners' restrictions in access to credit. As evident from columns 5 and 6, both channels appeared to have been at work.

## 6 Conclusions

This study conducts the first comprehensive empirical test of the theory of financing terms in international trade. To do so, we use a unique dataset that provides a break-down of Turkey's exports by three main financing terms (OA, CIA, and LC), destination country and the 10-digit HS product during the period 2004-2012.

In addition to examining the existing predictions on the impact of institutional quality and financial sector development in the export market on the choice of trade financing, we also examine, for the first time, the link between the extent of competition in the destination country and the choice of financing terms. To do so, we exploit two exogenous shocks taking place during our sample period: the end of the MFA and the Great Recession.

Our results give support to the theoretical predictions. They suggest that exporter-financed exports increase relative to importer/bank-financed exports when destined for countries with better institutions. The magnitude of this effect is larger for differentiated products. We also find that exporter-financing increases with the cost of financing in the destination market and that this effect is weaker for differentiated products. Most importantly, we show that higher competition in export markets, and thus greater bargaining power of importers, is associated with more exporter-financed trade.

## References

- Amiti, Mary, and David E. Weinstein.** 2011. "Exports and Financial Shocks." *The Quarterly Journal of Economics*, 126(4): 1841–1877.
- Anràs, Pol, and C. Fritz Foley.** 2013. "Poultry in Motion: A Study of International Trade Finance Practices." *Mimeo, Harvard University*.
- Chaney, Thomas.** 2013. "Liquidity Constrained Exporters." National Bureau of Economic Research Working Paper 19170.

- Demirguc, Asli, and Harry Huizinga.** 1999. “Determinants of Commercial Bank Interest Margins and Profitability: Some International Evidence.” *World Bank Economic Review*, 13(2): 379–408.
- Greenaway, David, Alessandra Guariglia, and Richard Kneller.** 2007. “Financial factors and exporting decisions.” *Journal of International Economics*, 73(2): 377–395.
- Hoefele, Andreas, Tim Schmidt-Eisenlohr, and Zhihong Yu.** 2013. “Payment Choice in International Trade: Theory and Evidence from Cross-country Firm Level Data.”
- Khandelwal, Amit K., Peter K. Schott, and Shang-Jin Wei.** 2013. “Trade Liberalization and Embedded Institutional Reform: Evidence from Chinese Exporters.” *American Economic Review*, 103(6): 2169–95.
- Laeven, L., and F. Valencia.** 2013. “Systemic Banking Crises Database.” *IMF Economic Review*, 61(2): 225–270.
- Manova, Kalina.** 2013. “Credit Constraints, Heterogeneous Firms, and International Trade.” *Review of Economic Studies*, 80: 711–744.
- Mayer, Thierry, Marc J. Melitz, and Gianmarco I. P. Ottaviano.** 2014. “Market Size, Competition, and the Product Mix of Exporters.” *American Economic Review*, 104(2): 495–536.
- Papke, Leslie E., and Jeffrey M. Wooldridge.** 2008. “Panel data methods for fractional response variables with an application to test pass rates.” *Journal of Econometrics*, 145(1-2): 121–133.
- Rauch, James E.** 1999. “Networks versus markets in international trade.” *Journal of International Economics*, 48(1): 7–35.
- Rauch, James E., and Vitor Trindade.** 2002. “Ethnic Chinese Networks In International Trade.” *The Review of Economics and Statistics*, 84(1): 116–130.
- Redding, Stephen, and Anthony J. Venables.** 2004. “Economic geography and international inequality.” *Journal of International Economics*, 62(1): 53–82.
- Schmidt-Eisenlohr, Tim.** 2013. “Towards a theory of trade finance.” *Journal of International Economics*, 91(1): 96–112.
- Uygur, Ercan.** 2010. “The Global Crisis And The Turkish Economy.”

Figure 1: Share of exports by financing terms (2004-2011)

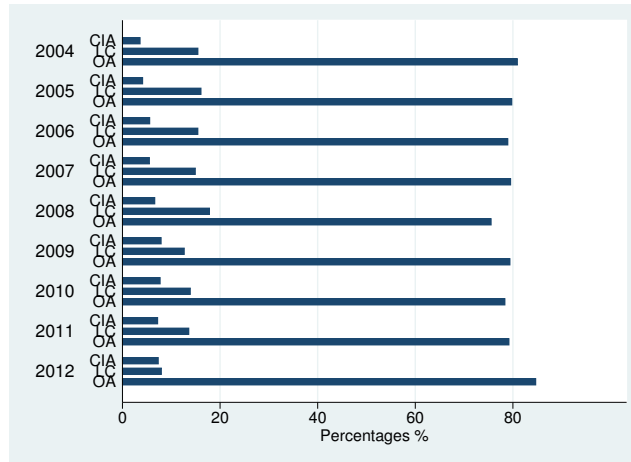


Figure 2: Share of exports on open account across countries

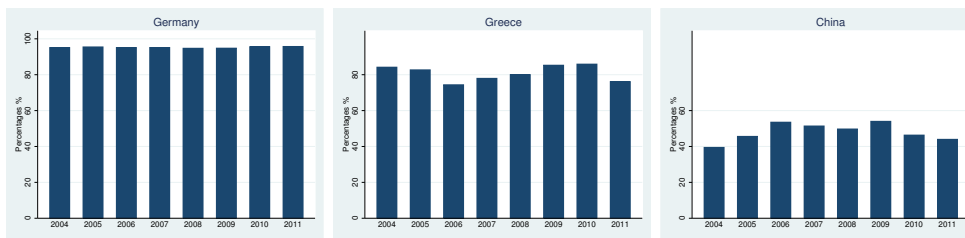


Figure 3: Share of exports on open account terms and institutional quality

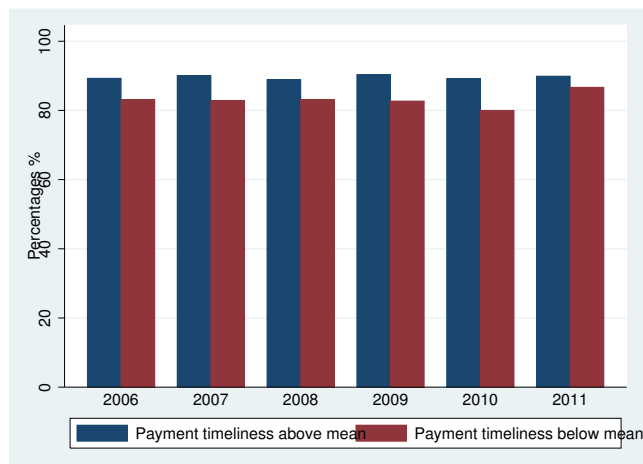


Figure 4: Share of exports on open account terms across product types

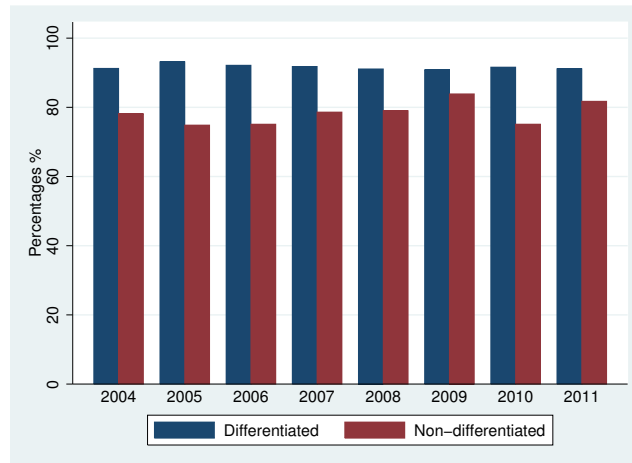


Figure 5: Share of exports on open account terms and bilateral distance

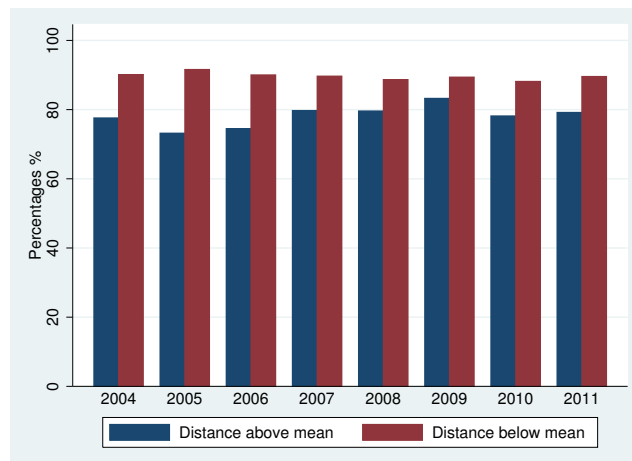


Table 1: Summary statistics

	Mean	Standard deviation
Log of exports value	9.4492	2.4802
Log of exports quantity	7.2822	3.1848
Open account dummy	0.7251	0.4465
Payment timeliness	2.9768	0.7981
Contract viability	3.1289	0.6729
Confidence in legal system	3.2113	0.5617
Log of duration of legal procedure	5.4354	0.9917
Political stability	-0.1620	0.9808
Rule of Law	0.0772	1.0492
Government effectiveness	0.1795	1.0156
Differentiated product dummy	0.8056	0.3957
Log of distance	7.7217	0.7275
Log of GDP	16.8360	18.8361

Table 2: Exporter-financed exports and institutional quality: Baseline specifications

	Payment timeliness			Contract viability				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OAxIQ	0.385*** (0.0385)	0.440*** (0.0558)	0.294*** (0.0676)	0.284*** (0.105)	0.307*** (0.0530)	0.344*** (0.0778)	0.193*** (0.0758)	0.202* (0.121)
OAxNIM	0.0112 (0.0121)	0.0135 (0.0191)	0.0393** (0.0168)	0.0424* (0.0256)	-0.0159 (0.0141)	-0.0156 (0.0220)	0.0316* (0.0170)	0.0356 (0.0258)
OAxDistance	-0.414*** (0.0288)	-0.416*** (0.0409)	-0.443*** (0.0398)	-0.434*** (0.0626)	-0.359*** (0.0306)	-0.344*** (0.0434)	-0.409*** (0.0408)	-0.398*** (0.0637)
OAxGDPpc			0.0112*** (0.00352)	0.0127** (0.00552)			0.0147*** (0.00315)	0.0158*** (0.00484)
N	1202163	1202163	1190679	1190679	1202163	1202163	1190679	1190679
R2	0.596	0.807	0.808	0.897	0.595	0.806	0.807	0.897
FE	cxt,HS10xt	cxt,cxHS10	cxt,cxHS10	cxHS6xt,cxHS10	cxt,HS10xt	cxt,cxHS10	cxt,cxHS10	cxHS6xt,cxHS10

Notes: The dependent variable is log quantity of exports of HS10 product p to country c on financing term f at time t. Measure of institutional quality (IQ) is given at the top of each column. PT and CV stand for payment timeliness and contract viability, respectively. All specifications include fxt fixed effects. All variables are in mean deviation form. Standard errors are clustered at the country-year level. \*, \*\*, \*\*\* represent significance at the 10, 5, and 1 percent levels, respectively.

Table 3: **Exporter-financed exports and institutional quality: Robustness checks**

<b>Restricted sample</b>				
	<b>Payment timeliness</b>		<b>Contract viability</b>	
OAxIQ	0.284*** (0.0731)	0.284*** (0.0876)	0.201** (0.0840)	0.201** (0.101)
OAxNIM	0.0448** (0.0180)	0.0448** (0.0216)	0.0380** (0.0182)	0.0380* (0.0218)
OAxDistance	-0.448*** (0.0432)	-0.448*** (0.0517)	-0.412*** (0.0440)	-0.412*** (0.0527)
OAxGDPpc	0.0132*** (0.00385)	0.0132*** (0.00461)	0.0164*** (0.00337)	0.0164*** (0.00405)
N	527050	527050	527050	527050
R2	0.787	0.835	0.787	0.835
<b>Full sample</b>				
	<b>CLS</b>		<b>DLP</b>	
OAxIQ	0.274*** (0.0685)	0.303*** (0.0977)	-0.124*** (0.0400)	-0.134** (0.0605)
OAxDistance	-0.489*** (0.0419)	-0.473*** (0.0644)	-0.424*** (0.0424)	-0.415*** (0.0651)
OAxNIM	-0.00356 (0.0196)	-0.00947 (0.0284)	-0.00686 (0.0207)	-0.00951 (0.0318)
OAxGDPpc	0.0300*** (0.00303)	0.0300*** (0.00446)	0.0162*** (0.00279)	0.0169*** (0.00423)
N	789483	789483	948284	948284
R2	0.808	0.898	0.808	0.897
FE	cxt,cxHS10 cxHS6xt,cxHS10		cxt,cxHS10 cxHS6xt,cxHS10	

*Notes:* The dependent variable is log quantity of exports of HS10 product p to country c on financing term f at time t. In the upper panel of the table, sample is restricted to destination-HS10-year combinations with non-zero exports on OA and non-OA terms. The full sample is used in the lower panel. CLS stands for the confidence in the legal system, and DLP for the duration of legal procedures. All specifications include fxt fixed effects. All variables are in mean deviation form. Standard errors are clustered at the country-year level. \*, \*\*, \*\*\* represent significance at the 10, 5, and 1 percent levels, respectively.

Table 4: **Exporter-financed exports and institutional quality: Comparing product types**

	Payment timeliness		Contract viability	
	(1)	(2)	(3)	(4)
OAxIQ	0.212*** (0.0296)	0.217*** (0.0305)	0.135*** (0.0274)	0.142*** (0.0285)
DiffxOAxIQ	0.103*** (0.0324)	0.101*** (0.0334)	0.0746** (0.0297)	0.0710** (0.0308)
DiffxIQ	-0.0816** (0.0341)	-0.0826** (0.0408)	-0.0476* (0.0275)	-0.0725** (0.0322)
OAxNIM	0.0753*** (0.00744)	0.0780*** (0.00764)	0.0707*** (0.00741)	0.0735*** (0.00760)
DiffxOAxNIM	-0.0432*** (0.00823)	-0.0448*** (0.00846)	-0.0470*** (0.00820)	-0.0486*** (0.00843)
DiffxNIM	0.0304*** (0.00789)	0.0228** (0.00899)	0.0330*** (0.00788)	0.0254*** (0.00898)
DiffxOA	0.561*** (0.0209)	0.561*** (0.0215)	0.564*** (0.0210)	0.565*** (0.0216)
N	1120495	1120495	1120495	1120495
R2	0.808	0.815	0.807	0.815
FE	cxt,cxHS10	cxHS2xt,cxHS10	cxt,cxHS10	cxHS2xt,cxHS10

*Notes:* The dependent variable is log quantity of exports of HS10 product p to country c on financing term f at time t. Measure of institutional quality (IQ) is given at the top of each column. Diff is a binary variable which takes on the value one if it is classified as differentiated according to Rauch (1999), and zero if it is classified as reference-priced or homogeneous. All specifications include fxt fixed effects. All specifications also include distance and GDPpc interactions. All variables are in mean deviation form. Standard errors are clustered at the country-product(HS6) level. \*, \*\*, \*\*\* represent significance at the 10, 5, and 1 percent levels, respectively.



Table 5: Exporter-financed exports: Degree of competition in the destination market

	(1)	(2)	(3)	(4)	(5)	(6)
OAxGDP	0.279*** (0.006)	0.292*** (0.010)				
OAxFSP <sub>c,t-3</sub>			0.201*** (0.0077)	0.204*** (0.010)		
N <sub>c,t-3,HS6</sub>					-0.0188*** (0.0023)	
OAxN <sub>c,t-3,HS6</sub>					0.0274*** (0.0008)	0.0265*** (0.0011)
OAxIQ	0.150** (0.0130)	0.137 (0.0205)	0.0938 (0.0222)	0.0890 (0.0298)	0.0815 (0.0297)	0.0848 (0.0390)
OAxNIM	0.0663*** (0.0032)	0.0700*** (0.0050)	0.101 (0.0080)	0.105 (0.0109)	0.114 (0.0125)	0.113 (0.0162)
OAxDistance	-0.582*** (0.0106)	-0.589*** (0.0169)	-0.391*** (0.0178)	-0.390*** (0.0237)	-0.524*** (0.0219)	-0.529*** (0.0283)
OAxGDPpc	0.00374 (0.0006)	0.00462 (0.0009)	0.00539 (0.0009)	0.00597 (0.0012)	0.0183** (0.0012)	0.0193* (0.0016)
N	1190679	1190679	430953	430953	295960	295960
R2	0.809	0.899	0.875	0.911	0.880	0.911
FE	ext,cxHS10	cxHS6xt,cxHS10	ext,cxHS10	cxHS6xt,cxHS10	ext,cxHS10	cxHS6xt,cxHS10

*Notes:* The dependent variable is log quantity of exports of HS10 product p to country c on financing term f at time t. Measure of institutional quality (IQ) is PT in all specifications. All specifications include fxt fixed effects. All variables are in mean deviation form.  $N_{c,t-3,HS6}$  is the number of countries exporting a given HS product to destination c in year  $t-3$ .  $FSP_{c,t-3}$  is a measure of foreign supply potential of destination c in year  $t-3$ . Standard errors are clustered at the country-product(HS6) level. \*, \*\*, \*\*\* represent significance at the 10, 5, and 1 percent levels, respectively.

Table 6: **Exporter-financed exports and relative tariffs in the export market**

	Relative_tariff		D_Tariff	
	(1)	(2)	(3)	(4)
OAxTariff	0.00431*** (0.000417)	0.001*** (0.000356)	0.365*** (0.0186)	0.170*** (0.0160)
Tariff	-0.00260*** (0.000353)		-0.228*** (0.0159)	
OAxIQ	0.260*** (0.0109)	0.249*** (0.0166)	0.252*** (0.0109)	0.246*** (0.0166)
OAxNIM	0.0518*** (0.00284)	0.0570*** (0.00425)	0.0516*** (0.00283)	0.0567*** (0.00425)
OAxDistance	-0.389*** (0.00845)	-0.387*** (0.0129)	-0.371*** (0.00852)	-0.379*** (0.0130)
OAxGDPpc	0.00870*** (0.0005)	0.0105*** (0.0007)	0.00841*** (0.0005)	0.0104*** (0.0007)
N	1018997	1018997	1018997	1018997
R2	0.822	0.906	0.822	0.906
FE	cxt,cxHS10	cxHS6xt, cxHS10	cxt,cxHS10	cxHS6xt, cxHS10

*Notes:* The dependent variable is log quantity of exports of HS10 product p to country c on financing term f at time t. PT is used as a measure of institutional quality (IQ) in all specifications. All specifications include fxt fixed effects. Tariff measure is given at the top of each column. Tariff data are compiled from WITS/TRAINS and defined as applied tariff at the destination-year-HS6 level. The sample excludes MFA products.  $Relative\_tariff_{ct,HS6} = Tariff_{c,t-3,HS6}^{TUR} - Tariff_{c,t-3,HS6}^{CHN}$ ; and  $D\_Tariff_{ct,HS6} = 1$  if  $Tariff_{c,t-3,HS6}^{TUR} > Tariff_{c,t-3,HS6}^{CHN}$  and zero otherwise. All variables are in mean deviation form. Standard errors are clustered at the country-HS6 level. \*, \*\*, \*\*\* represent significance at the 10, 5, and 1 percent levels, respectively.

Table 7: End of the MFA and exporter-financed exports

	$Treat_{HS6}$			$Max\_fill\_rate_{HS6}$				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PostxTreated	0.570*** (0.165)	1.096*** (0.293)	0.564*** (0.165)	0.509* (0.290)	0.604*** (0.174)	1.155*** (0.309)	0.597*** (0.173)	0.542* (0.303)
Post	-0.388*** (0.137)	-0.441 (0.394)			-0.389*** (0.137)	-0.442 (0.394)		
GDPpc	0.730** (0.296)	0.701 (0.628)			0.729** (0.296)	0.701 (0.628)		
NIM	-0.0981* (0.0530)	0.0917 (0.151)			-0.0982* (0.0530)	0.0918 (0.151)		
N	25913	15770	25913	25913	25913	15770	25913	25913
R2	0.217	0.246	0.220	0.786	0.217	0.246	0.220	0.786
FE	c, HS10	c, HS10	cxt, HS10	cxt, cxHS10	c, HS10	c, HS10	cxt, HS10	cxt, cxHS10

Notes: The dependent variable is  $\ln(X_{cpt,OA}) - \ln(X_{cpt,nonOA})$ , where  $t = 2004, 2008$ . MFA measure is given at the top of each column, where

$$\begin{aligned}
 Treat_{HS6} &= 1 \text{ if } \exists i \in \{CHN, BGD, IND\} \text{ s.t. } FR_{i,HS6,2004} > 0.9 \\
 Treat_{HS6} &= 0 \text{ if } \forall fill\_rate_{i,HS6,2004} < 0.9;
 \end{aligned}$$

and  $Max\_FR_{HS6}$  is the maximum fill rate per product in 2004. Standard errors are clustered at the HS6-level. \*, \*\*, \*\*\* represent significance at the 10, 5, and 1 percent levels, respectively.

Table 8: Exporter-financed exports during the crisis

	(1)	(2)	(3)	(4)	(5)	(6)
2009	-0.378*** (0.0011)	-0.369*** (0.0028)	-0.352*** (0.0048)	-0.373*** (0.0041)	-0.367*** (0.0027)	-0.375*** (0.0029)
Crisis	0.0927*** (0.0204)					
Output_loss		0.0025*** (0.0006)			0.0043*** (0.0005)	0.0014** (0.0007)
Liq_support			-0.0011 (0.0011)		-0.0068*** (0.0005)	
NPLs				0.0082*** (0.0011)		0.0054*** (0.0002)
GDPpc	-0.0267*** (0.0013)	-0.0237*** (0.0007)	-0.0213*** (0.0009)	-0.0225*** (0.0003)	-0.0212*** (0.0008)	-0.0233*** (0.0007)
NIM	0.0239*** (0.0043)	0.0250*** (0.0044)	0.0270*** (0.0048)	0.0253*** (0.0047)	0.0247*** (0.0044)	0.0248*** (0.0044)
N	346046	346046	346046	346046	346046	346046
R2	0.671	0.671	0.671	0.671	0.671	0.671
Fixed effects	cxHS16,HS10	cxHS16,HS10	cxHS16,HS10	cxHS16,HS10	cxHS16,HS10	cxHS16,HS10

Notes: The dependent variable is  $\ln(X_{cpt,OA}) - \ln(X_{cpt,nor,OA})$ , where  $t = 2006, 2009$ . Measure of institutional quality is payment timeliness in all specifications. Measure of institutional quality (IQ) is payment timeliness. Crisis is a dummy variable that takes on the value one for countries in crisis as identified by Laeven and Valencia (2013), and zero otherwise. Standard errors are clustered at the country-year level. \*, \*\*, \*\*\* represent significance at the 10, 5, and 1 percent levels, respectively.

# Appendix

Table 9: **Exporter-financed exports and IQ: alternative IQ measures**

	Regulatory quality		Government effectiveness	
	(1)	(2)	(3)	(4)
OAxIQ	0.136 (0.0830)	0.134 (0.126)	0.0756 (0.0851)	0.0616 (0.129)
OAxDistance	-0.377*** (0.0396)	-0.355*** (0.0618)	-0.396*** (0.0414)	-0.375*** (0.0643)
OAxNIM	0.00792 (0.0201)	0.00826 (0.0309)	0.00939 (0.0197)	0.00932 (0.0299)
OAxGDPpc	0.00904** (0.00369)	0.00978* (0.00567)	0.0113*** (0.00422)	0.0125* (0.00655)
N	1369605	1369605	1369605	1369605
R2	0.807	0.897	0.807	0.897
FE	cxt,cxHS10	cxHS6xt,cxHS10	cxt,cxHS10	cxHS6xt,cxHS10

*Notes:* The dependent variable is log quantity of exports of HS10 product p to country c on financing term f at time t. Measure of institutional quality (IQ) is given at the top of each column. All specifications include fxt fixed effects. All variables are in mean deviation form. Standard errors clustered at country-year level. textsuperscript\*, \*\*, \*\*\* represent significance at the 10, 5, and 1 percent levels, respectively

Table 10: Exporter-financed exports and institutional quality: Fractional logit

	PT	CV	CLS	DLP
	(1)	(2)	(3)	(4)
IQ	<b>0.0645*</b> (0.0345) [0.0092*]	<b>0.0818**</b> (0.0349) [0.0116**]	<b>0.176***</b> (0.0348) [0.0234***]	-0.0000176 (0.0000215) [-0.000002]
NIM	<b>0.0528***</b> (0.00987) [0.0075***]	<b>0.0526***</b> (0.0101) [0.0075***]	0.0191 (0.0127) [0.0025]	<b>0.0441***</b> (0.0105) [0.0061***]
Distance	-0.242*** (0.0195) [-0.0344]***	-0.236*** (0.0194) [-0.0336]***	-0.239*** (0.0231) [-0.0318]***	-0.237*** (0.0202) [-0.0329]***
GDPpc	0.00415** (0.00186)	0.00423** (0.00170)	0.0140*** (0.00184)	0.00610*** (0.00151)
GDP	0.0824*** (0.0115)	0.0874*** (0.0119)	0.0124 (0.0140)	0.109*** (0.0121)
N	648458	648458	425539	515826
AIC	541477.1	541397.7	337074.2	423426.2
BIC	542512.9	542433.5	338071.7	424441.1
FE	HS2,t	HS2,t	HS2,t	HS2,t

*Notes:* The dependent variable is share of exports of HS6 product p to country c on OA terms at time t. Measure of institutional quality (IQ) is given at the top of each column. Marginal effects in square parantheses. Standard errors are clustered at the country-year level. textsuperscript\*, \*\*, \*\*\* represent significance at the 10, 5, and 1 percent levels, respectively.

Table 11: Product differentiation matters: Detailed classification

	(1)	(2)	(3)	(4)	(5)	(6)
	Differentiated vs Reference-priced	Differentiated vs Homogenous	Differentiated vs Homogenous	Reference-priced vs Homogenous	Reference-priced vs Homogenous	Reference-priced vs Homogenous
OAxIQ	0.234*** (0.0315)	0.238*** (0.0324)	0.0555 (0.0818)	0.0601 (0.0866)	0.0563 (0.0859)	0.0536 (0.0941)
DiffOAxIQ	0.0806** (0.0342)	0.0795** (0.0352)	0.260*** (0.0828)	0.257*** (0.0876)		
DiffxIQ	-0.0581 (0.0362)	-0.0651 (0.0436)	-0.230*** (0.0829)	-0.164 (0.101)		
RefxOAxIQ					0.179** (0.0910)	0.182* (0.0995)
RefxIQ					-0.176* (0.0919)	-0.231 (0.155)
OAxNIM	0.0730*** (0.0079)	0.0757*** (0.0081)	0.0847*** (0.0220)	0.0872*** (0.0231)	0.0841*** (0.0229)	0.0986*** (0.0190)
DiffOAxNIM	-0.0410*** (0.0086)	-0.0426*** (0.0089)	-0.0525** (0.0223)	-0.0540** (0.0234)		
RefxOAxNIM					-0.0109 (0.0242)	-0.0236 (0.0194)
DiffxOA	0.542*** (0.0221)	0.542*** (0.0228)	0.741*** (0.0560)	0.730*** (0.0589)		
RefxOA					0.199*** (0.0612)	0.168** (0.0660)
N	1094152	1094152	935696	935696	211142	211142
R2	0.805	0.812	0.801	0.809	0.803	0.819
FE	cxt,cxHS10	cxHS2xt,cxHS10	cxt,cxHS10	cxHS2xt,cxHS10	cxt,cxHS10	cxHS2xt,cxHS10

*Notes:* The dependent variable is log quantity of exports of HS10 product p to country c on financing term f at time t. Measure of institutional quality (IQ) is given at the top of each column. Diff (Ref) is a binary variable which takes on the value one if it is classified as differentiated (reference-priced) according to Rauch (1999), and zero if it is classified as reference-priced (differentiated) or homogeneous. All specifications include fxt fixed effects. All specifications also include distance and GDPpc interactions. All variables are in mean deviation form. Standard errors are clustered at the country-product(HS6) level. \*, \*\*, \*\*\* represent significance at the 10, 5, and 1 percent levels, respectively.