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## Don't throw in the towel, throw in trade credit! ☆

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## ABSTRACT

The literature has documented how firms adjust to increased competitive pressures arising from globalization. This paper demonstrates a new margin of adjustment, namely, provision of trade credit. A simple model predicts that an increase in competitive pressures will lead exporters to provide trade credit and lower prices and that the price adjustment will be attenuated by trade credit provision. These predictions are tested in the context of an exogenous shock, the end of the Multi-Fiber Arrangement (MFA), a quota system governing trade in textiles and clothing until the end-2004. The analysis focuses on Turkey which was not subject to quotas in the EU and thus faced an increase in competition after the quotas on China had been removed. The results suggest that in the post-MFA period Turkish exports of products with binding MFA quotas prior to the shock saw an increase in the provision of trade credit and a drop in prices relative to the other products. There is also evidence that provision of trade credit generated a dampening effect on the price response to the increase in competition.

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## 1. Introduction

Liberalization of international trade rules has given rise to a spectacular growth in the world trade and increased competitive pressures faced by firms. The literature has explored how firms

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have adjusted to these developments. It has shown theoretically and empirically that the adjustment has taken place through exit of the least productive firms and reallocation of market shares towards better performers (Melitz, 2003; Pavcnik, 2002, respectively). The adjustment has also taken the form of dropping the least performing products from a firm's portfolio and expanding the best performing ones (Bernard et al., 2010, 2011; Eckel and Neary, 2010; Mayer et al., 2014). This paper demonstrates another margin of adjustment—namely, the choice of financing terms on which the trade transaction takes place. More specifically, it postulates that firms respond to increases in competitive pressures by providing trade credit and lowering prices and that provision of trade credit generates a dampening effect on the price response to the increase in competition.<sup>1</sup>

<sup>1</sup> Anecdotal evidence suggests that provision of trade credit may indeed be a response to competitive pressures. For instance, the *Trade Finance Guide*, published by the US Department of Commerce International Trade Administration in November 2012 to assist American companies in conducting export transactions, suggests that providing export financing "may help win customers in competitive markets" (p. 11). It also warns that insisting on the importer providing financing "could, ultimately, cause exporters to lose customers to competitors who willingly offer more favorable payment terms to foreign buyers" (p. 5).

Our analysis is motivated with a simple theoretical framework in the spirit of Schmidt-Eisenlohr (2013) and Antràs and Foley (2015) with heterogeneous buyer valuations. In this framework, an exporter of an intermediate product meets a randomly matched set of foreign buyers, each of which has a unit demand for the product. The exporter chooses between offering trade credit and asking for bank financing, which reflects a trade-off between a lower risk of non-payment and a higher cost of financing (due to bank fees). The model predicts that an increase in the foreign buyer's outside option, which can be thought of as an increase in the level of competition, leads the exporter to provide trade credit for a higher share of export sales and lower the price of exports. Since the optimal price under trade credit is higher, switching from requiring bank financing to providing trade credit generates a dampening effect on the price response to an increase in competition.

These theoretical predictions are tested in the context of an exogenous shock to competition associated with dismantling of the Multi-Fiber Arrangement (MFA), a system of bilateral quotas governing the global trade in textiles and clothing until the end of 2004. The analysis focuses on Turkish exports to the European Union (EU) before and after the end of the MFA. Turkish exports of textiles and clothing were not subject to any quota restrictions in the EU market after Turkey formed a customs union with the EU in 1996. Thus the removal of the MFA quotas on large textile and clothing producers, China in particular, 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 the MFA quotas were binding in some, but not the other, products, which meant that the shock mattered more for the former group. We use data on Turkish exports of MFA products to the EU, disaggregated at the level of the exporting firm, product, destination country, year and financing terms. The data set covers the period 2002–2007. To take into account pre-existing trends we compare the change in provision of trade credit before the shock to the change after the shock for the affected (previously quota-bound) and the remaining (control) products. We account for various sources of unobservable heterogeneity by including product, country-year and firm-year fixed effects.

The results from this difference-in-differences approach suggest that in the post-MFA period the share of Turkey's exports sold on credit to the EU increased faster in products in which the MFA quotas were binding in 2004 relative to products without binding quotas. The effect is statistically significant as well as meaningful in economic terms. After the shock, the affected products saw a 3.75 percentage point larger increase in the trade credit provision relative to the products which were not subject to the shock. Our results are robust to a placebo test, which exploits the timing of the shock and assigns a placebo date (January 2004 instead of January 2005) as the date of the MFA quota removal. As expected, the test returns a statistically insignificant estimate of our parameter of interest.

We then investigate the impact of the shock on prices and the interplay between adjustment of financing terms and prices. The results indicate that the exogenous shock to competition resulted in a decline in prices (unit values) of the affected products exported by Turkish producers relative to the control products. Again the effect is both statistically significant and economically meaningful. The products in which the MFA quotas were binding saw a 7% larger decline in prices relative to the control products after the shock. We also find a larger adjustment through prices taking place in exports of the affected products where only a limited adjustment through the credit channel was possible (due to a large share of the flow already being sold on credit before the shock). This result from a triple-difference specification suggests that provision of trade credit has a dampening effect on the price response to the exogenous shock to competition.

Our empirical findings, which confirm the theoretical predictions, have two implications. First, they suggest that the ability to provide financing can give producers a competitive edge in highly competitive foreign markets. Second, studies considering the response of export prices to competitive shocks abroad may be underestimating the effects unless they take into account adjustments taking place through the trade credit channel.

Our paper is related to several strands of the existing literature. First, as explained earlier, it contributes to the literature on firms' adjustment to competitive pressures arising from globalization by proposing a new margin of adjustment—a margin that has not been considered before in either the theoretical or the empirical literature.

Second, it adds to the literature that documents the importance of access to financing for the ability to export (Amiti and Weinstein, 2011; Chaney, 2016; Chor and Manova, 2012; Greenaway et al., 2007; Manova, 2008, 2013; Manova et al., 2015; Paravisini et al., 2014). While the literature focuses on the broadly defined ability of firms to borrow, this paper studies a particular type of financing, namely trade credit, which is the single most important source of short-term financing in domestic trade (Petersen and Rajan, 1997; Wilson and Summers, 2002). Our results suggest that the ability to provide trade credit is particularly important in the case of exports destined for markets with a high level of competition.

Third, by providing a theoretical framework and empirical evidence suggesting a positive link between the level of competition and provision of trade credit, our paper contributes to the literature that studies the workings of trade credit in general. It has been postulated that firms resort to trade credit as a competitive strategy. On the theoretical front, Wilner (2000) shows that trade creditors grant more concessions in debt renegotiations to important customers in order to maintain an enduring product market relationship, relative to concessions that would be granted by lenders in a competitive credit market. Anticipating these larger renegotiation concessions, less financially stable firms prefer buying on trade credit and pay a higher interest rate to a trade creditor than to a credit market lender. Another explanation for the existence of trade credit is that suppliers have a comparative advantage over banks in financing the short-term working capital needs of their customers. This is due to their knowledge of the credit worthiness and business conditions of their customers (e.g. Smith, 1987); or their ability to resell the underlying good in case of payment default (e.g. Mian and Smith, 1992). Finally, in monopolistic or oligopolistic product markets extending trade credit may allow suppliers to price discriminate among their customers (Brennan et al., 1988). On the empirical front, Fisman and Raturi (2004) use survey data from five African countries to document a negative relationship between monopoly power and trade credit provision. Using survey data from China, Fabbri and Klapper (2016) also find evidence pointing to a similar relationship. By going beyond survey data, focusing on an exogenous shock and employing a difference-in-differences approach we overcome the limitations of the existing studies and are able to provide more convincing evidence pointing towards a positive effect of market competition on trade credit provision.<sup>2</sup>

Fourth, by pointing out the role of competition, a factor that has not been considered before, we extend the literature on determinants of financing terms in international trade transactions (Ahn, 2014; Antràs and Foley, 2015; Eck et al., 2015; Engemann et al., 2014; Glady and Potin, 2011; Hoefele et al., 2016; Niepmann and Schmidt-Eisenlohr, 2017; Schmidt-Eisenlohr, 2013). Our study is also the first one relying on direct measures of export financing for a large sample of exporters. This contrasts with the existing literature that either tested the theories of export financing using information

<sup>2</sup> For a review of the literature on domestic trade credit see Petersen and Rajan (1997) and Fisman and Love (2003).

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